Republic of Namibia

Ministry of Health and Social Services

National Tuberculosis and Leprosy Programme

Annual Report: 2022-2023

Vision[1]:

A Namibia free of tuberculosis and leprosy.

Mission statement

Universal access to tuberculosis and leprosy care and prevention per international standards, while addressing the determinants and consequences of the diseases in line with the Sustainable Development Goals.

National Tuberculosis and Leprosy Programme

Directorate of Special Programmes

Private Bag 13198

Windhoek, Namibia

Tel: 061-2032428

Fax: 061-224155

[1] Third Medium-term Strategic Plan for Tuberculosis and Leprosy, 2017/18-2021/22

PREFACE

As a country, Namibia is committed to ending TB as the world's most lethal infectious disease. We are dedicated to closing the gap in TB diagnosis, treatment, and prevention. Our TB response is people-centred, focusing on increasing the investments necessary to end TB and ensuring a leadership that is both committed and accountable. This annual report provides an opportunity to assess the progress towards the national commitments and advances made in achieving the National Strategic Plan targets.

Namibia continues to rank amongst the top 30 high-burden TB countries per capita. In 2022, the country notified 8,604 DS-TB cases, which translates to 335 per 100,000 population. Additionally, a total of 34 leprosy cases were notified through passive case detection. The World Health Organization (WHO) estimated that Namibia missed about 25% of its TB cases, with an incidence rate estimated to be 450 cases per 100,000 population.

The Directorate of Special Programmes (DSP) acknowledges the ongoing support provided by the following organizations: Global Fund to Fight HIV/AIDS, TB, and Malaria (GFATM), World Health Organization (WHO), the United States Centers for Disease Control and Prevention (CDC), and the Namibia Institute of Pathology (NIP). The implementation of community-based TB services by Advanced Community Health Care Services Namibia (CoHeNa) and Health Poverty Action continues to be a key component of tuberculosis care and prevention in the country.

I sincerely acknowledge the immense support received from Ministry of Health and Social Services (MHSS) leadership at national, regional, and district levels. The work being done by the regional and district TB and leprosy coordinators deserves special mention. Finally, I would like to acknowledge all health workers and volunteers in Namibia, whose support has been pivotal to the evident progress in TB and leprosy control.

I am confident that continued collaboration and formidable efforts will result in the ultimate goal of ending Tuberculosis and Leprosy in the country.

MINISTRY OF HEALTH & SOCIAL SERVICES
14 MAY 2025
Special Programme
061 203 2822
Private Bag 13198, Windhoek

....
Ms. Julieth Karirao
Acting Director: Directorate Special Programmes

TABLE OF CONTENTS

PREFACE ... 3
LIST OF FIGURES ... 8
LIST OF TABLES ... 11
EXECUTIVE SUMMARY ... 15
1 NATIONAL OVERVIEW ... 17
1.1 Background ... 17
1.2 The National TB and Leprosy Programme ... 18
1.3 TB and Leprosy key indicators ... 20
1.4 TB Incidence and Mortality Trends ... 22
1.5 Programmatic Achievements, Challenges and Recommendations ... 24
2 TB DIAGNOSTIC SERVICES ... 28
2.1 Provision of services by Namibia Institute of Pathology ... 29
3 BURDEN OF DRUG-SUSCEPTIBLE TB ... 36
3.1 TB Case notifications ... 36
3.2 Regional distribution of TB cases ... 41
3.3 Districts with the highest burden ... 43
3.4 Age and sex distribution of TB cases (all forms) notified ... 44
3.5 Childhood TB ... 45
3.6 Treatment outcomes for drug susceptible TB ... 47
3.6.1 Treatment outcomes by region ... 50
3.6.2 Treatment Outcomes for New Bacteriologically positive PTB cases ... 51
3.6.3 Trends in Treatment Outcomes for New Bacteriologically Positive PTB cases 53
3.6.4 Treatment Outcomes for New and Relapse TB cases ... 54
3.6.5 Treatment Outcomes for EPTB cases ... 55
4 TB/HIV AND OTHER CO-MORBIDITIES ... 58
4.1 The burden of TB/HIV co-infection ... 58
4.2 Provision of HIV services for TB patients ... 61

4.3 Provision of TB services to PLHIV 65

4.3.1 TB LAM 65

4.4 TB and other co-morbidities 68

5 TB PREVENTION SERVICES 70

5.1 TB Preventive Therapy 70

5.2 3HP Initiation 71

5.3 TB infection control practices at health facilities 71

5.4 Contact Investigation 72

5.5.1 Contact investigation and TPT 72

5.5.2 TPT completion among contacts investigated in 2021 75

6 PROGRAMMATIC MANAGEMENT OF DRUG-RESISTANT TUBERCULOSIS 76

6.1 DR-TB Notifications 76

6.2 DR-TB treatment 81

6.3 DR-TB and HIV 83

6.4 Treatment outcomes for DR-TB patients 84

7 PHARMACEUTICAL SUPPLIES 87

8 COMMUNITY ENGAGEMENT ACTIVITIES BY THE NTLP 88

8.1 World TB Day commemoration 88

8.2 Community based TB care and overview of partner engagement 90

8.3 Advanced Community Health Care Services Namibia (CoHeNa) Report 92

8.4 TB in the mining sector 94

8.5 TB in the Correctional facilities and Police holding cells 95

8.6 TB screening campaign in high-burden populations 96

9 SOCIAL SUPPORT AND REHABILITATION SERVICES 100

9.1 Social support 100

9.2 Rehabilitation 104

10 CAPACITY BUILDING AND SYSTEM STRENGTHENING 107
11 LEPROSY 108
11.1 Leprosy Elimination status 108

11.2 Leprosy Medicines 112

12 Annexures 113
12.1 Annex A: Health Facilities providing TB services in Namibia 113

12.2 Annex B: HIV/Diabetes summary for TB patients 114

12.3 Annex C: Number of TB patient with Xpert MTB/RIF test results 115

12.4 Annex D: TB and Leprosy Medicine Expenditure 2021-22 116

LIST OF FIGURES

FIGURE 1: ADMINISTRATIVE REGIONS OF NAMIBIA 17

FIGURE 2: NTLP STRUCTURE IN THE DIRECTORATE FOR SPECIAL PROGRAMMES 18

FIGURE 3: TRENDS OF TB BURDEN AND ESTIMATED TB INCIDENCE RATE; 2000-2022 23

FIGURE 4: TRENDS OF ESTIMATED TB INCIDENCE AND TB MORTALITY RATE PER 100, 000 POPULATIONS 24

FIGURE 5: TRENDS OF DRUG SUSCEPTIBILITY TESTING (DST) COVERAGE, 2017-2022 29

FIGURE 6: NAMIBIA INSTITUTE OF PATHOLOGY NATIONAL FOOTPRINT 31

FIGURE 7: NUMBER OF XPERT MTB/RIF TESTS PERFORMED BY REGION, 2022 32

FIGURE 8: XPERT COVERAGE AMONG NEW PATIENTS TB 2022 34

FIGURE 9: XPERT COVERAGE AMONG RELAPSE TB PATIENTS, 2022 34

FIGURE 10: XPERT COVERAGE AMONG ALL FORMS TB PATIENTS, 2022 35

FIGURE 11: TRENDS OF NUMBER OF ALL FORMS OF TB CASES, 2012 - 2022 37

FIGURE 12: TREND IN TB TREATMENT COVERAGE; 2017-2022 39

FIGURE 13: TREND IN CASE NOTIFICATION RATE; 2012-2022 40

FIGURE 14: NUMBER OF TB CASES (ALL FORMS) BY REGION, 2022 42

FIGURE 15: NUMBER OF NEW AND RELAPSE TB CASES BY REGION, 2022 43

FIGURE 16: TB CASES (ALL FORMS) BY AGE GROUP AND SEX, 2022 45

FIGURE 17: PROPORTION (%) OF NATIONAL TB BURDEN IN CHILDREN, 2022 BY REGION 46

FIGURE 18: REGIONAL PROPORTION OF TB CASES IN CHILDREN (< 15 YEARS), 2022 BY REGION 47

FIGURE 19: TRENDS FOR DEATH RATE AND LOST TO FOLLOW-UP (LTFU) 49

FIGURE 20: TREATMENT OUTCOMES FOR ALL FORMS OF TB, 2021 COHORT BY REGION 51

FIGURE 21: TREATMENT OUTCOMES FOR NEW AND RELAPSE TB CASES BY REGION, 2021 COHORT 54

FIGURE 22: TREATMENT OUTCOMES FOR EPTB CASES BY REGION, 2021 COHORT 56

FIGURE 23: TRENDS IN TREATMENT OUTCOMES FOR EPTB CASES; 2012-2021 COHORTS 57

FIGURE 24: TRENDS IN TB/HIV NOTIFICATIONS 2012-2022 59

FIGURE 25: TB/HIV CARE CASCADE; 2018-2022 59

FIGURE 26: AGE-SEX DISTRIBUTION AMONG NEW AND RELAPSE TB/HIV CASES, 2022 61

FIGURE 27: TRENDS IN SELECTED TB/HIV INDICATORS 2012-2022 62

FIGURE 28: HIV BURDEN AMONG ALL TB PATIENTS BY REGION, 2022 63

FIGURE 29: TB TREATMENT OUTCOMES FOR NEW/RELAPSE TB/HIV PATIENTS BY REGION, 2021 COHORT 65

FIGURE 30: PERFORMANCE OF TB LAM IN NAMIBIA, 2022 67

FIGURE 31: REGIONAL PERFORMANCE OF TB LAM IN NAMIBIA, 2022 68

FIGURE 32: DIABETES SCREENING AMONG NEW & RELAPSE TB PATIENTS IN 2022 69

FIGURE 33: TB SCREENING AND TPT INITIATION AMONG PLHIV, 2022 70

FIGURE 34: PATIENTS INITIATED ON 3HP AMONG PLHIV BY REGION IN 2022 71

FIGURE 35: TB CONTACT SCREENING, 2022 73

FIGURE 36: REGIONAL DISTRIBUTION OF TB CONTACT INVESTIGATION & TPT AMONG <5 YEARS, 2022 74

FIGURE 37: NATIONAL TPT COMPLETION FOR CONTACTS INITIATED ON THERAPY, 2021 75

FIGURE 38: TRENDS IN THE REPORTED CASES ALL FORMS OF DRUG-RESISTANT TB, 2015-2022 76

FIGURE 39: TREND OF CONFIRMED DRUG RESISTANCE TB CASES BY RESISTANCE, 2015-2022 78

FIGURE 40: AGE-SEX DISTRIBUTION FOR DR-TB CASES, 2022 79

FIGURE 41: REGIONAL DISTRIBUTION OF REPORTED DR-TB CASES BY RESISTANCE PATTERN, 2022 80

FIGURE 42: DISTRIBUTION OF DRUG RESISTANT TB CASES BY TREATMENT HISTORY, 2022 81

FIGURE 43: DRUG RESISTANT TB TREATMENT COVERAGE BY REGION, 2022 83

FIGURE 44: DR-TB AND HIV INDICATORS, 2022 84

FIGURE 45: REGIONAL DISTRIBUTION OF DR-TB TREATMENT OUTCOMES, 2020 COHORT 85

FIGURE 46: TREATMENT OUTCOMES FOR MDR-TB PATIENTS, 2020 COHORT 86

FIGURE 47: THE CENTRAL MEDICAL STORES SERVICE LEVEL, 2013-2022 87

FIGURE 48: NUMBER OF COMMUNITY HEALTH CARE WORKERS, 2022 91

FIGURE 49: COMMUNITY BASED TB CARE SERVICES, 2022 92

Figure 50: Number of mines referring and screening presumptive TB patients, 2022 95
Figure 51: TB cases notified in correctional facilities and police holding cells, 2022 96
Figure 52: TB active case-finding activities in Tsumkwe, 2022 98
Figure 53: TB active case-finding activities in Omaheke region, 2022 99
Figure 54: TB active case-finding activities in Hardap region, 2022 99
Figure 55: Percentage of new and relapse TB patients with documented socio-economic assessment, 2022 101
Figure 56: Social support among new and relapse TB patients, 2022 101
Figure 57: Percentage of DR-TB patients with documented socio-economic assessment, 2022....................................102
Figure 58: Social support among DR-TB patients, 2022 102
Figure 59: Percentage of new and relapse TB patients receiving socio-economic support, 2022 103
Figure 60: Percentage of DR-TB patients receiving socio-economic support, 2022..104
Figure 61: Rehabilitation among New and Relapse PTB and EPTB patients, 2022 105
Figure 62: Rehabilitation among Drug Resistant TB patients, 2022 106
Figure 63: Trends in the number of notified cases of Leprosy, 2008- 2022...109
Figure 64: Regional Leprosy Case Management and Support, 2022...110
Figure 65: Leprosy Treatment Completion rate (2021 cohort), 30% TSR 112

LIST OF TABLES

TABLE 1: SUMMARY OF KEY INDICATORS 21

TABLE 2: TRENDS IN NUMBER OF TB CASES NOTIFIED, 2011 TO 2022 BY CATEGORY 41

TABLE 3: DISTRICTS WITH THE HIGHEST TB BURDEN 44

TABLE 4: TREATMENT OUTCOMES FOR ALL FORMS OF DRUG SUSCEPTIBLE TB CASES NOTIFIED IN 2021.....49

TABLE 5: TREATMENT OUTCOMES FOR NEW PTB B+ PATIENTS BY REGION, 2021 COHORT 52

TABLE 6: TRENDS IN TREATMENT OUTCOMES FOR NEW PTB_B+ CASES, 2011 – 2021 COHORTS.....53

TABLE 7: REGIONAL DISTRIBUTION OF NOTIFIED NEW & RELAPSE TB PATIENTS ON ART AND CPT, 2022 64

TABLE 8: LIST OF PARTNERS AND CSOS WORKING WITH NTLP IN 2022.....90

TABLE 9: COHENA NEW TB CASES CONTRIBUTION: HARDAP, KHOMAS AND OMAHEKE REGIONS, 2022 93

TABLE 10: COHENA INDICATORS AND TARGETS AS WELL AS ACTUAL ACHIEVEMENTS.....93

TABLE 11: TB HIV RELATED HEALTH TRAININGS CONDUCTED IN 2022.....107

TABLE 12: NOTIFIED NEW LEPROSY CASES BY REGION, 2022 111

LIST OF ACRONYMS

ACSM	advocacy, communication, and social mobilisation
AFB	acid-fast bacilli
Am	amikacin
Amx/Clv	amoxicillin/clavulanate
ART	antiretroviral therapy
B+	Bacteriologically Negative
B-	Bacteriologically positive
CAA	Catholic AIDS Action
CBTBC	community-based tuberculosis care
CCRC	Central Clinical Review Council of the NTLP
CDC	United States Centres for Disease Control and Prevention
CHPO	Chief Health Programme Officer
CHW	Community health care workers
Clr	Clarithromycin
Cm	capreomycin
CMO	Chief Medical Officer
CMS	central medical stores
CNR	Case notification rate
CoAg	Cooperative Agreement
CoHeNa	Advanced Community Health Care Services Namibia
COVID-19	CoronaVirus Disease of 2019
CPT	co-trimoxazole preventive therapy
Cs	cycloserine
CSC	National Steering Committee
CSO	Civil Society Organisations
DAPP	Development Aid from People to People
DCC	District Coordinating Committee
DHIS2	District Health Information Software 2
DM	direct microscopy
DOT	Directly observed treatment
DOTS	directly observed treatment - short course (WHO strategy)
DRS	drug resistance survey
DR-TB	Drug-resistant tuberculosis
DSP	Directorate of Special Programmes
DST	Drug Susceptibility Testing
DS-TB	Drug Susceptibility Testing
DTLC	District Tuberculosis and Leprosy Coordinator
E	ethambutol

EPTB	Extra-Pulmonary TB
Eto	Ethionamide
ETR	Electronic system register
FDC	fixed-dose combination
FLD	first-line (anti-TB) drugs (or medicines)
GDP	Gross Domestic Product
GF	Global Fund
GFATM	Global Fund to fight HIV/AIDS, TB and Malaria
GUV	Germicidal Ultraviolet Lights
GRN	Government of the Republic of Namibia
H	isoniazid
HAART	highly active antiretroviral therapy
HCT	HIV counselling and testing
HCW	Health care workers
HIV	human immunodeficiency virus
IEC	information, education and communication
INH	isonicotinic acid hydrazide
IPT	isoniazid preventive therapy
ITECH	International Training and Education Centre for Health
IUATLD	International Union against Tuberculosis and Lung Disease (The Union)
KAP	knowledge, attitude, practices
Km	kanamycin
KNCV	Koninklijke Nederlandse Centrale Vereniging
LAM	Lipoarabinomannan
Lfx	levofloxacin
LF TB LAM	Lateral Flow Tuberculosis Lipoarabinomannan
LPA	Line Probe Assay
LTFU	Loss to Follow-Up
LTBI	Latent tuberculosis infection
Lzd	linezolid
MB	Multi-bacillary
MDR-TB	multi-drug-resistant tuberculosis
MDT	Multidrug therapy
Mfx	moxifloxacin
MHSS	Ministry of Health and Social Services
MSH	Management Sciences for Health
MTP-II	Second Medium-Term Plan (for tuberculosis and leprosy)
MTP-III	Third Medium-Term Plan (for tuberculosis and leprosy)
NANASO	Namibia Network of AIDS Service Organisations
N/R TB	New & Relapse TB

NGO	non-governmental organisation
NIP	Namibia Institute of Pathology
NSP	new smear-positive
NTLP	National Tuberculosis and Leprosy Programme
OLD	Occupational lung disease
OPD	Out-Patient Departments
OR	Operational Research
PB	Paucibacillary leprosy
PLHIV	People Living with HIV
PTB	pulmonary tuberculosis
R	rifampicin
RACCOC	Regional AIDS Coordinating Committees
RMT	Regional Management Team
RR	Rifampicin Resistance
RTLC	Regional TB and leprosy coordinator
RTLC	Regional Tuberculosis and Leprosy Coordinator
Rx	Treatment
S	streptomycin
SHPO	Senior Health Programme Officer
SLD	second line (anti-TB) drugs/medicines
SOP	Standard Operating Procedure
SNT	sputum not tested
TAF	Treatment After Failure
TALFU	Treatment After Lost to Follow-up
TB	Tuberculosis
TB-IC	TB Infection Control
TB-IPC	Tuberculosis Infection Prevention and Control
TAC	Technical Advisory Committee
THU	Treatment history unknown
TIMS	TB in the Mining Sector
TIPC	Therapeutics Information and Pharmacovigilance Centre
TPT	Tuberculosis Preventive Therapy
TSR	Treatment success rate
ULO	Unknown last outcome
UNHLM	United Nations High-Level Meeting
UNAM	University of Namibia
USAID	United States Agency for International Development
VMMC	Voluntary Medical Male Circumcision
WHO	World Health Organisation
Z	pyrazinamide

EXECUTIVE SUMMARY

This 2022 annual report contains data and information on TB and leprosy control activities from all the regions in Namibia. It includes reports on TB case finding and treatment outcomes. The report also contains a comprehensive analysis of TB/HIV and drug-resistant TB (DR-TB) data as well as other programme activities embarked on during 2022.

Namibia reported a total of 8,604 drug-susceptible TB (DS-TB) cases during 2022, representing a significant 30.4% increase from the previous year. The case notification rate (CNR) for all forms of active TB was 335 cases per 100,000 population, compared to 260 per 100,000 in 2021.

The World Health Organization (WHO) focuses particularly on new and relapse TB cases to monitor epidemiological trends. In 2022, Namibia reported 8,386 new and relapse TB cases, resulting in a notification rate of 327 per 100,000 population. The number of patients with DR-TB reported in 2022 remained constant at 265 cases, the same as in 2021. Out of these, 252 cases had rifampicin resistance.

The treatment success rate for all forms of DS-TB was 87% for patients who started treatment in 2021, and the same rate was observed for new and relapse TB patients. However, the death rate for TB patients on treatment was 8% for all forms of DS-TB. The treatment success rate for DR-TB reduced from 75% to 69% for 2019 and 2020 treatment cohort respectively, with a high death rate of 22%.

The coverage of HIV counselling and testing for TB patients remained significant, with 99% of TB patients knowing their HIV status. The prevalence of HIV infection among DS-TB patients remained constant at 30% in 2022, and of the 2,588 patients who tested HIV positive, 99% were put on antiretroviral therapy (ART).

Lastly, the number of new leprosy cases reported in 2022 increased from 20 to 34 cases in 2022. This report highlights Namibia's ongoing efforts to combat TB and leprosy, emphasizing both the progress made and the areas that require further attention, particularly in managing TB and maintaining high treatment success rates.

1 NATIONAL OVERVIEW

1.1 Background

Namibia is located in Southern Africa, covering approximately 800,000 square kilometres (km^2), making it the fifth-largest country on the continent. It is bordered by Angola to the north, Botswana to the east, South Africa to the south, Zambia to the northeast, and the Atlantic Ocean to the west. The country has a semi-arid climate and is prone to droughts, which severely threaten its water and food security. Only about 1% of Namibia's land is considered arable. As of 2022, Namibia had an estimated population of 2,567,012 people residing in its 14 administrative regions and 36 districts.

Figure 1: Administrative regions of Namibia

1.2 The National TB and Leprosy Programme

The figure below shows the National TB and Leprosy Programme (NTLP) structure and the relationships among different levels of the program. This diagram illustrates how the NTLP operates at national, regional, district, and community levels, highlighting key roles and their interactions.

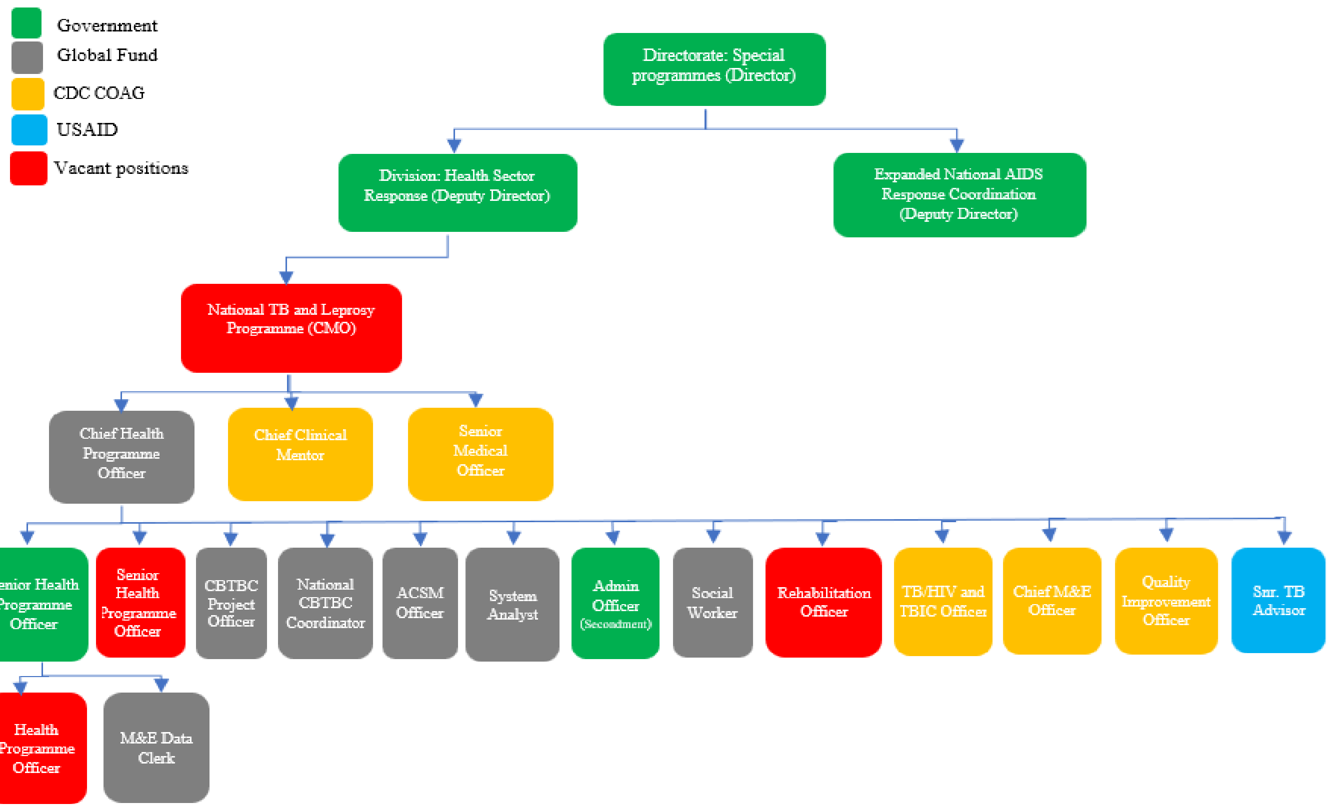


Figure 2: NTLP structure in the Directorate for Special Programmes

Despite the above structured approach, the NTLP has faced significant human resource challenges in recent years. These challenges include shortages of trained personnel, high turnover rates, and inadequate training and support for existing staff. These issues impact the program's ability to effectively manage and control TB and leprosy, leading to gaps in service delivery.

Addressing these human resource challenges is critical for the NTLP to achieve its goals. This may involve strategies such as increasing funding for hiring and training staff, implementing retention programs to reduce turnover, and enhancing the support systems for health workers at all levels. Strengthening the human resource capacity will enable the NTLP to operate more efficiently and effectively, ensuring better management of TB and leprosy across the country.

National Level: At the national level, the NTLP functions as a subdivision within the Directorate of Special Programmes. The leadership is headed by a Chief Medical Officer, who oversees the entire program and ensures that national policies and strategies are effectively implemented. This level is crucial for setting guidelines, securing funding, and coordinating with international health organizations.

Regional Level: The NTLP is divided into 14 regions, each managed by a Regional TB and Leprosy Coordinator. These coordinators are responsible for implementing the national strategies at the regional level, monitoring the progress of TB and leprosy control activities, and providing technical support to district coordinators. They also facilitate communication between the national and district levels, ensuring that regional challenges and successes are reported and addressed.

District Level: At the district level, there are 35 districts, each with a designated District TB and Leprosy Coordinator (DTLC). The DTLCs are critical in translating regional plans into actionable district-level activities. They manage local sides, oversee patient care and case management, and ensure that resources are effectively utilized. The DTLCs also liaise with health facilities and community health workers to maintain strong surveillance and outreach programs.

Community Level: The community level involves local health workers and volunteers who are the frontline in the fight against TB and leprosy. These individuals are essential for conducting door-to-door screening, raising awareness, and providing direct support to patients. They report back to health facilities' in charge on the ground realities, enabling a bottom-up flow of information.

1.3 TB and Leprosy key indicators

Namibia is gradually progressing towards achieving its national targets through the concerted efforts of the MoHSS and its partners. The table below shows the summary of key indicators for figures reported in 2022. The table indicates that approximately 97% of 8604 drug susceptible TB cases started on treatment in 2022 were new and relapse TB patients. In addition, 99% TB patients had known HIV status, with 30% HIV prevalence rate. The case notification rate was 335 per 100 000 population for DS-TB cases. A total of 252 rifampicin resistant TB cases were notified. The treatment success rate new and relapse (2021 cohort) and treatment success rate rifampicin resistant TB (2020 cohort) was 87% and 69 respectively. Lastly, the DS-TB case fatality rate (2021 cohort) was 8%.

Table 1: Summary of key indicators

INDICATORS	NEW	RELAPSE
Pulmonary, bacteriologically confirmed[2]	4 624	993
Pulmonary, clinically diagnosed	1 264	296
Extra pulmonary	1 082	127
Totals	6 970	1 416
New and relapse	8 386	
Previously treated, excluding relapses	218	
Totals cases notified (all forms)	8 604	
Case notification rate (per 100,000)	335	
HIV known status	99%	
Prevalence of HIV	30%	
Rifampicin resistant TB notified	252	
Treatment success rate new and relapse (2021 cohort)	87%	
Treatment success rate rifampicin resistant TB (2020 cohort)	69%	
DS-TB case fatality rate (2021 cohort)	8%	

[2] A bacteriologically confirmed TB case: a biological specimen is positive by smear microscopy, culture, or Xpert MTB/RIF. A clinically diagnosed TB case: not bacteriologically confirmed but diagnosed with active TB by a clinician or other medical practitioner who has decided to give the patient a full course of TB treatment.

1.4 TB Incidence and Mortality Trends

The graph below illustrates the trends in TB burden, highlighting three key aspects: National DS-TB cases notified, estimated TB cases, and the incidence rate per 100,000 population. In 2022, there was a notable improvement in the availability of TB services, including TB diagnostic services, compared to the previous two years. The total number of all forms of DS-TB cases notified in 2022 was 8,604, representing a significant 30.4% increase compared to 2021. Of these, 8,386 cases were classified as new and relapse cases.

The data reveals a substantial drop in TB notifications from 2019 to 2020, with a 15% decrease attributed to the disruptions caused by the COVID-19 pandemic. However, there was a slight increase in case notifications from 2020 to 2021, followed by a substantial increase in 2022. These trends underscore the impact of the COVID-19 pandemic on TB case notifications and the subsequent recovery and improvement in TB service availability in 2022. The substantial increase in notified cases in 2022 reflects the effectiveness of improved TB diagnostic and treatment services.

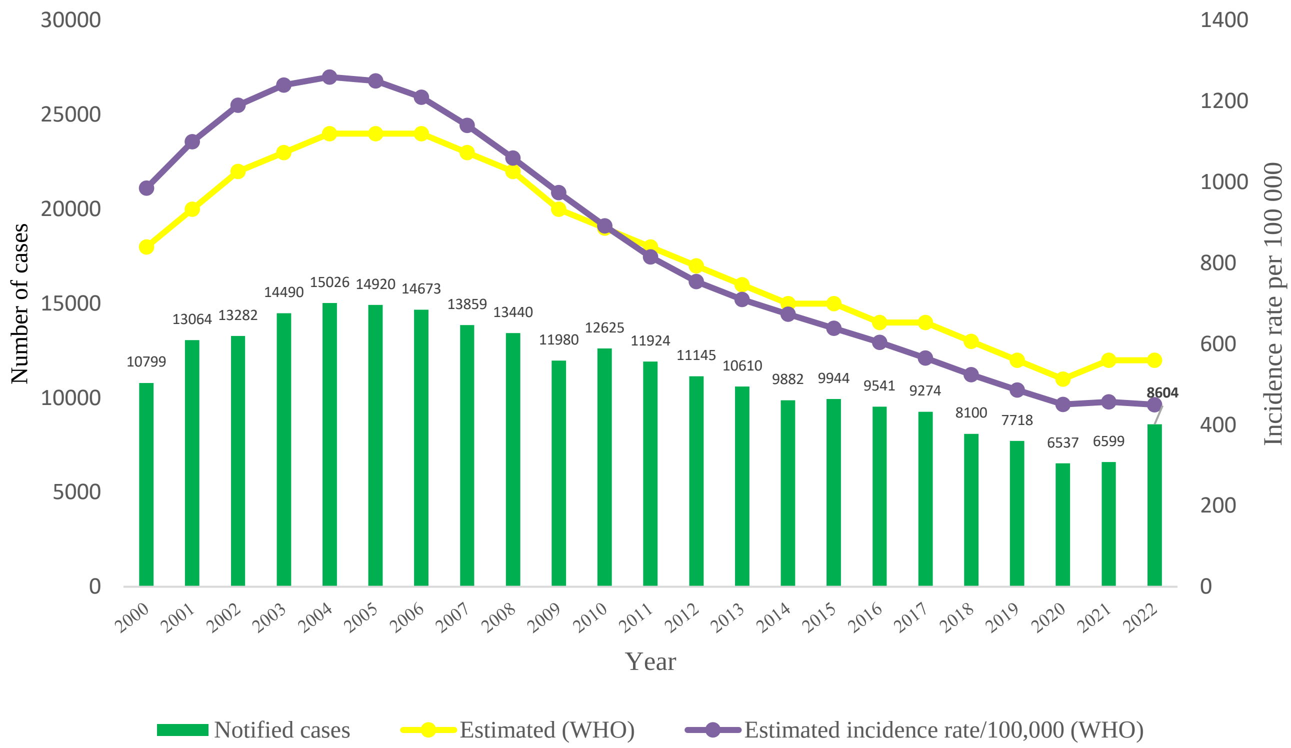


Figure 3: Trends of TB burden and estimated TB incidence rate; 2000-2022

The two graphs below illustrate the trends in TB incidence and mortality rates per 100,000 population. Although the country's TB incidence and mortality rates remain high, the trends indicate a steady decline over the past 10 years. This suggests that efforts to combat TB are having a positive impact, though there is still significant progress to be made.

Despite these improvements, the WHO estimates that the country is still missing over 25% of its TB cases. This figure represents individuals who may be undiagnosed and/or untreated, highlighting a critical gap in the healthcare system that needs to be addressed to ensure that all TB cases are detected and properly managed. Addressing this gap will be crucial for further reducing TB incidence and mortality rates in the country.

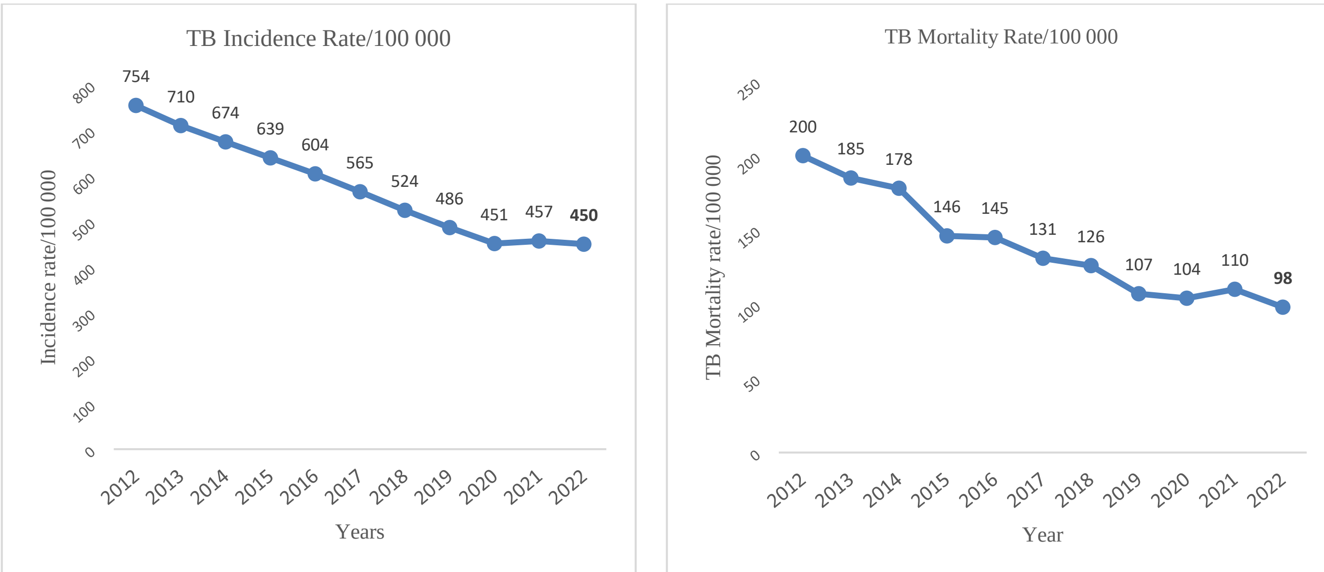


Figure 4: Trends of estimated TB incidence and TB mortality rate per 100, 000 populations

1.5 Programmatic Achievements, Challenges and Recommendations

1.5.1 Achievements

Legal Framework and M&E Surveillance:

- Established a comprehensive legal framework for TB reporting and vital statistics.
- Enhanced the M&E surveillance system with the implementation of DHIS2 Tracker.

Data Management:

- Implemented a robust data review mechanism involving health facilities.
- Achieved functional vital registration system with over 90% death registration.

HIV Testing and ART Coverage:

- Maintained consistently high HIV testing and ART coverage rates, reaching 99%.

Treatment Success Rates:

- Achieved commendable treatment success rates for DS-TB (87%) and DR-TB (67%) in 2022.

Programmatic Initiatives:

- Conducted thorough End Term Programme and Epidemiological reviews.
- Successfully implemented community mass screening programs, leading to the detection of previously undiagnosed TB cases.
- Engaged in the TB in Mines (TIMS) Phase-III Project.
- Launched a strategic plan for TB services specifically targeting nomadic populations.

1.5.2 Challenges

Despite these achievements, Namibia faces several challenges in its TB control efforts.

Mortality and High-Risk Groups:

- Continues to experience high mortality rates, particularly among PLHIV.
- Suboptimal case finding among high-risk groups such as miners, malnourished individuals, smokers, and alcoholics.

Data Quality and Resources:

- Struggles with data quality from screening initiatives in correctional facilities and mines.
- Limited availability of nutritional status data for TB patients.
- Faces challenges due to inadequate human resources and financial support.

Operational Issues:

- Diminishing funding affecting community-based TB care services.
- Issues with sustaining TB diagnostics due to interruptions in testing capabilities.

1.4.3 Recommendations

Enhanced Case Finding:

- Intensify active case finding efforts, particularly focusing on high-risk groups.
- Develop and implement a targeted recovery plan to address missing TB cases.

Community Engagement and Support:

- Strengthen the role of community health volunteers in TB control efforts.
- Enhance community-based DOTs and intensify case finding activities.

Socio-economic Support:

- Improve integration with socio-support programs to alleviate the financial burden on TB patients.
- Conduct regular socio-economic assessments to better support high-risk groups.

Laboratory Strengthening:

- Mobilize resources to improve access to TB laboratory services across the country.
- Optimize second-line Drug Susceptibility Testing (DST) coverage and enhance DR-TB surveillance.

Data Management and Integration:

- Complete the implementation of DHIS2 Tracker for comprehensive data integration and analysis.

- Establish a National Unique ID system to facilitate patient follow-up and improve data interoperability.

These recommendations aim to address existing challenges and capitalize on achievements to strengthen Namibia's TB control efforts, ensuring better outcomes for TB patients and communities.

2 TB DIAGNOSTIC SERVICES

The Namibia Institute of Pathology (NIP) has remained the primary provider of diagnostic services for patients accessing care through the public health system. The Ministry of Health and Social Services (MoHSS) upholds its obligation to provide these diagnostic tests at no cost to patients. This commitment ensures that all individuals, regardless of their financial status, have access to crucial diagnostic services, which is essential for effective disease management and control.

Since 2017, there has been a significant increase in Drug Susceptibility Testing (DST) coverage in Namibia. This improvement can be largely attributed to the introduction of advanced diagnostic tools such as GeneXpert and the Second Line Line Probe Assay (2nd Line LPA). GeneXpert serves as an initial diagnostic test that provides rapid results for the detection of Mycobacterium tuberculosis and its resistance to rifampicin, a critical first-line anti-TB drug. The 2nd Line LPA, on the other hand, is instrumental in detecting resistance to second-line anti-TB drugs, which is vital for managing cases of multi-drug resistant TB (MDR-TB). These technologies have greatly enhanced the efficiency and accuracy of TB diagnostics in the country.

However, the TB diagnostic program faced a significant setback in 2019 due to a stockout of GeneXpert cartridges. This shortage disrupted the continuity and effectiveness of TB diagnostics, highlighting the challenges in the supply chain that can hinder progress. As illustrated in Figure 4, this interruption had a noticeable impact on the program's performance.

Overall, while the implementation of GeneXpert and 2nd Line LPA has considerably strengthened TB diagnostic services in Namibia, the incident in 2019 underscores the importance of addressing logistical and supply chain issues. Ensuring a consistent and reliable supply of diagnostic materials is crucial for maintaining the advancements achieved and for continuing the fight against TB effectively.

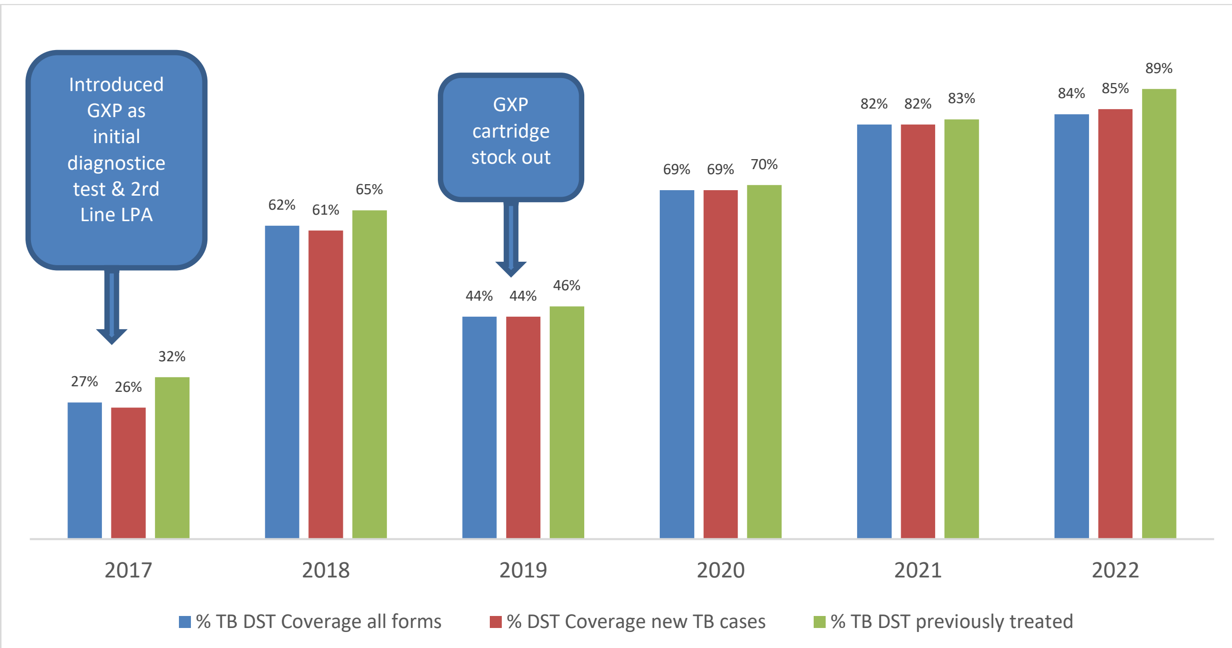


Figure 5: Trends of Drug Susceptibility Testing (DST) Coverage, 2017-2022

2.1 Provision of services by Namibia Institute of Pathology

The Namibia Institute of Pathology (NIP) is governed by a board of seven directors appointed by the Minister of Health and Social Services. This board has been in service since February 2020 and will continue to serve until 31 March 2023. NIP operates an extensive network of 39 laboratories spread across the 14 regions of Namibia, providing essential diagnostic services to the public.

The laboratories under NIP cover a wide range of diagnostic disciplines, including Haematology, Clinical Chemistry, Serology, Microbiology (including TB diagnostics), Histology, Cytology, and Molecular Diagnostics. This comprehensive scope ensures that the population has access to diverse and critical medical testing services.

To maintain high standards of quality and competence, all laboratories within the NIP network adhere to the ISO 15189 International Standard for Medical Laboratories. This adherence guarantees that the laboratories meet stringent international requirements, ensuring reliable and accurate diagnostic results.

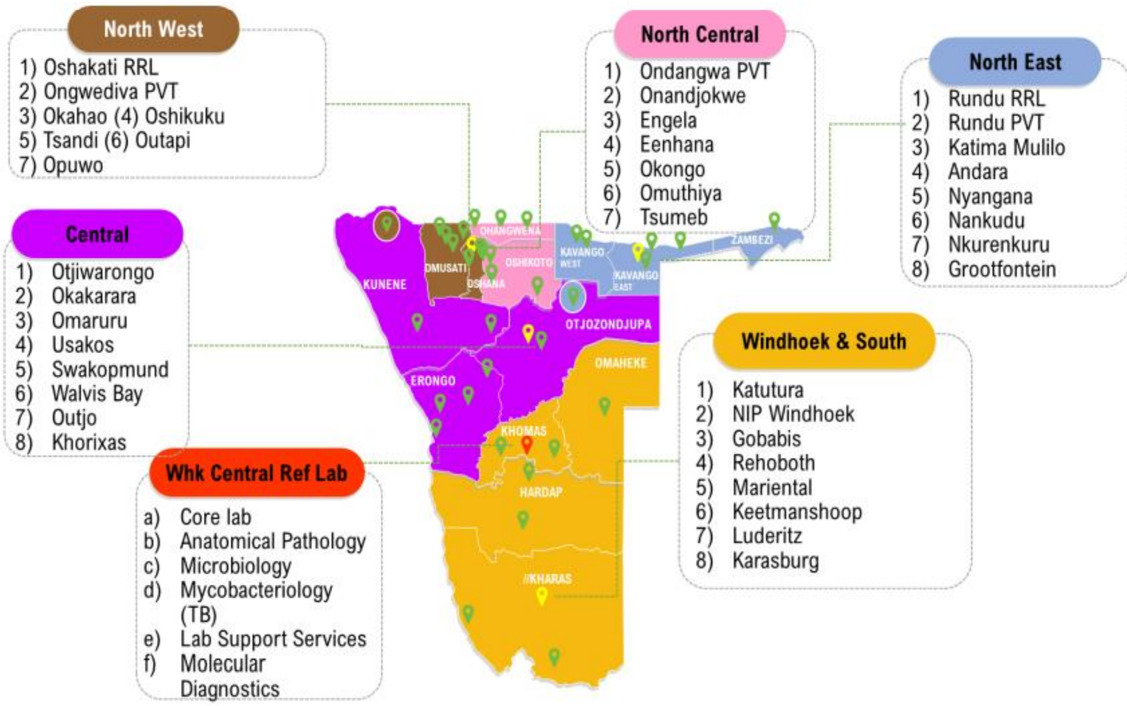


Figure 6: Namibia Institute of Pathology National Footprint

Through its network of 39 laboratories, 33 of which are equipped to perform TB tests, the Namibia Institute of Pathology (NIP) conducted approximately 76,468 TB tests in 2022. These tests included smear microscopy tests, Xpert MTB/RIF tests, mycobacterial cultures, and line probe assays (LPA). Notably, all mycobacterial cultures and LPAs are performed at the Windhoek Central Reference Laboratory, ensuring specialized and high-quality diagnostic services.

In terms of infrastructure, NIP maintained 47 GeneXpert instruments dedicated to TB diagnostics and five Bactec^{TM} MGIT 960 incubators, which are crucial for mycobacterial growth and detection. These instruments and incubators form the backbone of NIP's TB diagnostic capabilities, allowing for accurate and timely detection of TB and drug-resistant TB.

Despite these robust capabilities, there were notable gaps in the diagnostic process. From the laboratory registers, it was observed that 11,162 (21%) of the 53,497 documented Xpert MTB/RIF requests had no results. This significant proportion of undocumented results indicates potential challenges in the diagnostic workflow that need to be addressed to ensure all patients receive timely and accurate TB diagnosis.

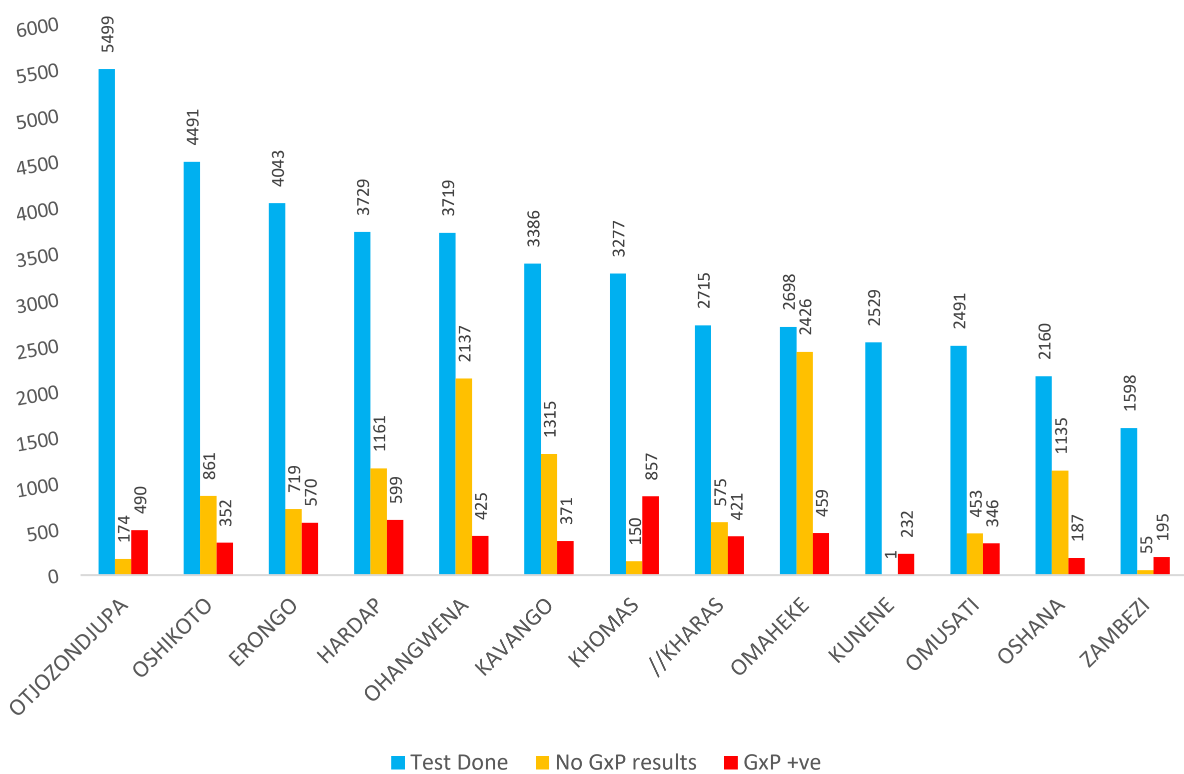


Figure 7: Number of Xpert MTB/RIF tests performed by Region, 2022

Despite the mandate that all TB patients undergo a rapid molecular test such as Xpert MTB/RIF, 24% of patients did not receive this test in 2022. Only 76% (6,551) of the 8,604 patients with susceptible TB had Xpert MTB/RIF results. This shortfall highlights significant challenges in the availability of laboratory commodities and the process of specimen link-up.

The challenges faced by the Namibia Institute of Pathology (NIP) include disruptions in the supply chain of essential laboratory commodities and inefficiencies in linking specimens to the appropriate diagnostic tests. These issues contribute to gaps in the diagnostic process, as evidenced by the 11,162 (21%) Xpert MTB/RIF requests that had no results.

The figures below illustrate the coverage of Xpert MTB/RIF testing among new, relapse, and all forms of TB patients. These figures underscore the need for improved logistics and resource management to ensure comprehensive and timely TB diagnostics for all patients. Addressing these challenges is crucial for enhancing the effectiveness of TB control efforts in Namibia. Ensuring that all patients receive the necessary rapid molecular tests is vital for accurate diagnosis and effective treatment, ultimately aiding in the country's fight against tuberculosis.

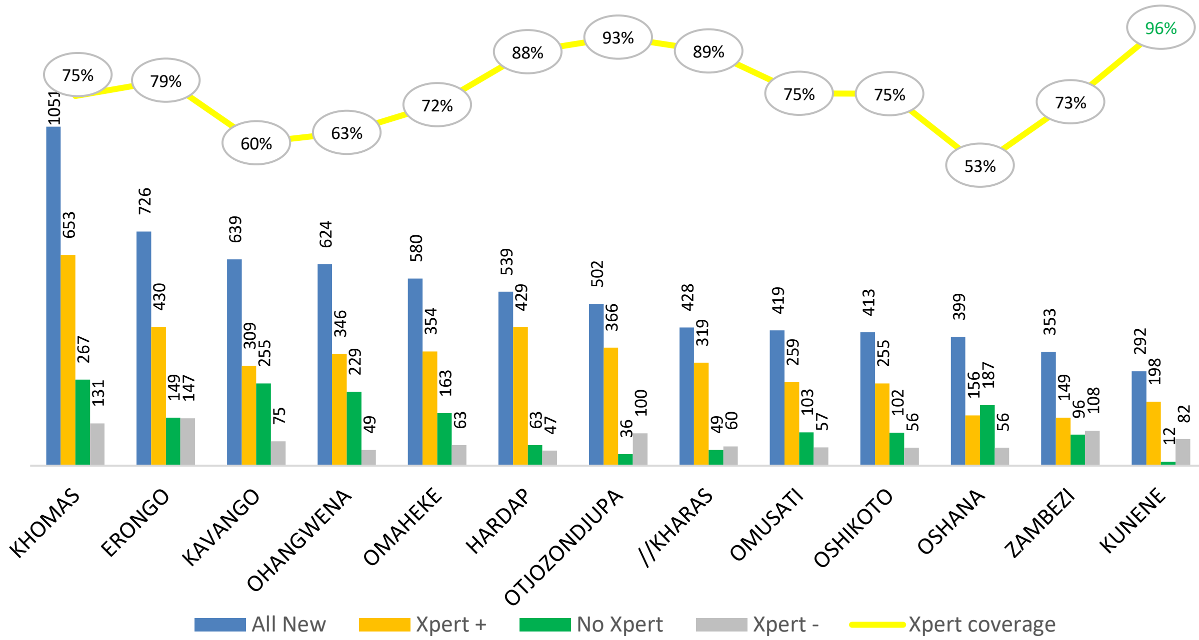


Figure 8: Xpert Coverage among new patients TB 2022

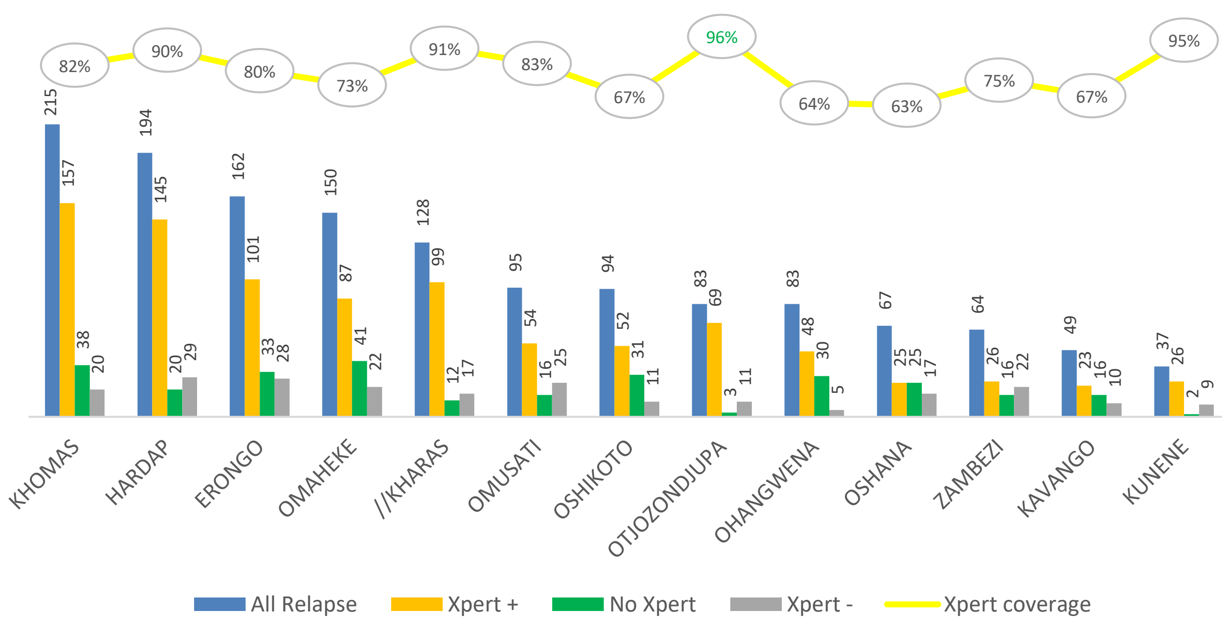


Figure 9: Xpert Coverage among Relapse TB patients, 2022

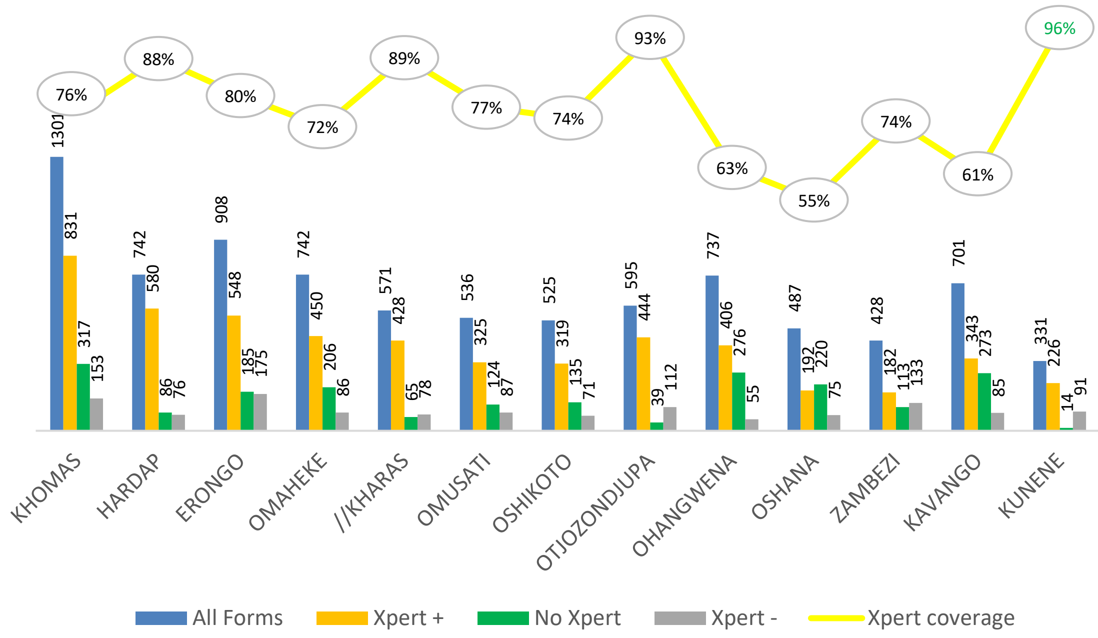


Figure 10: Xpert Coverage among all forms TB patients, 2022

3 BURDEN OF DRUG-SUSCEPTIBLE TB

3.1 TB Case notifications

The data on drug-susceptible TB case notifications presented in this report was obtained from the Electronic TB Register (ETR.Net). In 2022, there was a significant increase in the number of TB cases notified, increasing by 30.4% compared to 2021. This surge reflects a substantial improvement in the availability and accessibility of TB services, including diagnostic services, compared to the previous two years.

The total number of DS-TB cases notified in 2022 was 8,604, of which 8,386 were classified as new and relapse TB cases. This improvement is notable considering the huge drop in TB notifications observed from 2019 to 2020, which saw a 15% decline due to the COVID-19 pandemic. The pandemic disrupted health services globally, and Namibia was no exception. However, TB case notifications showed a positive trend, improving in both 2021 and 2022.

These improvements highlight the country's efforts to enhance TB diagnostic and treatment services, ensuring better management and control of tuberculosis. The increased availability of TB diagnostic services, including advanced tools like the Xpert MTB/RIF test, has played a crucial role in this positive trend. Continued focus on improving logistics, resource management, and the overall health infrastructure will be essential to sustain and further this progress in the fight against TB.

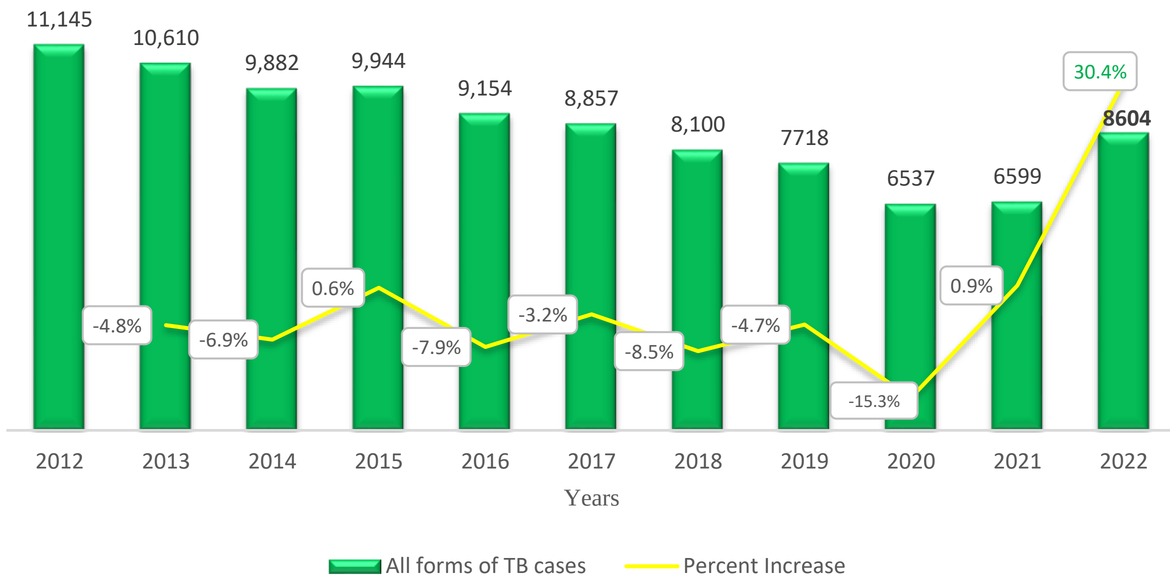


Figure 11: Trends of number of all forms of TB cases, 2012 - 2022

According to the WHO report (2023), TB treatment coverage is a crucial indicator for monitoring the progress of the End TB Strategy, with a recommended target of at least 90% by 2027. It is also one of the 16 indicators used to assess progress towards the Universal Health Coverage (UHC) target, part of the United Nations (UN) Sustainable Development Goals (SDGs).

TB treatment coverage is estimated by dividing the number of new and relapse cases detected and treated in a given year by the estimated number of incident TB cases in the same year, expressed as a percentage. This is approximated as the reported number of people newly diagnosed with TB divided by incidence. Currently, the number of notified new and relapse cases reported in 2022 is used as the numerator for this indicator, although there are limitations, such as people with TB who are treated but not notified to National TB programs (NTPs) and people who are notified but may not be started on treatment.

Globally, TB treatment coverage in 2022 was 70% (95% UI: 66 - 75%), an increase from 62% (95% UI: 58 - 67%) in 2021 and 58% (95% UI: 55 - 62%) in 2020. In Africa, the treatment coverage was also 70%, indicating that 30% of the TB cases may be still missing.

Looking at Namibia's six-year trend, treatment coverage was highest in 2022 at 75% and lowest in 2020 at 56%. The figure below illustrates the TB treatment coverage, calculated as the ratio of notified cases to estimated incidence. The fluctuation in treatment coverage rates over the years reflects various factors, including the impact of the COVID-19 pandemic, which led to an 8% decrease in coverage between 2019 and 2020. However, there was a 2% increase in coverage between 2020 and 2021, indicating recovery from pandemic-related disruptions.

In 2022, treatment coverage further improved to 75%, meaning that 25% of TB cases may have been missed. This improvement underscores the ongoing efforts to enhance TB treatment access and effectiveness in Namibia. Continued focus on strengthening health systems, increasing diagnostic capabilities, implementing mass screening programs, and ensuring timely treatment will be crucial in closing the gap and achieving higher TB treatment coverage rates in the future. These efforts will be essential to effectively identify and treat TB cases promptly, reducing transmission and improving outcomes for individuals affected by TB.

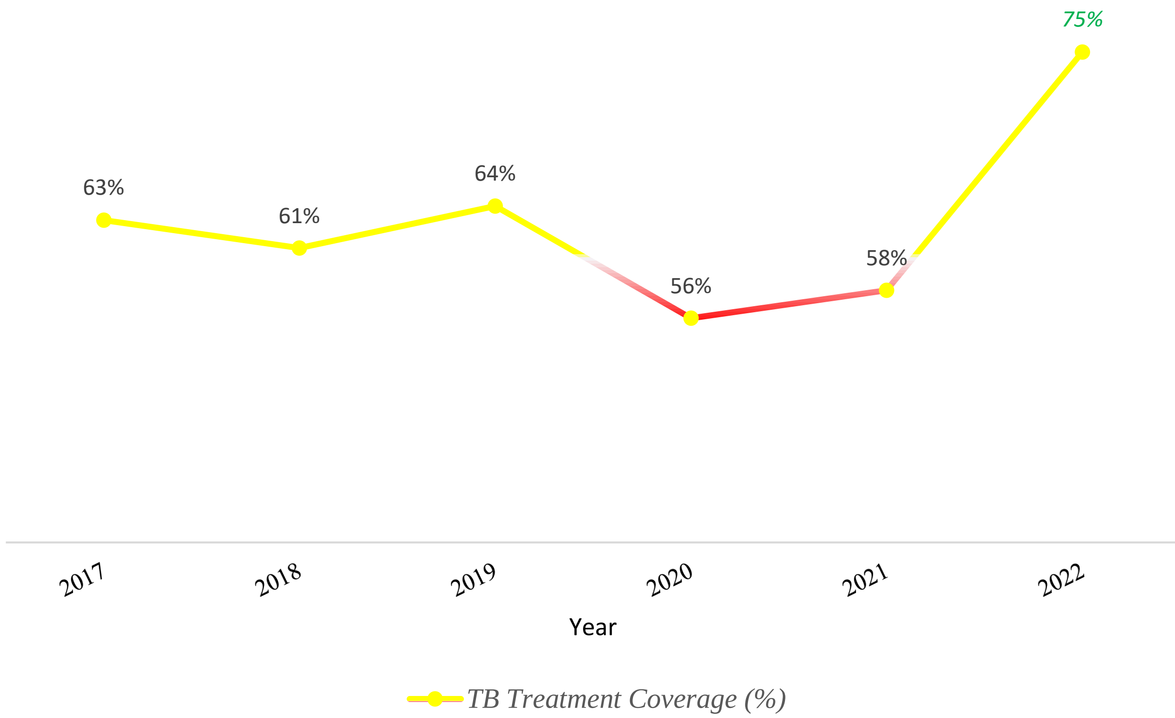


Figure 12: Trend in TB treatment coverage; 2017-2022

Namibia's TB case notification rate increased to 335 per 100,000 population from 260 per 100,000 in 2022. This increase indicates improved detection and reporting of TB cases, highlighting improved diagnostic capabilities and surveillance efforts. Monitoring these rates is crucial for national TB and Leprosy programme interventions to control TB transmission effectively.

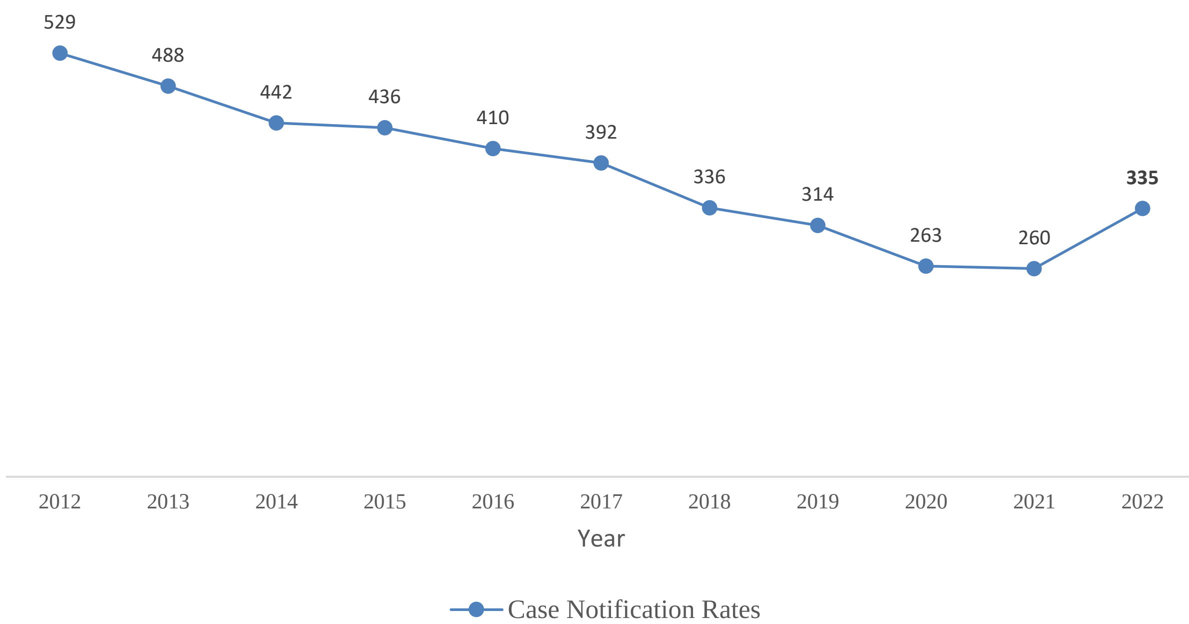


Figure 13: Trend in Case Notification Rate; 2012-2022

The table below presents the trends in TB notifications from 2012 to 2022 across all forms of DS-TB notifications by category. A noticeable increase was observed in the category of New Pulmonary TB Bacteriologically Positive (PTB B+). Additionally, there was a slight increase in the other categories, including new Pulmonary TB cases where sputum was not tested in children. This increase is concerning as it indicates a rise in the number of children who were not tested for TB compared to the previous year. This data underscores the need for enhanced focus on pediatric TB testing and comprehensive diagnostic measures to ensure early detection and treatment for all age groups.

Table 2: Trends in Number of TB Cases Notified, 2011 to 2022 by category

	2012	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*	*2020*	*2021*	*2022*
NEW PTB B+	4333	4331	4335	4854	4539	3951	4324	3821	3696	3891	4624
NEW PTB B-	1421	1345	1455	1094	964	1019	456	612	411	433	848
NEW EPTB	2063	1846	1469	1468	253	232	275	1373	965	799	1082
RELAPSE	1410	1431	1361	2045	1546	1160	1122	1165	990	1079	1416
OTHER	866	761	682	65	12	238	257	215	225	135	218
NEW PTB SPUTUM NOT TESTED ADULTS	505	476	276	253	1403	1812	1306	438	169	200	320
NEW PTB SPUTUM NOT TESTED CHILDREN	547	420	304	165	437	442	360	94	79	62	96
ALL FORMS	**11145**	**10610**	**9882**	**9944**	**9154**	**8854**	**8100**	**7718**	**6535**	**6599**	**8604**

3.2 Regional distribution of TB cases

In 2022, the regional distribution of TB cases showed that Khomas and Erongo regions notified the highest number of TB cases, as in previous years. The Khomas region contributed 15% and Erongo region 11% to the total 8,604 DS-TB cases notified countrywide. On the other hand, Kavango West, Kunene and Zambezi regions reported the least number of DS-TB cases.

These regional disparities highlight the need for targeted interventions and resource allocation to regions with higher TB burdens while ensuring adequate support to regions with lower case numbers to prevent potential outbreaks and improve overall TB control efforts.

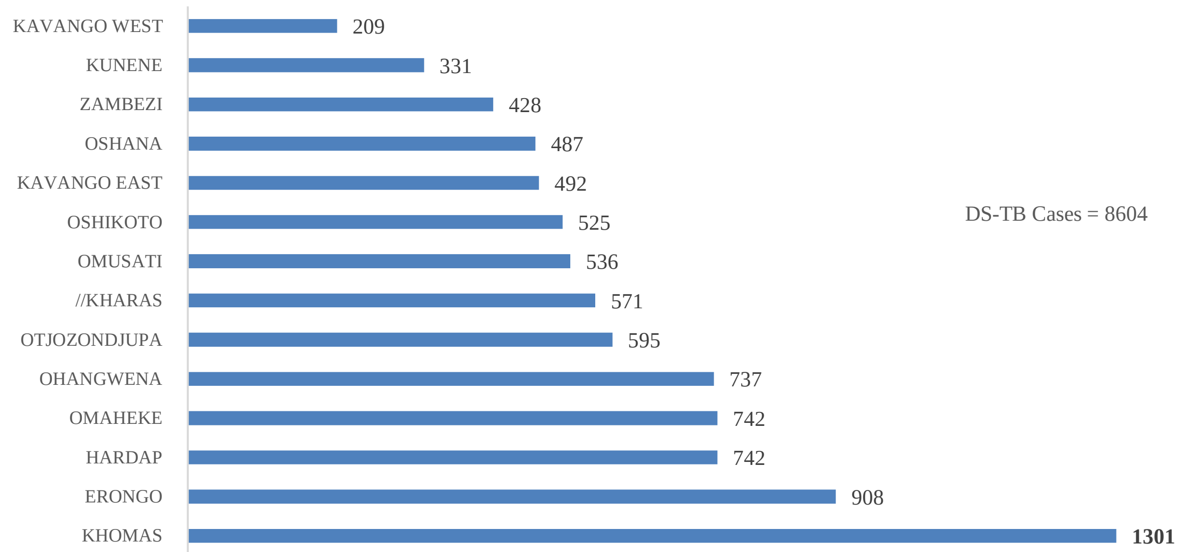


Figure 14: Number of TB cases (all forms) by region, 2022

Expectedly, the trend was comparable when considering the distribution of new and relapse TB cases, as shown in Figure 15 below. Khomas and Erongo regions remain with the highest number of cases, reflecting their overall higher DS-TB case burden. On the other hand, Kavango west, Kunene and Zambezi regions remain among the areas with the least notifications for both new and relapse TB cases.

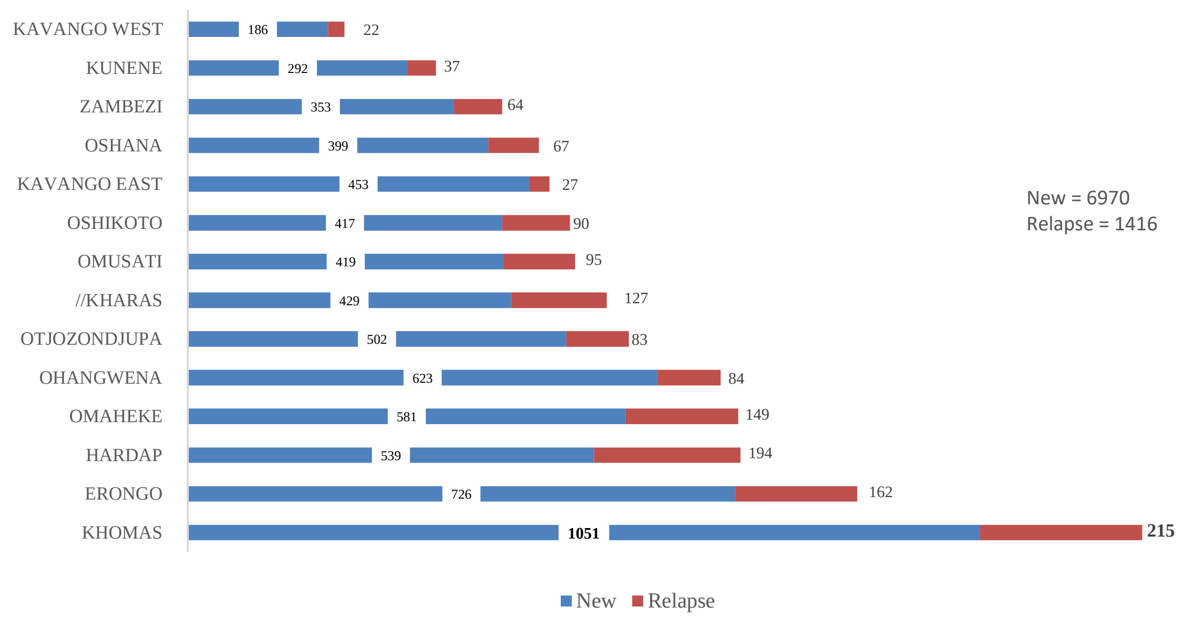


Figure 15: Number of New and Relapse TB cases by region, 2022

3.3 Districts with the highest burden

The distribution of TB cases across districts varied significantly. Seven districts contributed 51% of the country's TB burden, consistent with the previous year. These high-burden districts are Windhoek, Gobabis, Engela, Walvis Bay, Katima Mulilo, Rundu, and Oshakati.

This concentration of TB cases in specific districts highlights the need for targeted interventions and resource allocation to these areas to effectively manage and reduce TB incidence. Ensuring robust TB control measures in these districts will be essential for overall national TB control efforts.

Table 3: Districts with the highest TB burden

DISTRICT	NUMBER OF TB CASES, ALL FORMS	PERCENTAGE CONTRIBUTION
WINDHOEK DISTRICT	1301	15.1%
GOBABIS DISTRICT	742	8.6%
ENGELA DISTRICT	488	5.7%
OSHAKATI DISTRICT	487	5.7%
WALVIS BAY DISTRICT	484	5.6%
KATIMA MULILO DISTRICT	428	5.0%
RUNDU DISTRICT	337	3.9%
KEETMANSHOOP DISTRICT	320	3.7%
MARIENTAL DISTRICT	308	3.6%
REHOBOTH DISTRICT	297	3.5%
SWAKOPMUND DISTRICT	293	3.4%
GROOTFONTEIN DISTRICT	285	3.3%
ONANDJOKWE DISTRICT	261	3.0%
OUTAPI DISTRICT	239	2.8%
EENHANA DISTRICT	185	2.2%
TSUMEB DISTRICT	182	2.1%

3.4 Age and sex distribution of TB cases (all forms) notified

As in the previous reporting periods, the majority of DS-TB cases notified were male, accounting for 61% of the total cases (Figure 16). This trend was prevalent across all 14 regions. Additionally, a significant proportion of TB cases were in the age group of 25 to 44 years, consistent with data from previous years.

These patterns highlight the need for tailored TB prevention and treatment programs that address the specific needs of these demographic groups. By focusing on the high-risk male population and the 25-44 age group, NTLP efforts can be more effectively directed to reduce TB incidence and improve health outcomes.

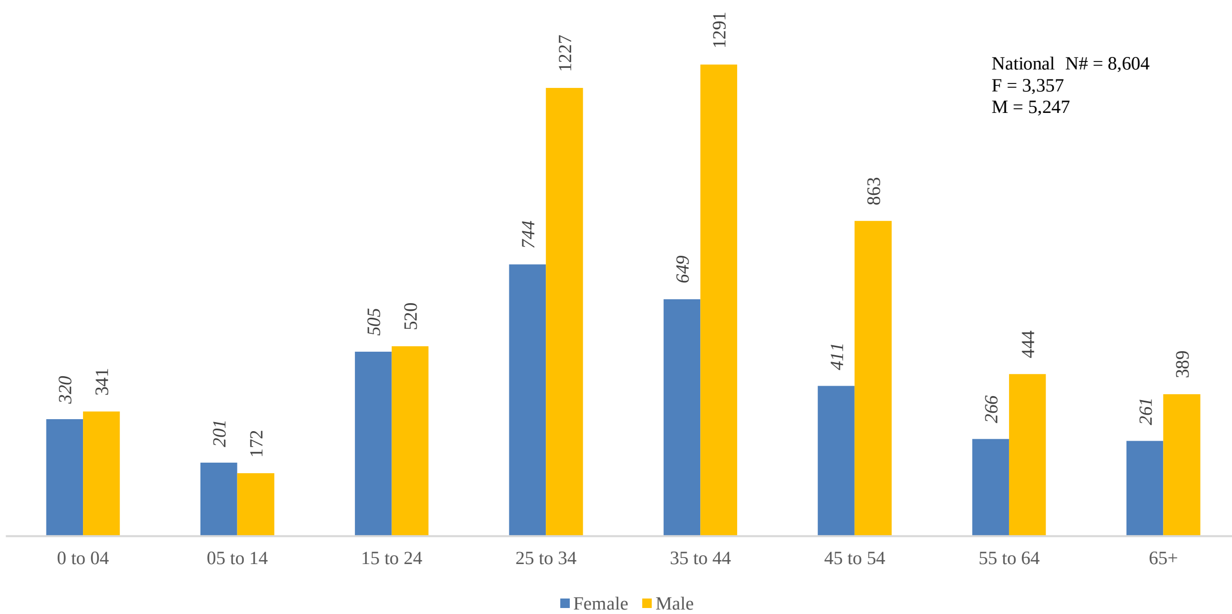


Figure 16: TB cases (all forms) by Age Group and Sex, 2022

3.5 Childhood TB

In 2022, a total of 1,034 (12%) of the 8,604 notified TB cases were children under the age of 15. The sex distribution among these cases was relatively balanced, with 521 girls and 513 boys. The graph below (figure 17) illustrates the regional contribution of TB cases in children. The denominator in this calculation is the total number of national TB cases under 15 years (children) reported in 2022, while the numerator is the total number of children with TB reported in each region.

Since 2019, there has been a steady trend in the notification of TB cases among children, consistently accounting for less than 12% of total cases. This proportion falls within the WHO recommended range of 5-15%, indicating a relatively stable trend in childhood TB notifications.

Khomas and Omaheke regions reported the highest number of TB cases in children under 15 years, highlighting the need for focused pediatric TB control measures in these areas. To ensure early detection and appropriate treatment for childhood TB in high-burden regions.

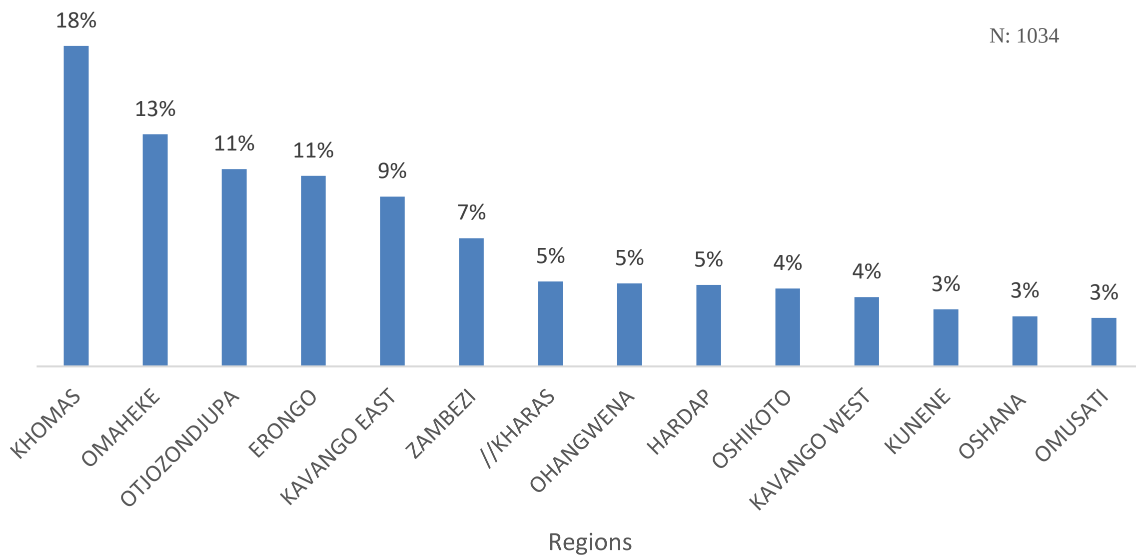


Figure 17: Proportion (%) of national TB burden in children, 2022 by region

The graph below (figure 18) shows the percentage of children under 15 years old reported with TB across the regions. The denominator in this calculation is the total number of TB cases reported in each region, while the numerator is the total number of children with TB reported in that region. According to the data, the regions with the highest percentages of TB cases in children are Kavango East, Otjozondjupa, and Kavango West regions, with 20%, 19%, and 19%, respectively. In contrast, Omusati region has the lowest percentage, with only 5% of its TB cases occurring in children under 15 years old. This indicates that Kavango East, Otjozondjupa, and Kavango West face significant challenges in managing pediatric TB. Meanwhile, the lower percentage in Omusati might reflect more effective TB control measures for children.

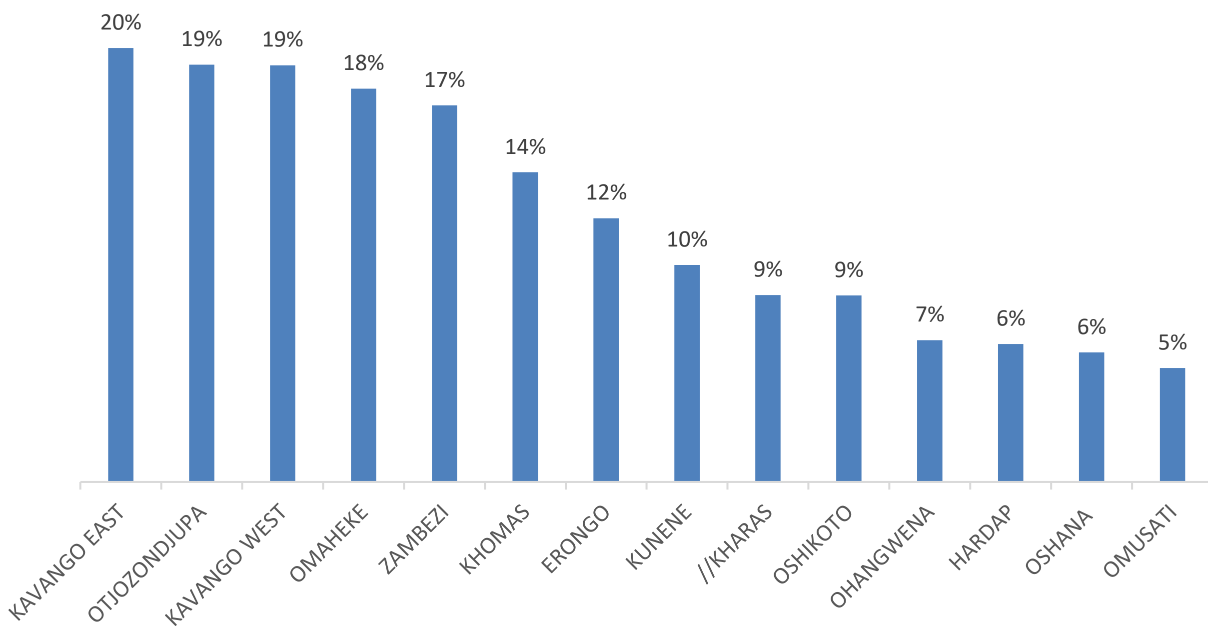


Figure 18: Regional proportion of TB cases in children (< 15 years), 2022 by region

3.6 Treatment outcomes for drug susceptible TB

This report analyses treatment outcomes for TB patients notified in the preceding year, focusing on the results of the 2021 cohort. The potential treatment outcomes for patients who commenced TB treatment include: *cured, treatment completed, died, treatment failed, lost to follow-up, and transferred.*

The preferred treatment outcomes that reflect an effective TB control program are "cured" and "treatment completed." These outcomes indicate successful completion of treatment therapy and recovery from TB. The analysis of the 2021 cohort's treatment outcomes provides insights into the effectiveness of the TB treatment program and highlights areas for improvement to enhance patient care and program performance.

Table 4 below summarizes the treatment outcomes for the 2021 cohort. A total of 6,580 (99.9%) of the patients reported in 2021 were evaluated in 2022. There was a slight decrease in TB treatment outcomes compared to the previous year. The treatment success rate (TSR) for all forms of TB was 87%, which is below the 90% target and marginally lower than the 88% TSR of the 2020 cohort. High death rates among all types of TB contributed to low treatment success rates.

The highest TSR (90%) was recorded among new bacteriologically positive TB patients. Whereas, the treatment success rate for new smear not tested TB patients was relatively low at 76%. For new and relapse TB cases, the TSR was 87%, with a loss to follow-up (LTFU) rate of 4%. Notably, the LTFU rate among foreign nationals was the highest at 15%, highlighting the critical need for strengthened cross-border referrals system.

These findings highlight the importance of targeted efforts to improve treatment adherence and success rates, particularly among vulnerable populations and those with higher LTFU rates.

Table 4: Treatment Outcomes for All Forms of Drug Susceptible TB cases Notified in 2021

	Cured		Treatment completed		Successfully treated		Died		Failed		LTFU		Total evaluated		Not evaluated (incl. transfer out)		Total notified (2021 cohort)
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n
All forms	3298	50%	2403	37%	5701	87%	510	8%	104	2%	258	4%	6573	99.89%	7	0.11%	6580
New & Relapse	3249	50%	2362	37%	5611	87%	498	8%	94	1%	237	4%	6440	99.91%	6	0.09%	6446
New B+ PTB	2708	69%	795	20%	3503	90%	190	5%	68	2%	137	4%	3898	99.95%	2	0.05%	3900
New B- PTB	3	1%	387	88%	390	89%	38	9%	1	0%	10	2%	439	99.77%	1	0.23%	440
New Smear not done PTB	7	3%	164	73%	171	76%	42	19%	2	1%	10	4%	225	99.56%	1	0.44%	226
Relapse TB	531	49%	374	35%	905	84%	114	11%	22	2%	37	3%	1078	99.91%	1	0.09%	1079
Foreign national	216	51%	129	30%	345	81%	13	3%	5	1%	63	15%	426	100.00%	0	0.00%	426
EPTB	0	0%	738	79%	738	79%	143	15%	1	0%	47	5%	929	99.79%	2	0.21%	931
HIV +ve	828	42%	768	39%	1596	81%	245	12%	37	2%	85	4%	1963	99.85%	3	0.15%	1966

The line graph below (figure 19) illustrates the trends in death rate and Lost to Follow-Up (LTFU) among TB patients from 2016 to the 2021 cohort.

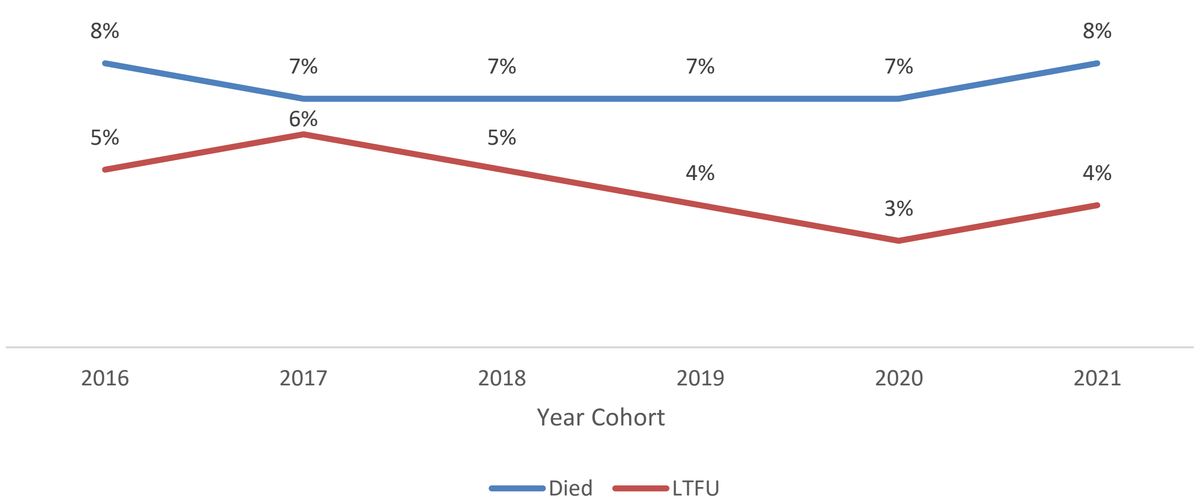


Figure 19: Trends for death rate and Lost to Follow-Up (LTFU)

The death rate started at 8% in 2016 and remained largely consistent at 7% from 2017 to 2020, before returning to 8% in 2021 treatment cohort. This trend highlights persistent challenges in managing mortality among TB patients over the years. Similarly, LTFU rates fluctuated over the period, underscoring the need for improved patient tracking and retention strategies.

3.6.1 Treatment outcomes by region

The graph below (Figure 20) shows the treatment outcomes for all forms of TB across different regions, showing significant regional variations in the treatment success rates (TSRs). The Khomas, Omusati, and //Kharas regions recorded the lowest TSRs at 81%. In contrast, the Erongo, Omaheke, Otjozondjupa, and Zambezi regions achieved the highest TSRs, meeting the 90% treatment success rate target with an impressive 93% each.

In terms of loss to follow-up (LTFU), the current reporting period identified the Omusati region with the highest LTFU rate at 9%. This increase is attributed to the same issue previously experienced in the Ohangwena region, where cross-border patients from Angola significantly impacted the follow-up rates. In the previous period, Ohangwena recorded an 8% LTFU rate, highlighting the ongoing challenge of managing cross-border patient care.

The death rates also varied significantly across regions. The Oshikoto and //Kharas regions reported the highest death rates, each at 12%. They were followed by the Kunene and Khomas regions, with death rates of 10% and 9%, respectively. These statistics indicate areas where targeted interventions are needed to reduce mortality rates and improve the overall effectiveness of TB treatment programs. The disparities in treatment outcomes highlight the importance of addressing region-specific challenges to improve TB control efforts and patient outcomes across all regions.

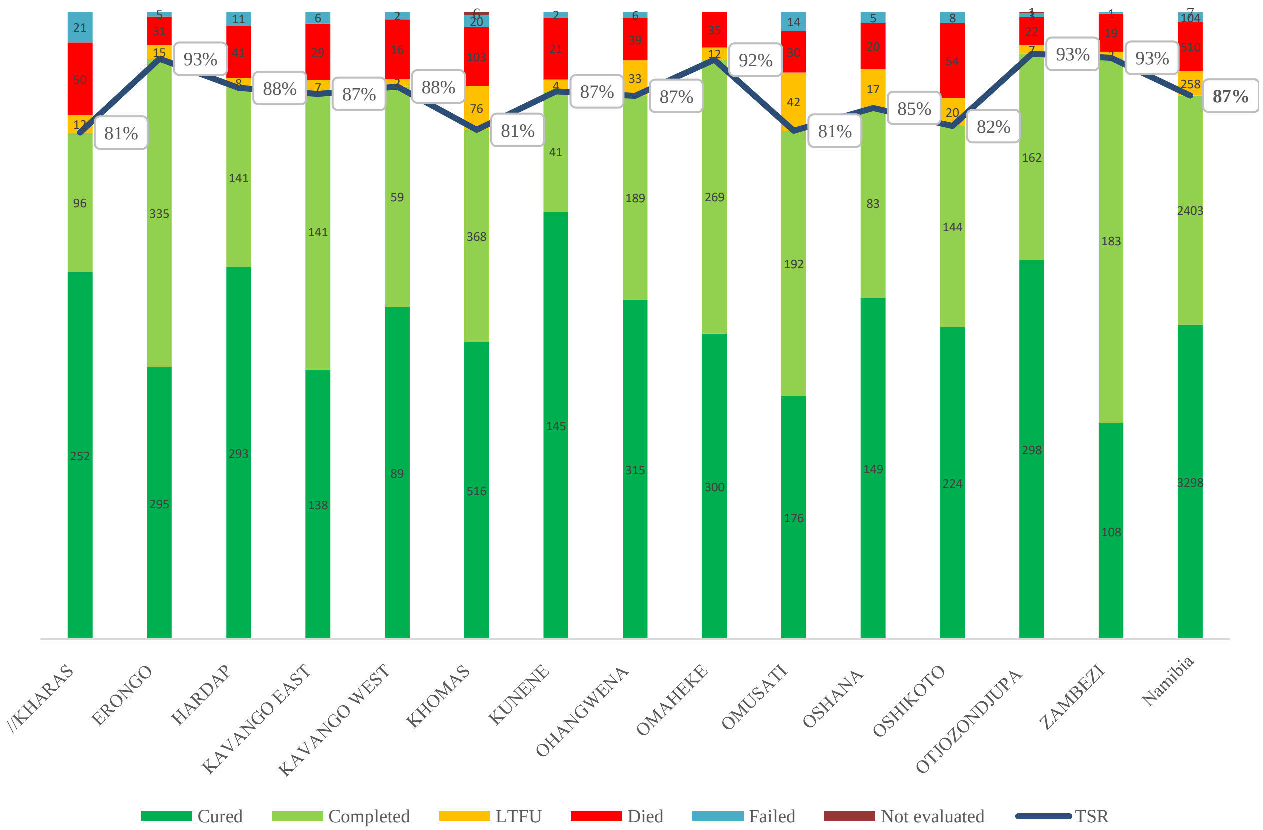


Figure 20: Treatment Outcomes for All Forms of TB, 2021 cohort by Region

3.6.2 Treatment Outcomes for New Bacteriologically positive PTB cases

Table 5 below summarises the treatment outcomes for patients categorized as New B+ PTB who commenced treatment in 2021 by region. Of the 3,900 patients with New B+ PTB evaluated in

2022, 69% were cured, while 20% were classified as having completed treatment, resulting in a treatment success rate (TSR) of 90%.

This TSR indicates a slight decrease from the 91% achieved by the 2020 cohort. The reduction in TSR may be partly attributable to the inconsistency of contract renewals for the Community-Based Tuberculosis Care (CBTBC) providers. This highlights the need for improved stability in staffing to maintain and enhance TB treatment outcomes.

Table 5: Treatment Outcomes for New PTB B+ Patients by Region, 2021 cohort

Region	Cured		Treatment completed		Successfully treated		Died		Failed		LTFU		evaluated	Not evaluated	Total notified (2021)
//KHARAS	188	68%	42	15%	230	83%	23	8%	16	6%	8	3%	277		277
ERONGO	254	61%	142	34%	396	95%	12	3%	3	1%	7	2%	418		418
HARDAP	214	71%	56	19%	270	90%	22	7%	5	2%	3	1%	300		300
KAVANGO EAST	131	69%	39	21%	170	90%	8	4%	5	3%	6	3%	189		189
KAVANGO WEST	82	75%	19	17%	101	92%	7	6%	1	1%	1	1%	110		110
KHOMAS	407	72%	87	15%	494	87%	31	5%	12	2%	29	5%	566	2	568
KUNENE	130	89%	1	1%	131	90%	11	8%	1	1%	3	2%	146		146
OHANGWENA	271	70%	76	20%	347	89%	15	4%	5	1%	22	6%	389		389
OMAHEKE	238	63%	111	30%	349	93%	17	5%	0	0%	9	2%	375		375
OMUSATI	147	56%	74	28%	221	84%	6	2%	12	5%	25	9%	264		264
OSHANA	125	80%	17	11%	142	91%	6	4%	2	1%	6	4%	156		156
OSHIKOTO	182	82%	14	6%	196	88%	15	7%	3	1%	9	4%	223		223
OTJOZONDJUPA	249	70%	84	24%	333	94%	13	4%	2	1%	7	2%	355		355
ZAMBEZI	90	69%	33	25%	123	95%	4	3%	1	1%	2	2%	130		130
NAMIBIA	2708	69%	795	20%	3503	90%	190	5%	68	2%	137	4%	3898	2	3900

3.6.3 Trends in Treatment Outcomes for New Bacteriologically Positive PTB cases

Table 6 below summarises the trends in treatment outcomes for new smear-positive TB cases between the 2011 and 2021 treatment cohorts. There has been a notable consistency in patients not being evaluated, maintained at 0% since the 2018 cohort. However, patients lost to follow-up remained an issue across all cohorts.

Additionally, 20% of patients were classified as having completed treatment. Despite this relatively high treatment success rate for new smear-positive cases, this indicates that patients were not effectively followed up with sputum smear examinations after completing the full course of treatment.

Lastly, the death rate has remained consistently high at 5% since the 2018 treatment cohort. To address these challenges, the country is focused on strengthening TB mortality audits and implementing digital adherence technologies. These measures might improve patient monitoring, enhance medication adherence, and potentially reduce loss to follow-up and mortality rates.

Table 6: Trends in Treatment Outcomes for new PTB_B+ cases, 2011 – 2021[3] cohorts

Tx Outcome	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Not Evaluated	5%	1%	0%	0%	1%	0%	1%	0%	0%	0%	0%
Failed	5%	5%	4%	4%	5%	2%	3%	2%	3%	2%	2%
Died	5%	5%	4%	4%	3%	5%	4%	5%	5%	5%	5%
LTFU	5%	5%	5%	4%	6%	5%	6%	5%	4%	3%	4%
Completed	10%	9%	9%	10%	11%	10%	12%	10%	12%	13%	20%
Cured	73%	76%	78%	78%	76%	78%	74%	77%	77%	78%	69%

[3] PTB B+ cases included from 2011 – 2021 is only for New smear positive patients

3.6.4 Treatment Outcomes for New and Relapse TB cases

Fig. 21, Shows the treatment outcomes for new and relapse tuberculosis (TB) cases reported for 2021 treatment cohort. The graph displays the proportion of cases successfully treated across 14 regions. The overall treatment success rate for this cohort was 87%, based on 6,446 new and relapse TB cases. This rate represents a slight decrease from the 88% success rate observed in the 2020 treatment cohort. The data also indicates that the treatment success rates vary by region. Erongo, Omaheke, Otjozondjupa, and Zambezi regions achieved the highest success rates of 93%, while the //Kharas and Omusati regions had the lowest success rates, with an 81% treatment success rate. These regional differences highlight areas where additional support and targeted interventions may be needed.

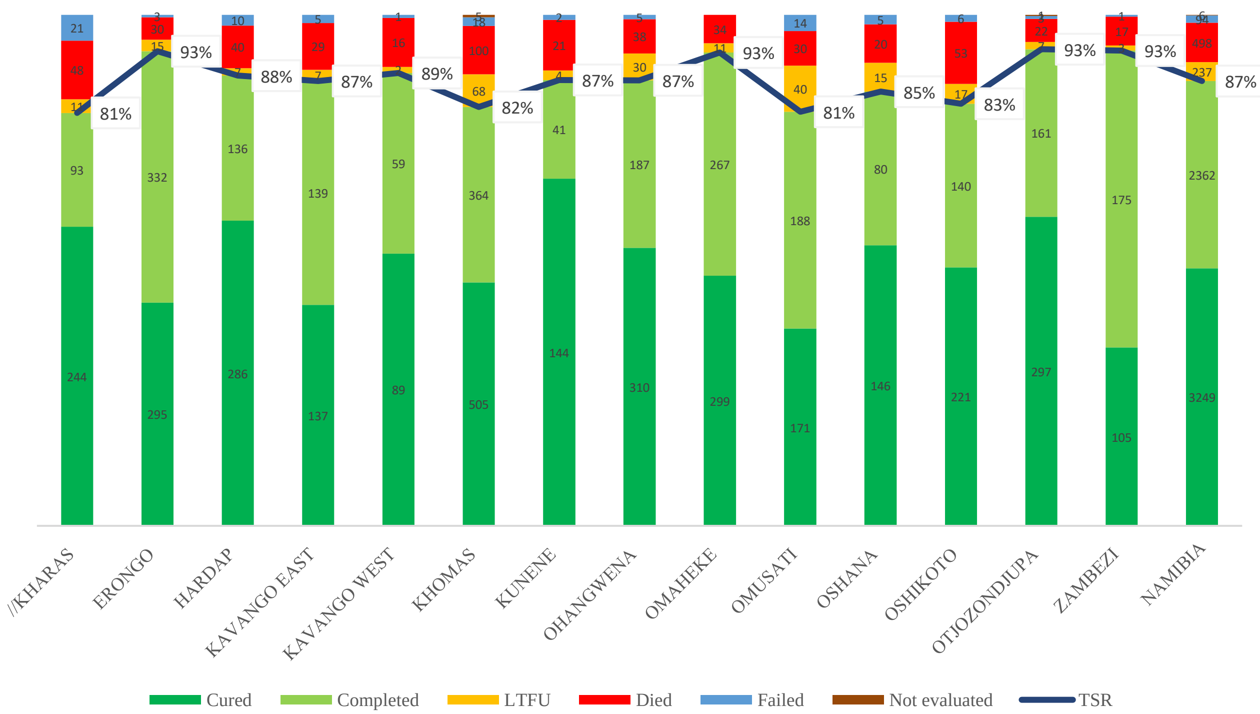


Figure 21: Treatment Outcomes for New and Relapse TB cases by Region, 2021 cohort

3.6.5 Treatment Outcomes for EPTB cases

Fig. 22 shows the treatment outcomes for 931 Extra-Pulmonary TB (EPTB) cases in the 2021 cohort, with a notable treatment success rate of 79%. This figure is below the 84% success rate achieved in the previous cohort, reflecting a 5% decrease in treatment completion. The decrease success rate suggests possible challenges in patient retention and adherence to treatment protocols.

A significant issue identified was the high percentage of patients lost to follow-up, particularly in the Oshana and Omusati regions, which reported 13% and 11%, respectively. Lost to follow-up rates in these regions could point to general issues such as difficulties in accessing healthcare services, patient migration, and lack of effective follow-up mechanisms, especially in rural and cross-border areas where these regions are located.

In addition to lost to follow-up cases, mortality rates were a concern in specific regions. //Kharas registered the highest death rate at 32%, followed by Kunene and Oshikoto, each with 22%. The high mortality rates in these regions could be attributed to several factors, including delays in diagnosing EPTB. Further investigation into the healthcare infrastructure, availability of diagnostic tools, and the quality of care provided in these regions could shed light on the root causes of these high death rates.

Overall, the treatment success rate and the associated challenges of high lost to follow-up and death rates highlight the need for targeted interventions. Strengthening patient follow-up systems, improving diagnostic capabilities, and addressing healthcare access issues, particularly in regions with high lost to follow-up and death rates, to improve treatment outcomes.

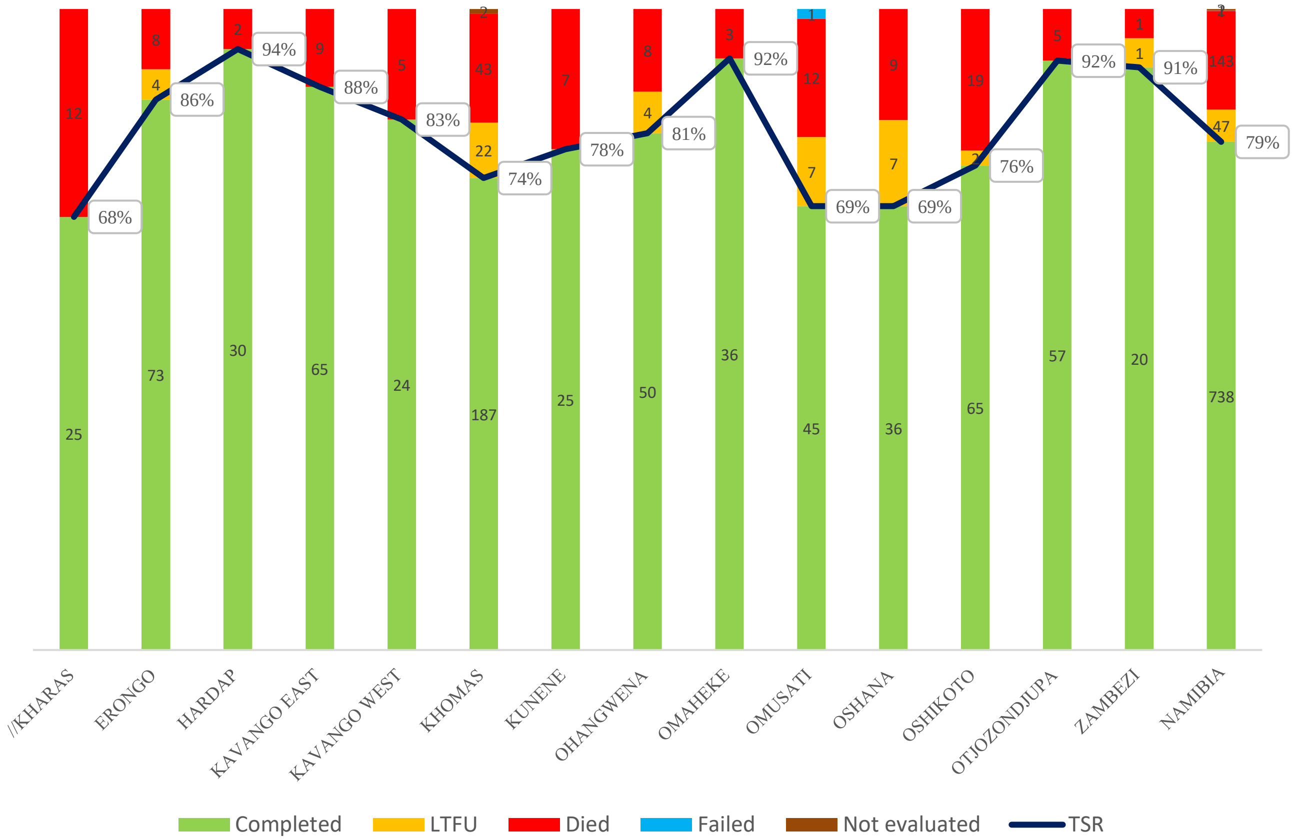
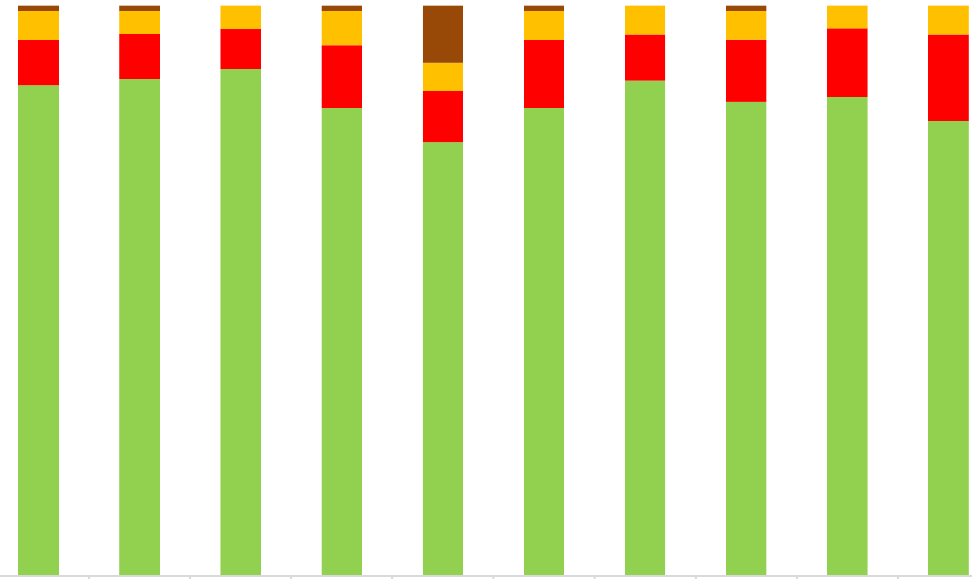


Figure 22: Treatment Outcomes for EPTB cases by Region, 2021 cohort

Fig. 23 shows the trends in outcomes among EPTB cases. Treatment completion reduced to 79% in the 2021 cohort, down from 84% the previous year. The death rate increased to 15% in 2021, compared to 12% in 2020 treatment cohort. The percentage of patients lost to follow-up (LTFU) was consistent at 5% from 2016 to 2019, decreased to 4% in 2020, and returned to 5% in 2021 treatment cohort. Patients not evaluated remained at 0%. These trends highlight a decline in treatment success and a rise in death rates, while LTFU rates remained relatively stable.



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Not evaluated	1%	1%	0%	1%	10%	1%	0%	1%	0%	0%
LTFU	5%	4%	4%	6%	5%	5%	5%	5%	4%	5%
Died	8%	8%	7%	11%	9%	12%	8%	11%	12%	15%
Completed	86%	88%	88%	82%	76%	82%	86%	84%	84%	79%

Figure 23: Trends in Treatment Outcomes for EPTB cases; 2012-2021 cohorts

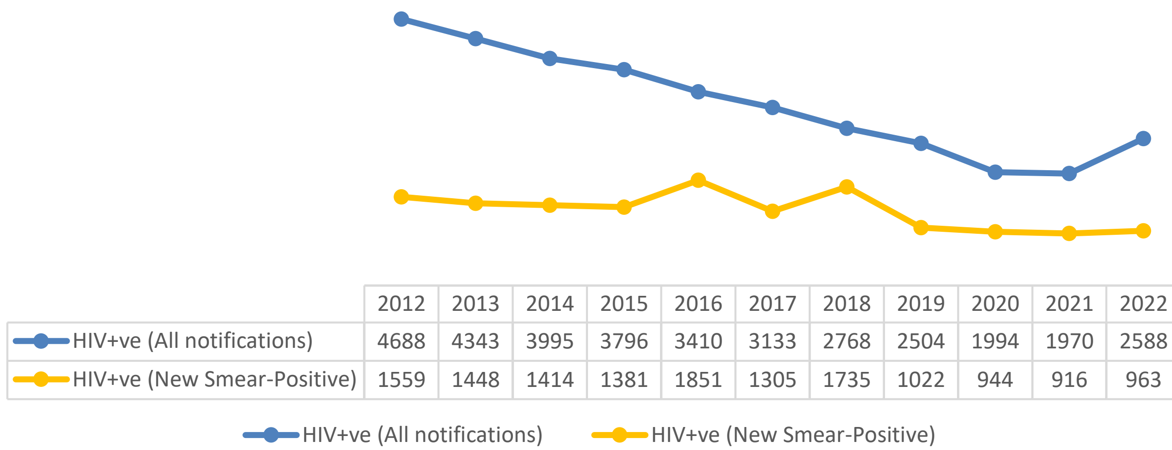
4 TB/HIV AND OTHER CO-MORBIDITIES

The country has demonstrated significant progress in maintaining high TB/HIV service coverage, particularly in achieving the national target for HIV testing among TB patients. The target of testing over 95% of TB patients for HIV was obtained, with 8,535 (99%) out of 8,604 All Forms of TB patients in 2022 having a known HIV status.

This achievement highlights the effectiveness of integrated TB and HIV services, ensuring all TB patients are tested for HIV. The high testing rates reflect strong coordination between healthcare workers, adequate resource allocation, and continued prioritization of TB/HIV collaboration.

4.1 The burden of TB/HIV co-infection

The graph below shows the trend of TB-HIV co-infected patients. The proportion of TB-HIV co-infected patients has been declining over the years. In 2022, the proportion was 30% (2,588 out of 8,535), the same as in 2021. This stability reflects progress in managing TB among patients with HIV, due to ongoing improvements in screening, treatment, and prevention efforts for both diseases. The consistent decline over time highlights the effectiveness of integrated TB and HIV programs in reducing co-infection rates.



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
HIV+ve (All notifications)	4688	4343	3995	3796	3410	3133	2768	2504	1994	1970	2588
HIV+ve (New Smear-Positive)	1559	1448	1414	1381	1851	1305	1735	1022	944	916	963

Figure 24: Trends in TB/HIV notifications 2012-2022

The graph below shows that since 2019, both the proportion of TB patients with a documented HIV status and the proportion of HIV-positive TB patients on ART during TB treatment have remained constant at 99%. In contrast, the proportion of HIV-positive TB patients has been declining since 2018. This indicates stable management of TB/HIV services while reflecting a decrease in the number of HIV-positive cases among TB patients.

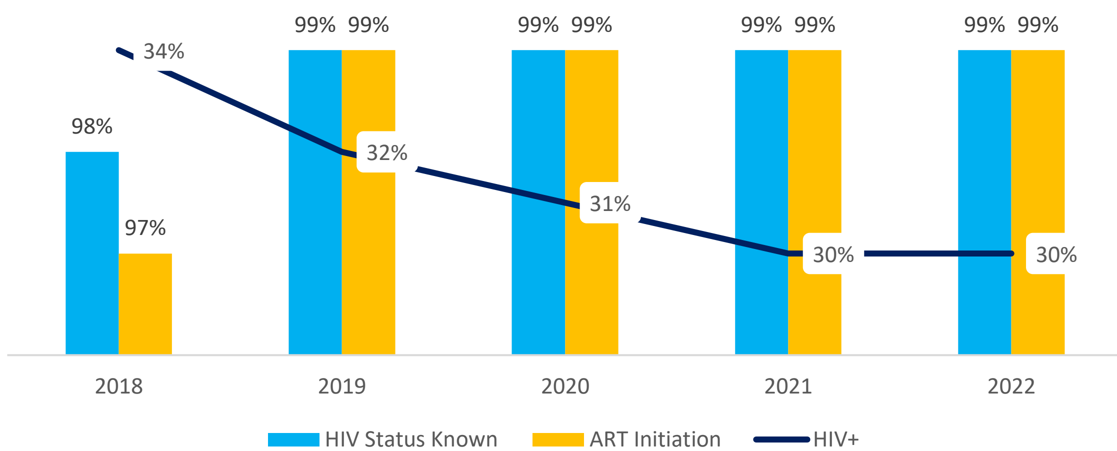


Figure 25: TB/HIV Care Cascade; 2018-2022

Fig. 26 shows that the distribution of people living with HIV (PLHIV) among TB cases continues to reflect the overall age-sex distribution of TB in the country. The data highlights significant differences in TB burden between males and females, particularly within the middle-aged population.

In the middle-aged population (25-34 years and 35-44 years), males demonstrate a notably higher TB-HIV co-infection rate compared to females. Specifically, in the 25-34 years age group, males represent 49% (283 out of 574) of the TB-HIV cases. This prevalence increases further in the 35-44 years age group, where males account for 57% (462 out of 810) of the cases. The trend is evident across these age ranges, reflecting a higher burden of TB-HIV co-infection among males.

For the 45-54 years age group, males constitute 63% (349 out of 557) of the TB-HIV cases, underscoring the significant impact of TB-HIV co-infection on this critical segment of the population.

In contrast, the data shows that females have a slight predominance in the 15-24 years age group, making up 59% (94 out of 160) of the TB-HIV cases. This observation aligns with previous reporting periods and may reflect specific demographic patterns in the HIV epidemic.

Overall, the data indicates that TB-HIV co-infection disproportionately affects males, especially in the middle-aged population. This highlights the need for target interventions and support for this demographic to affectively address the higher burden of TB-HIV co-infection.

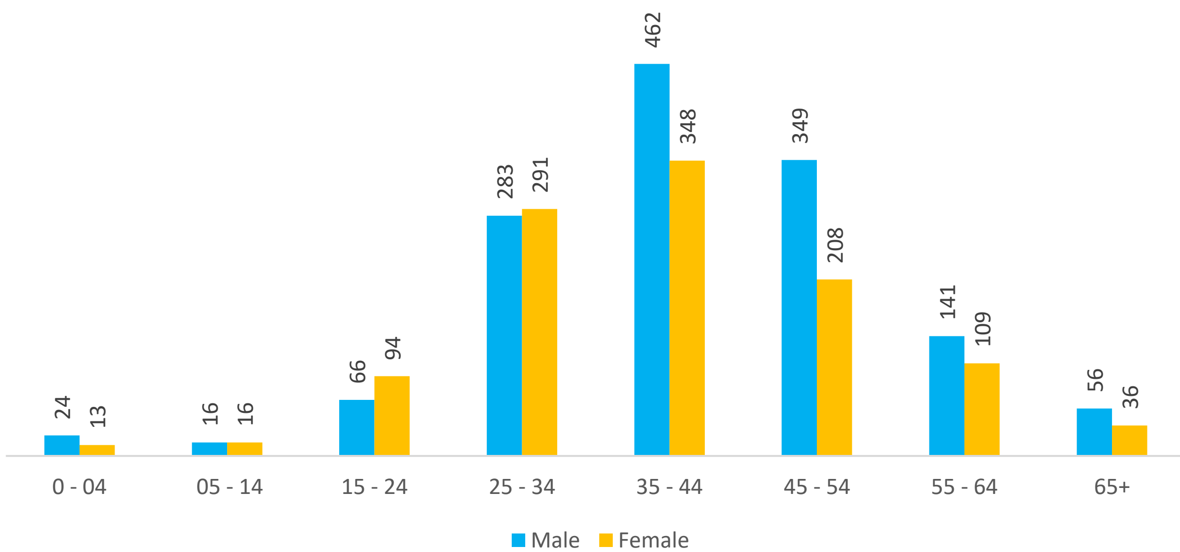
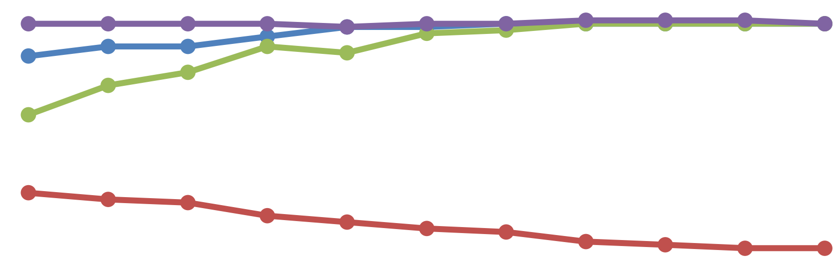


Figure 26: Age-sex distribution among New and Relapse TB/HIV cases, 2022

4.2 Provision of HIV services for TB patients

Fig. 27 shows the annual trends for key TB/HIV indicators from 2012 to 2022. From 2018 to 2022, the percentage of TB patients with documented HIV status remained steady at 99%. Among these patients, 30% (2588) were HIV positive, reflecting a decline from 47% in 2012. The proportion of HIV-positive TB patients initiated on ART increased significantly, from 71% in 2012 to 99% in 2022, showing notable progress toward the 'HIV test and treat' goal.

Furthermore, Cotrimoxazole Preventive Therapy (CPT) coverage remained consistently high, although it slightly decreased from 100% to 99% in 2022. This data highlights the steady improvements in documentation, treatment initiation, and overall TB-HIV co-management over the years.



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
% with Known HIV Status	89%	92%	92%	95%	98%	98%	99%	99%	99%	99%	99%
% HIV Positive	47%	45%	44%	40%	38%	36%	35%	32%	31%	30%	30%
Proprtion ART	71%	80%	84%	92%	90%	96%	97%	99%	99%	99%	99%
Proportion on CPT	99%	99%	99%	99%	98%	99%	99%	100%	100%	100%	99%

Figure 27: Trends in selected TB/HIV indicators 2012-2022

HIV prevalence among TB patients varied across regions, ranging from 20% to 44%. The Zambezi region reported the highest HIV prevalence at 44%, though this reflects a reduction from 49% in the previous year. Seven regions had an HIV prevalence exceeding the national rate of 30%, while the Omaheke region recorded the lowest rate at 20%. All 12 regions sustained high rates of TB patients with known HIV status, with //Kharas and Khomas regions at 98%, and the remaining regions exceeding 99% in 2022.

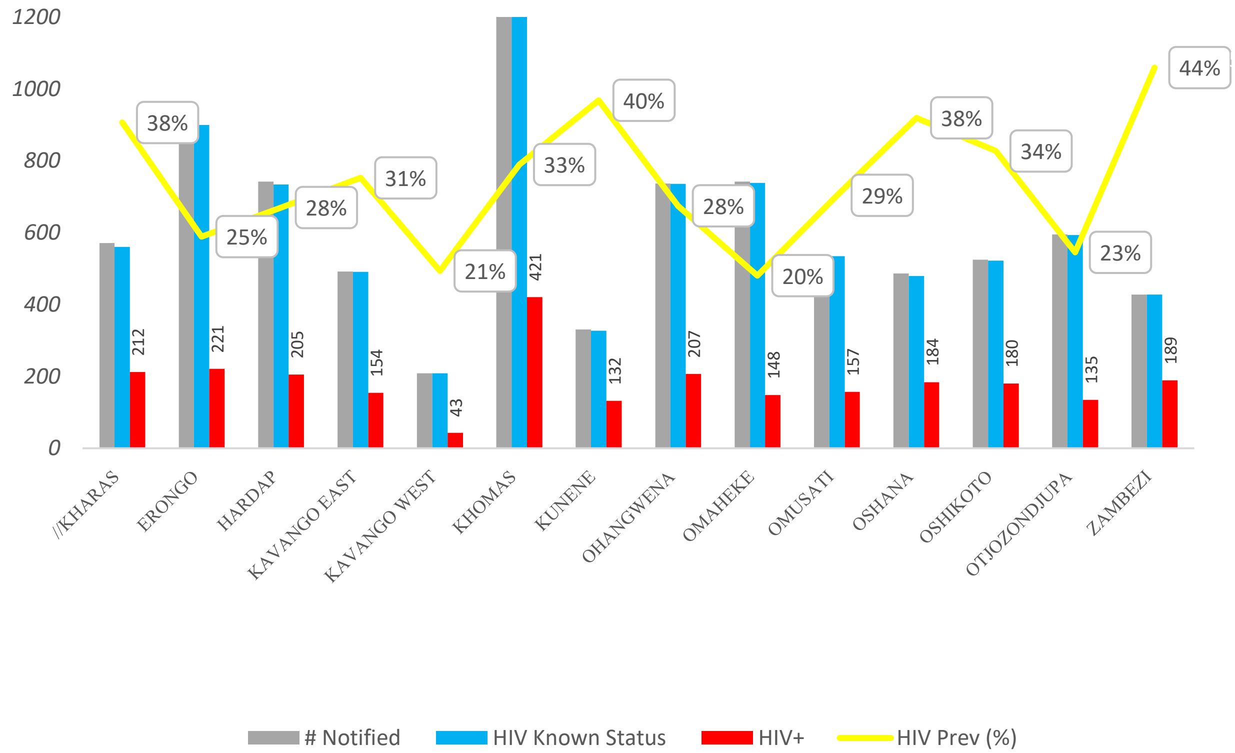
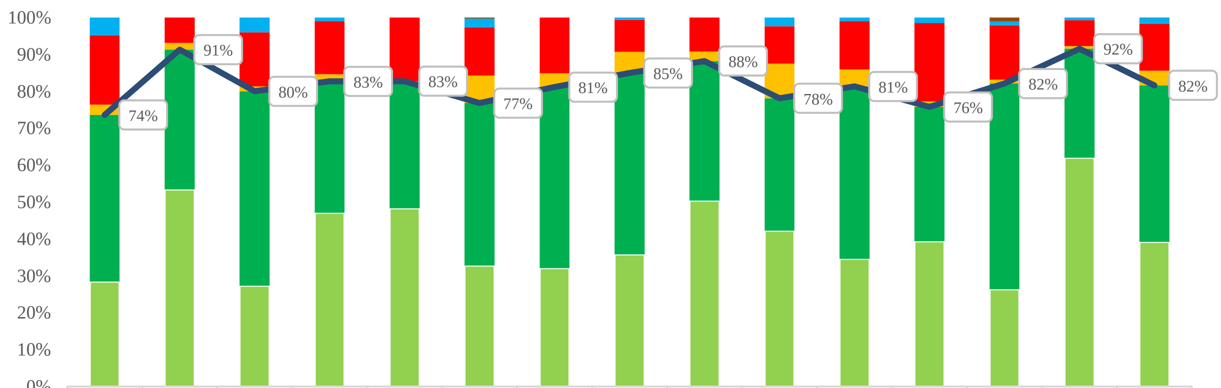


Figure 28: HIV burden among all TB patients by region, 2022

The Table below shows the number of HIV-infected new and relapse TB patients who were initiated on Cotrimoxazole Preventive Therapy (CPT) and Antiretroviral Therapy (ART) across all regions. The //Kharas, Hardap, Kavango West, Kunene, Oshana, and Zambezi regions achieved a full 100% initiation rate for both ART and CPT among eligible patients. Additionally, all 14 regions maintained high initiation rates, with ART initiation above 97% and CPT initiation above 98% for HIV-positive patients, highlighting consistent commitment to integrated HIV and TB care across the country.

Table 7: Regional distribution of notified new & relapse TB patients on ART and CPT, 2022

Region	Number of N/R TB patients with Known HIV Status	Number of N/R TB HIV+ patients	Number of N/R TB HIV+ patients on ART	Number of N/R TB HIV+ patients on CPT	Number of N/R TB patients Notified
//KHARAS	546	205	204	205	556
ERONGO	880	216	214	215	888
HARDAP	725	203	202	203	733
KAVANGO EAST	479	152	151	151	480
KAVANGO WEST	208	43	43	43	208
KHOMAS	1244	402	389	399	1266
KUNENE	325	130	130	130	329
OHANGWENA	706	196	195	194	707
OMAHEKE	727	145	144	144	730
OMUSATI	513	150	150	149	514
OSHANA	460	176	176	176	466
OSHIKOTO	504	177	177	173	507
OTJOZONDJUPA	584	133	131	130	585
ZAMBEZI	417	184	184	184	417
NAMIBIA	8318	2512	2490	2496	8386



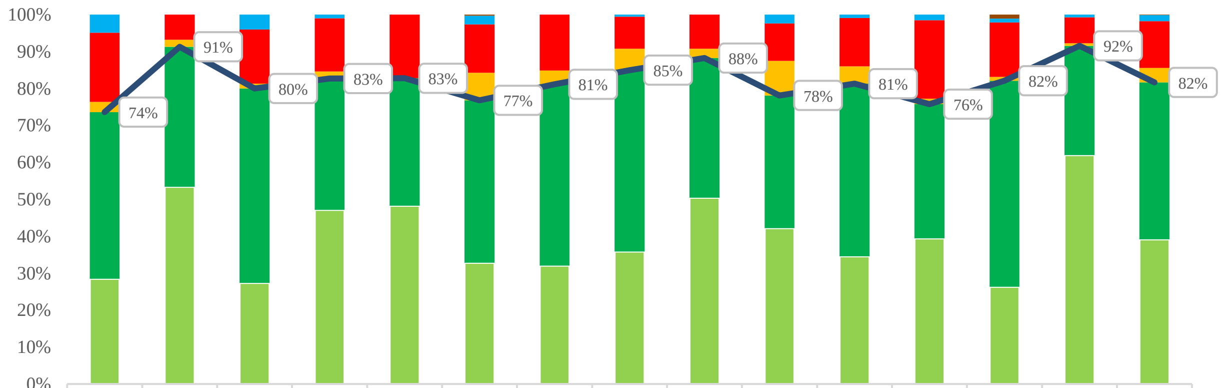
	//KHARAS	ERONGO	HARDAP	KAVANGO EAST	KAVANGO WEST	KHOMAS	KUNENE	OHANGWENA	OMAHEKE	OMUSATI	OSHANA	OSHIKOTO	OTJOZONDJUPA	ZAMBEZI	NAMIBIA
Not evaluated						1							1		2
Failed	7		6	1		9		1		3	1	2	1	1	32
Died	27	11	22	15	5	49	8	15	11	13	14	28	14	10	242
LTFU	4	3	2	2		28	2	10	3	12	5	2	1	1	75
Cured	65	61	79	37	10	165	26	85	45	46	50	48	53	42	812
Completed	41	86	41	49	14	123	17	62	60	54	37	52	25	88	749
TSR	74%	91%	80%	83%	83%	77%	81%	85%	88%	78%	81%	76%	82%	92%	82%

Completed Cured LTFU Died Failed Not evaluated TSR

Figure 29 below shows the treatment outcomes for new and relapse TB patients co-infected with HIV. The regions of Zambezi, Erongo, and Omaheke reported the highest Treatment Success Rates (TSR) among TB-HIV co-infected patients, achieving 92%, 91%, and 88%, respectively.

These high success rates highlight effective TB and HIV co-management practices in these regions.

On the other hand, the regions of //Kharas, Oshikoto, Khomas, and Omusati reported TSRs below 80%. Additionally, death rates among TB-HIV co-infected patients were highest in the regions of Oshikoto (21%), //Kharas (19%), and Kavango West (17%). Furthermore, loss to follow-up (LTFU) rates were highest in the regions of Omusati, Khomas, and Ohangwena, with rates of 9%, 7%, and 6%, respectively.



	//KHARAS	ERONGO	HARDAP	KAVANGO EAST	KAVANGO WEST	KHOMAS	KUNENE	OHANGWENA	OMAHEKE	OMUSATI	OSHANA	OSHIKOTO	OTJOZONDJUPA	ZAMBEZI	NAMIBIA
Not evaluated						1							1		2
Failed	7		6	1		9		1		3	1	2	1	1	32
Died	27	11	22	15	5	49	8	15	11	13	14	28	14	10	242
LTFU	4	3	2	2		28	2	10	3	12	5	2	1	1	75
Cured	65	61	79	37	10	165	26	85	45	46	50	48	53	42	812
Completed	41	86	41	49	14	123	17	62	60	54	37	52	25	88	749
TSR	74%	91%	80%	83%	83%	77%	81%	85%	88%	78%	81%	76%	82%	92%	82%

Figure 29: TB treatment outcomes for New/Relapse TB/HIV patients by region, 2021 cohort

4.3 Provision of TB services to PLHIV

4.3.1 TB LAM

A urine-based assay to detect Lipoarabinomannan (LAM) has important utility among patients with advanced immunodeficiency as they frequently do not have respiratory TB symptoms and/or are unable to produce sputum. The 2019 national TB treatment guidelines provided for the use of the Lateral Flow Tuberculosis Lipoarabinomannan (LF TB LAM) for TB screening among adults, adolescents, and children living with HIV and who has advanced disease.

The graph below presents data on TB testing conducted using TB LAM and GeneXpert, highlighting testing outcomes and challenges in simultaneous diagnostic approaches. Throughout the year, a total of 1,198 patients were screened using the TB LAM test, of whom 423 (35%) tested positive, while 775 (65%) tested negative. Among those tested, only 625 (52%) received both TB LAM and GeneXpert tests, indicating a challenge in consistently applying both diagnostic methods concurrently. This gap in concurrent testing may impact timely and accurate diagnosis.

Further analysis shows that out of the patients who tested positive, either by TB LAM or GeneXpert, 460 individuals in total were initiated on TB treatment. This indicates an effective treatment approach in treatment initiation.

These findings highlight the progress made in expanding TB LAM testing capacity, while also identifying areas for improvement in integrating TB LAM and GeneXpert testing processes. Addressing these challenges can improve diagnostic accuracy, and enable timely treatment initiation.

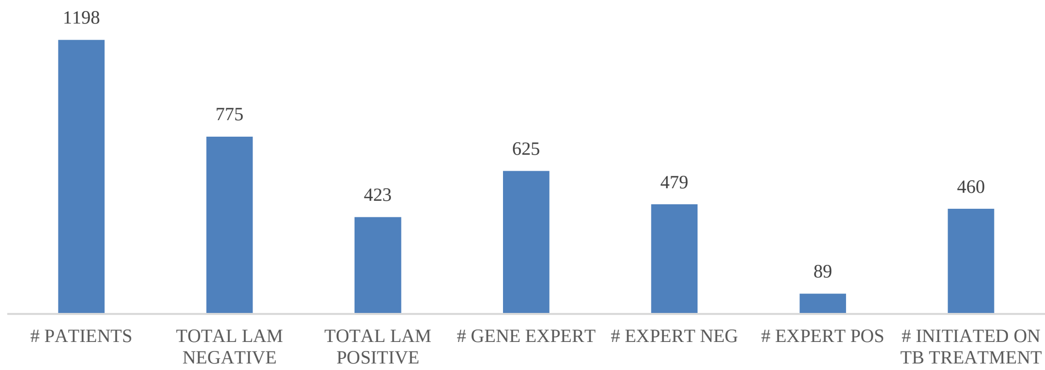


Figure 30: Performance of TB LAM in Namibia, 2022

The figure below shows a regional overview of LAM testing, highlighting the distribution of patients and test results. Oshana Region reported the highest number of patients at 302, with 202 LAM-negative cases and 100 LAM-positive cases. Kavango East, Kunene, and Omaheke followed closely with 135, 134, and 124 patients respectively. Among these, Omaheke recorded the highest number of LAM-positive cases at 58.

Omusati region recorded 100 patients, with a large majority testing LAM-negative (83) and only 17 testing LAM-positive. In contrast, regions like //Kharas and Kavango West reported significantly fewer patients, with 26 and 6 respectively. Kavango West, in particular, had the lowest LAM-positive count with only one case.

Regions such as Oshikoto and Zambezi, despite having fewer total patients (62 and 30 respectively), displayed notable proportions of LAM-positive cases. Zambezi, with 30 patients, had 18 testing positive, while Oshikoto saw more LAM-positive than LAM-negative cases.

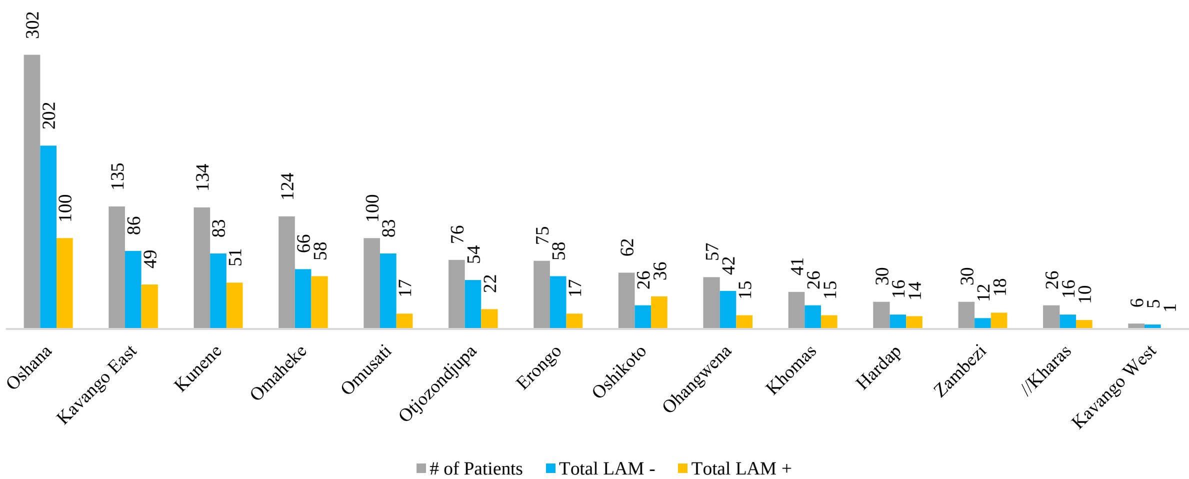
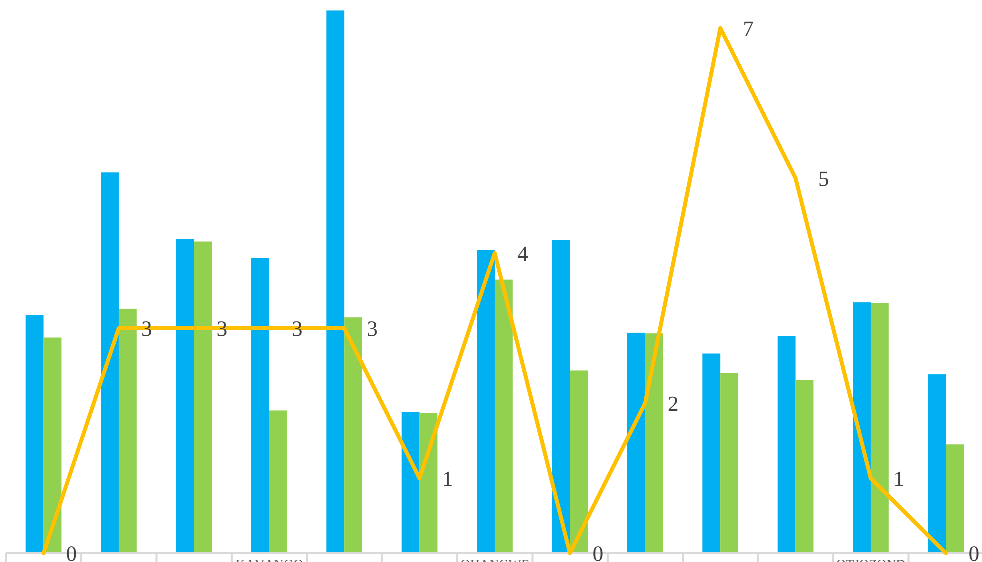


Figure 31: Regional Performance of TB LAM in Namibia, 2022

4.4 TB and other co-morbidities

The figure below highlights that among the 8,386 new and relapse TB cases notified in 2022, A total of 6,249 cases (75%) were screened for Diabete, with 32 cases diagnosed. Screening rates show regional inconsistencies, with Hardap, Kunene, Omaheke, and Otjozondjupa regions achieving high screening rates, each screening over 99% of their new and relapse TB cases. However, Khomas, Kavango, and Omaheke regions had the lowest screening rates, with proportions at 43%, 48%, and 58% respectively.



	//KHARAS	ERONGO	HARDAP	KAVANGO EAST/WEST	KHOMAS	KUNENE	OHANGWENA	OMAHEKE	OMUSATI	OSHANA	OSHIKOTO	OTJOZONDJUPA	ZAMBEZI
N/R TB Notified Cases	556	888	733	688	1266	329	707	730	514	466	507	585	417
N/R TB Cases Tested for Diabetes	503	570	727	333	550	327	638	426	513	420	404	584	254
N/R TB Cases Diagnosed with Diabetes	0	3	3	3	3	1	4	0	2	7	5	1	0

Figure 32: Diabetes screening among New & Relapse TB patients in 2022

5 TB PREVENTION SERVICES

5.1 TB Preventive Therapy

Tuberculosis Preventive Therapy (TPT) also referred to as the treatment of Latent TB Infection (LTBI) is the therapy offered to individuals considered to be at risk of developing TB disease to reduce that risk. The categories of patients eligible for TPT includes PLHIV, close contacts of TB patients who are children under the age of five, individuals diagnosed with diabetes mellitus, people on immunosuppressive medication and those with immunocompromising conditions.

The figure below shows that 91% of PLHIV newly enrolled on ART who have documented screening for TB were eligible for TPT. Furthermore, 92% of 8,369 PLHIV who were eligible were initiated on TPT. The 7,740 patients that was eligible for TPT, 79% were initiated on TPT. The significant decline in TPT initiation from 2021 to 2022 could be due to the increase of Isoniazid stockout within the reporting year regardless of the introduction of the shorter TPT regimen. Lastly, all PLHIV newly enrolled on ART and diagnosed with active TB were initiated on TB treatment.

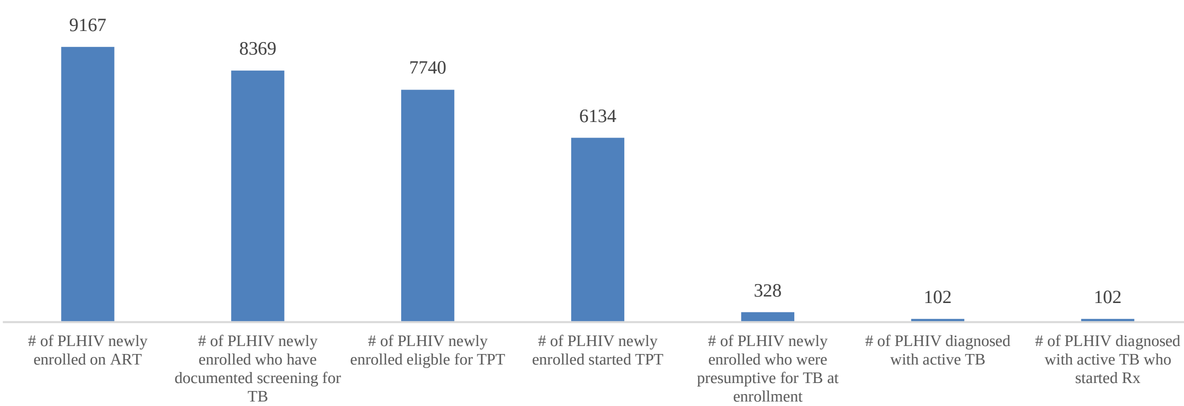


Figure 33: TB screening and TPT initiation among PLHIV, 2022

5.2 3HP Initiation

The NTLP introduced the shorter TPT regimen 3HP with its 4th National TB treatment guidelines. In 2022, a total of 2382 PLHIV were initiated on 3HP. Kavango East and Oshiko regions had the highest number of patients initiated on 3HP. While Omaheke and Kunene regions had the lowest 3HP initiation.

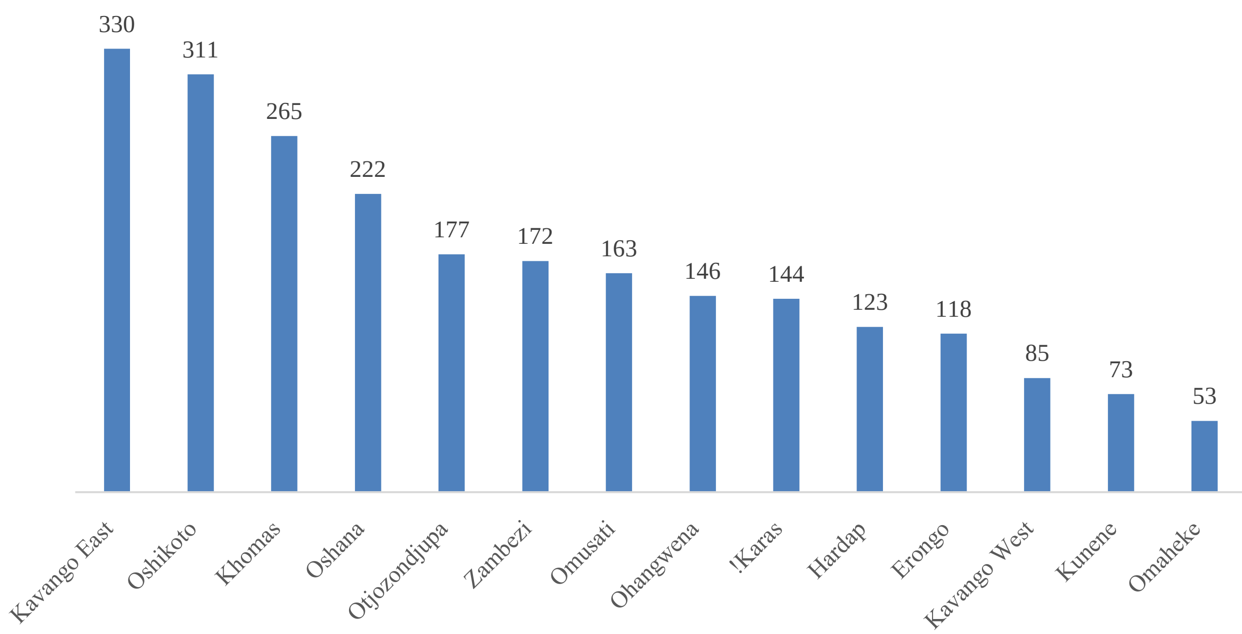


Figure 34: Patients initiated on 3HP among PLHIV by region in 2022

5.3 TB infection control practices at health facilities

The Ministry of Health has recently revised the TB Infection Prevention and Control (IPC) guidelines to align with international standards while addressing country specific challenges. These updated guidelines emphasize critical measures, including regular TB screening for staff and the development or review of IPC plans in health facilities. Out of 15,477 public sector staff, only 4,252 were screened for TB, resulting in 32 positive cases. While some regions have successfully screened over 90% of their staff, others are struggling to achieve adequate coverage.

To ensure effective adoption of the revised guidelines, intensive training sessions were conducted, targeting both managers and implementers. These sessions aimed to strengthen capacity in applying IPC measures and addressing gaps identified in facilities. Despite these efforts, the review and development of IPC plans across public facilities remain inconsistent. Of the 373 public facilities nationwide, 330 have reviewed their IPC plans, leaving a notable gap in compliance.

Infrastructure improvements have been integral to supporting IPC measures. To minimize overcrowding and reduce the risk of TB transmission, 248 facilities now have outside waiting areas, with some constructed or repaired as part of the program's initiatives. Further enhancements include the installation and maintenance of Germicidal Ultraviolet (GUV) systems.

5.4 Contact Investigation

5.5.1 Contact investigation and TPT

Contact investigation is a crucial and systematic process for identifying potentially undiagnosed TB cases among the contacts of an index TB case. In 2022, 5,799 bacteriologically confirmed TB cases were diagnosed. Among the 29,525 contacts identified, 12% were children under the age of five. Specifically, 3,475 children under five and 26,050 individuals above the age of five were identified for TB screening. Of the under-five contacts, 2,912 (84%) were screened, leading to 168 diagnoses, which accounts for 5.8% of those screened. All 168 diagnosed children were started on TB treatment. For the above-five contacts, 21,166 (81%) were screened, with 369 diagnosed, representing 1.7% of those screened. Similarly, all 369 diagnosed adults were started on TB treatment. The higher percentage of diagnoses among children compared to adults indicates that TB was more frequently identified in the younger age group following screening.

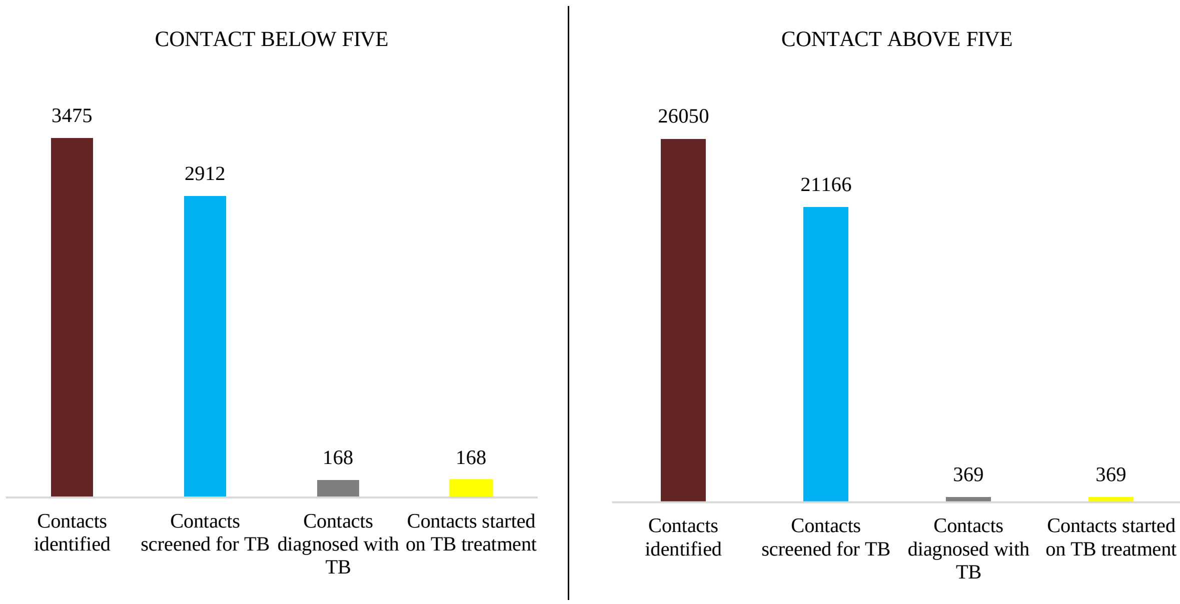


Figure 35: TB contact screening, 2022

The figure below illustrates the regional distribution of TB screening and TPT initiation among contacts under five years old. Ohangwena region identified the highest number of contacts, reflecting its active engagement in TB contact investigation efforts. Despite identifying a large number of contacts, only 77% of eligible contacts in Ohangwena were commenced on TPT, indicating potential challenges in initiating therapy.

In contrast, Zambezi region achieved a commendable 100% initiation rate for all eligible contacts, showcasing exemplary implementation of TB preventive therapy. Other regions such as Kavango (85%) and Kharas (88%) also performed well, with high proportions of eligible contacts starting on TPT. However, regions like Khomas (41%), Omaheke (47%), and Hardap (55%) had significantly lower initiation rates, highlighting gaps in ensuring eligible contacts commence on therapy.

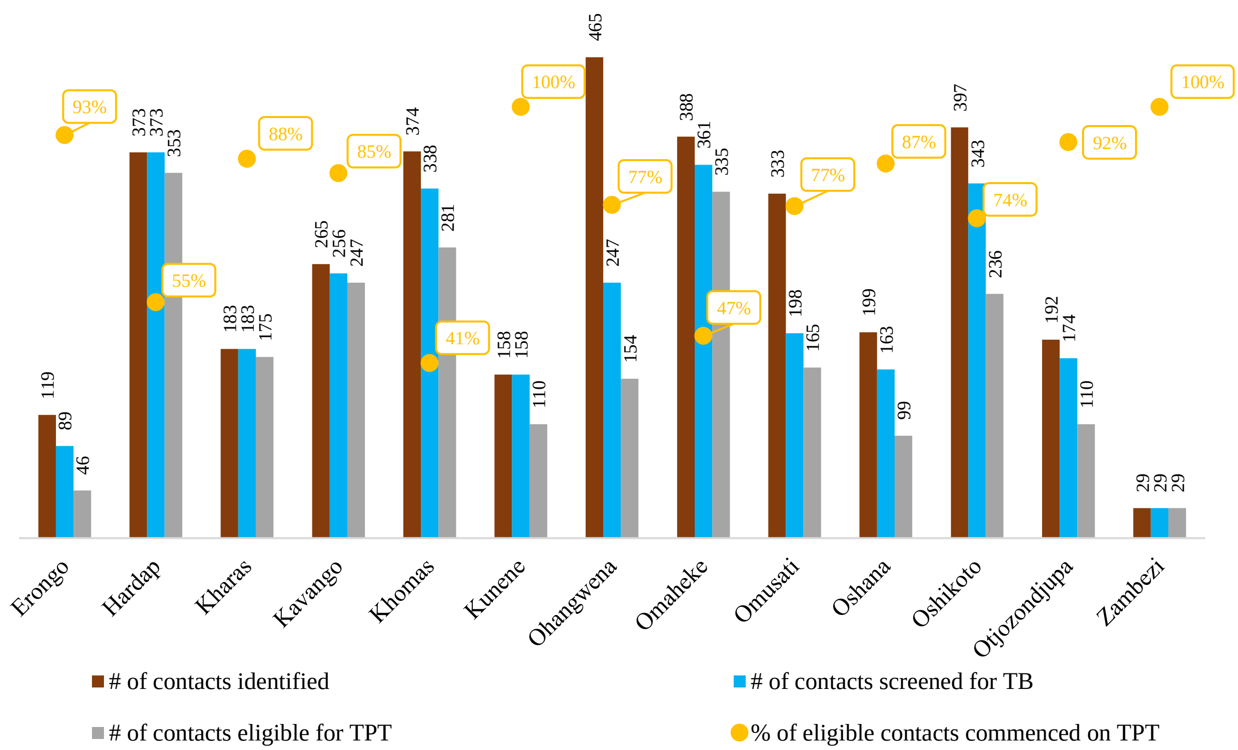


Figure 36: Regional distribution of TB contact investigation & TPT among <5 years, 2022

5.5.2 TPT completion among contacts investigated in 2021

The figure below illustrates the treatment completion rates for TB contacts initiated on TPT in 2021, reported in 2022. Of the 1,563 contacts initiated, 92% successfully completed the course, reflecting an improvement from the 87% completion rate in 2020. Among these, 1,278 were under-five contacts, achieving a completion rate of 91%, while 285 were above-five contacts, with a completion rate of 96%. This indicates notable progress in TPT adherence and outcomes, particularly among adult contacts.

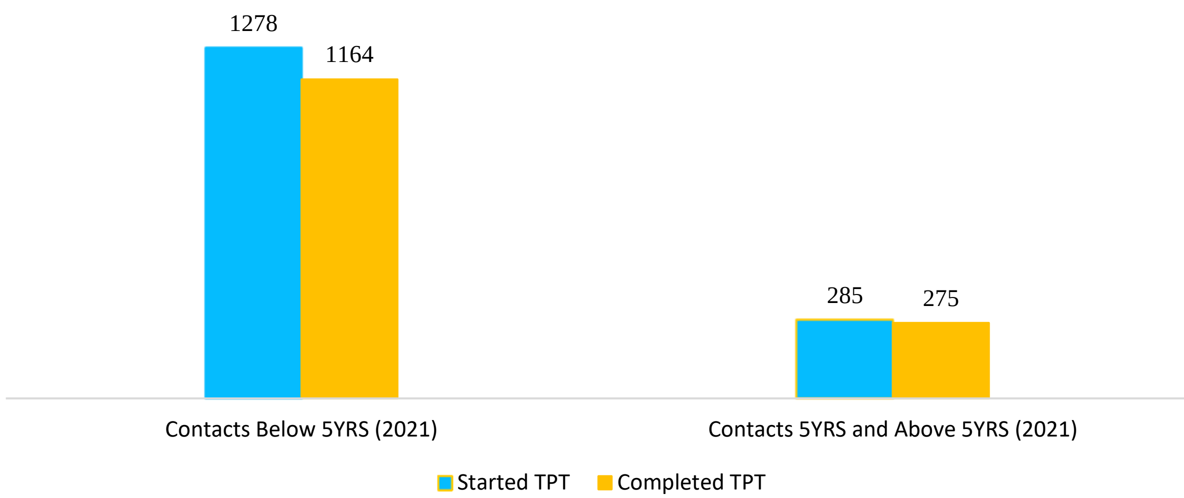


Figure 37: National TPT completion for contacts initiated on therapy, 2021

6 PROGRAMMATIC MANAGEMENT OF DRUG-RESISTANT TUBERCULOSIS

6.1 DR-TB Notifications

Drug-resistant tuberculosis (DR-TB) refers to TB caused by Mycobacterium tuberculosis strains that are resistant to one or more anti-TB medicines. Preventing the development and spread of DR-TB requires early detection and effective treatment of both drug-susceptible (DS-TB) and drug-resistant TB cases. The data below show the annual trends in DR-TB notifications (all forms) from 2015 to 2022.

The number of DR-TB cases increased steadily from 341 in 2015 to a peak of 423 cases in 2017. However, there was a consistent decline thereafter, dropping to 218 cases in 2020, representing a 48% reduction compared to the peak in 2017. In 2021, notifications rose slightly to 265 cases, but this number remained unchanged in 2022. Despite the stabilization in the last two years, the overall trend shows a significant reduction in DR-TB notifications over the eight-year period.

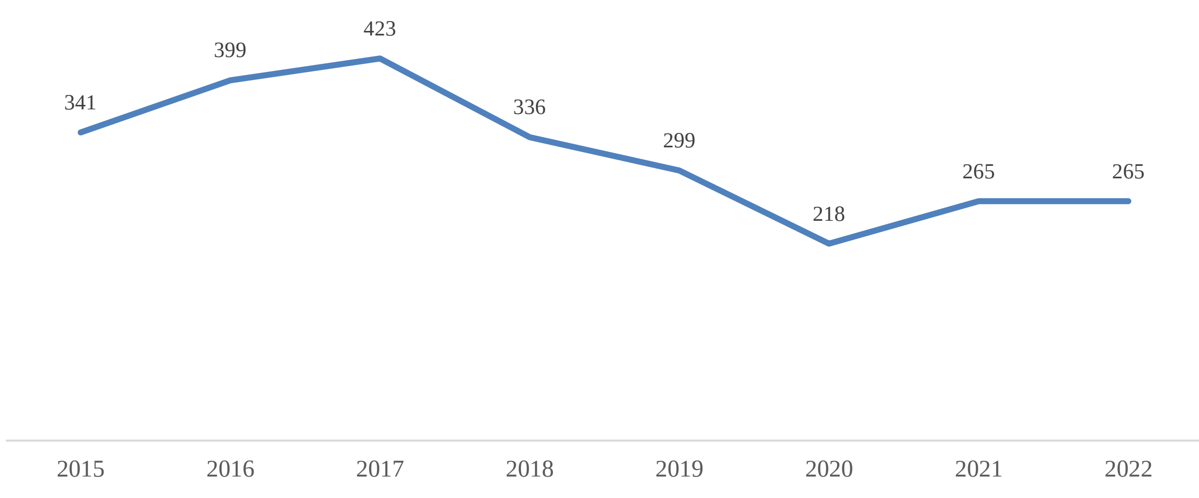


Figure 38: Trends in the reported cases all forms of Drug-Resistant TB, 2015-2022

The figure below presents the trend of DR-TB notifications by case category from 2015 to 2022. During this period, a total of 2,454 DR-TB cases were notified, with annual totals fluctuating. The highest number of cases was reported in 2017, with 417 cases, followed by a gradual decline to 213 in 2020. Since then, the total stabilized, with 255 cases notified in 2021 and 253 cases in 2022.

In 2022, a total of 253 cases were notified as having confirmed drug-resistant TB, including 57 MDR-TB (excluding XDR-TB), 185 rifampicin-resistant cases detected via Xpert MTB/RIF, 10 cases of rifampicin monoresistance, and one case of polyresistance involving isoniazid.

Additionally, 12 patients were initiated on second-line anti-TB treatment without laboratory confirmation of drug resistance, based on clinical diagnosis, bringing the total number of notified cases to 265. Of the confirmed cases, 253 could be classified as rifampicin-resistant, including three cases of pre-XDR TB, and no cases of XDR-TB were reported.

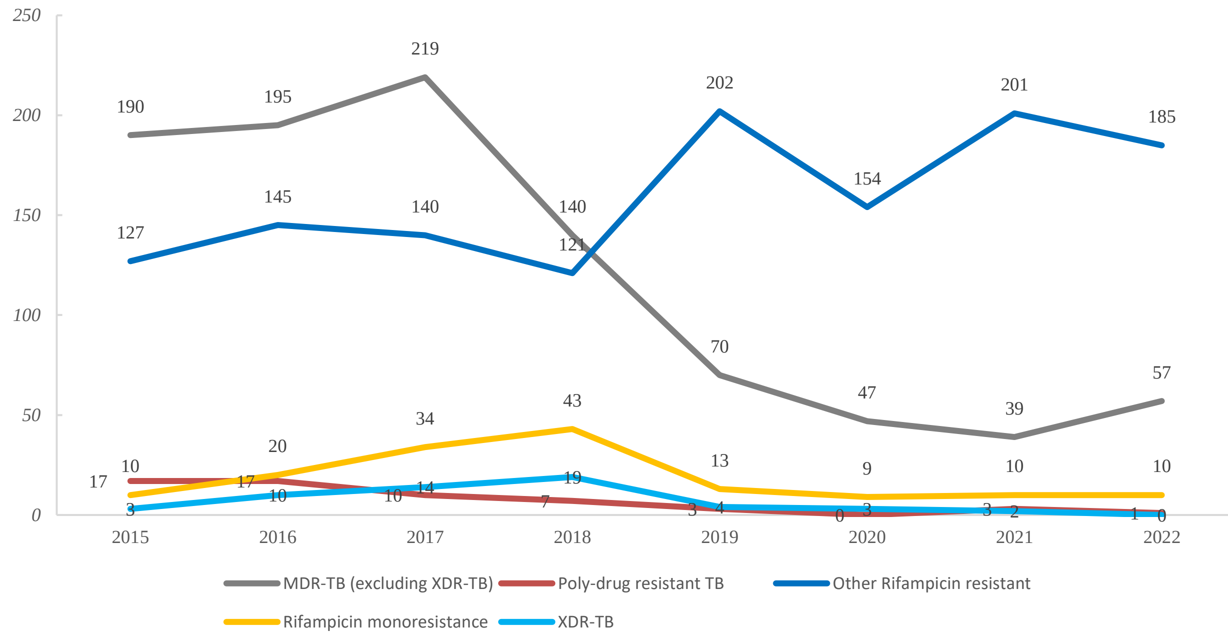


Figure 39: Trend of confirmed Drug Resistance TB Cases by resistance, 2015-2022

The figure below shows the age and sex distribution of DR-TB cases. As observed in the DS-TB cases, the majority of DR-TB cases were among male patients, accounting for 52.8% of the total cases, while female patients made up 47.2%.

Children under the age of 15 years (0-14 age group) contributed 12.8% of the total DR-TB cases. The 25-34 and 35-44 age groups reported the highest case burden, collectively contributing 48.3% of the total cases.

The 2022 age-sex distribution pattern for DR-TB remained consistent with previous reporting periods, reflecting a higher burden among adults and males.

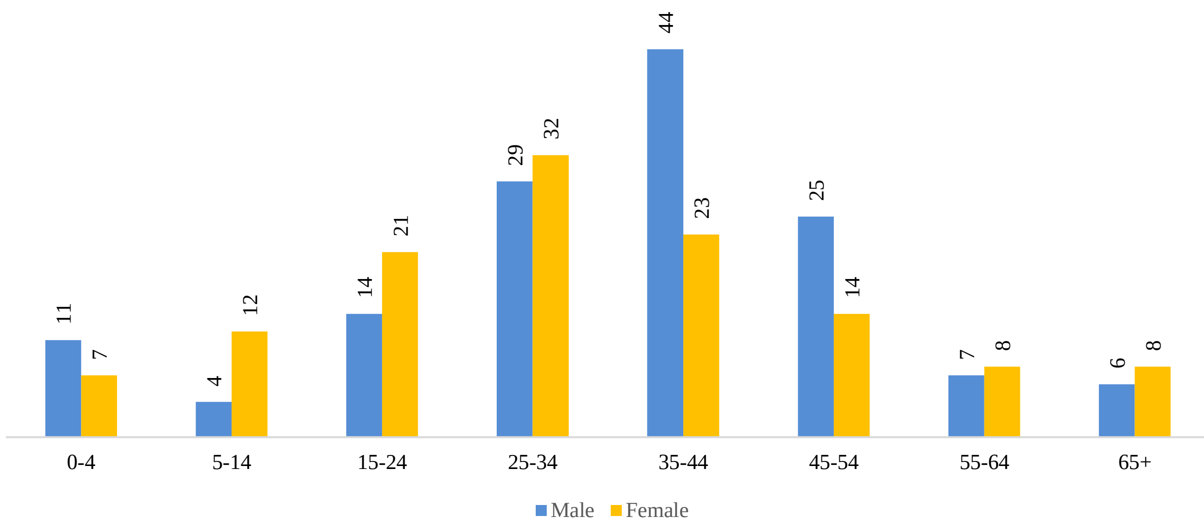


Figure 40: Age-Sex Distribution for DR-TB cases, 2022

The graph below illustrates the regional distribution of DR-TB cases in 2022. Otjozondjupa reported the highest number of cases with a total of 46, followed by Khomas (35) and Kavango (32). These three regions accounted for a significant proportion of the 265 cases recorded nationwide. In contrast, Kunene and Karas reported the lowest numbers, with 7 and 9 cases, respectively.

Rifampicin resistance (RifXpert) was identified in 185 cases nationally, with Otjozondjupa leading at 34 cases. Multidrug-resistant TB (MDR-TB) accounted for 57 cases, with the highest numbers reported in Otjozondjupa (10 cases), Khomas (9 cases), and Omusati (7 cases).

Rifampicin-monoresistance was relatively low, with only 10 cases recorded. One poly-resistance case was observed in Hardap region. And there was zero extensive drug resistance (XDR-TB) case. Additionally, 12 cases were clinically diagnosed, with Khomas and Erongo reporting the highest numbers at 4 cases each.

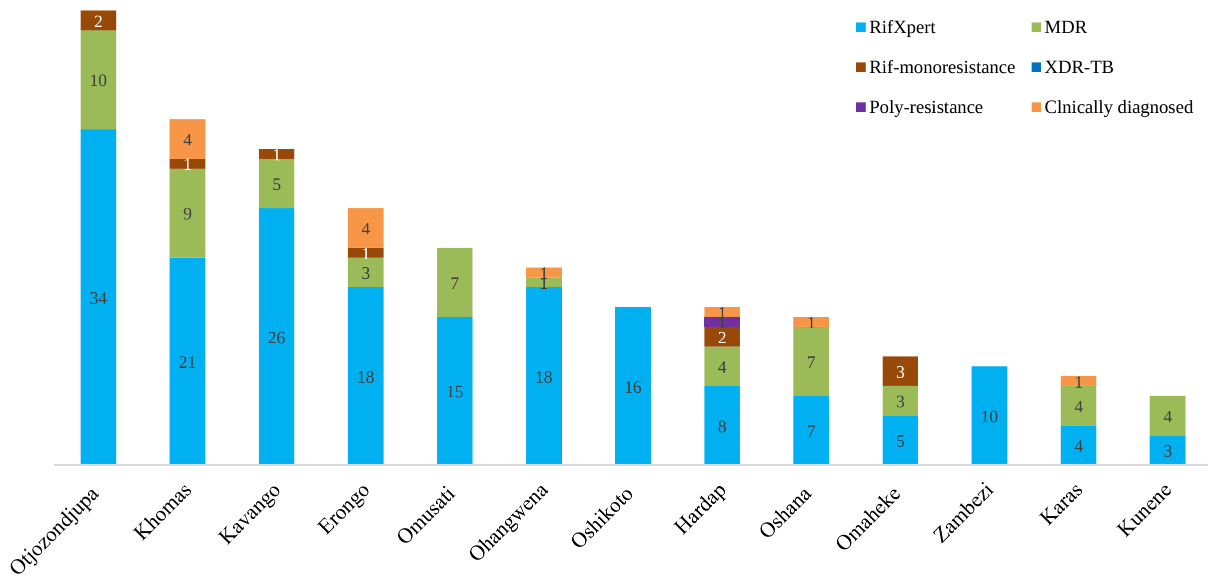


Figure 41: Regional Distribution of reported DR-TB cases by Resistance pattern, 2022

The figure below shows the distribution of DR-TB cases by treatment category for 2022. A total of 265 cases were reported, with the majority 194 cases (73.2%) classified as New TB cases, reflecting the program's success in identifying and enrolling new patients for treatment. Relapse cases accounted for 35 cases (13.2%).

While smaller proportions were recorded for Treatment After Loss to Follow-Up (TALFU) 11 cases (4.2%), Treatment After Failure 2 cases (0.8%), and cases where Resistance Patterns

Changed 3 cases (1.1%). Additionally, 5 cases (1.9%) were classified as "Other treatments" representing rare or unclassified treatment history.

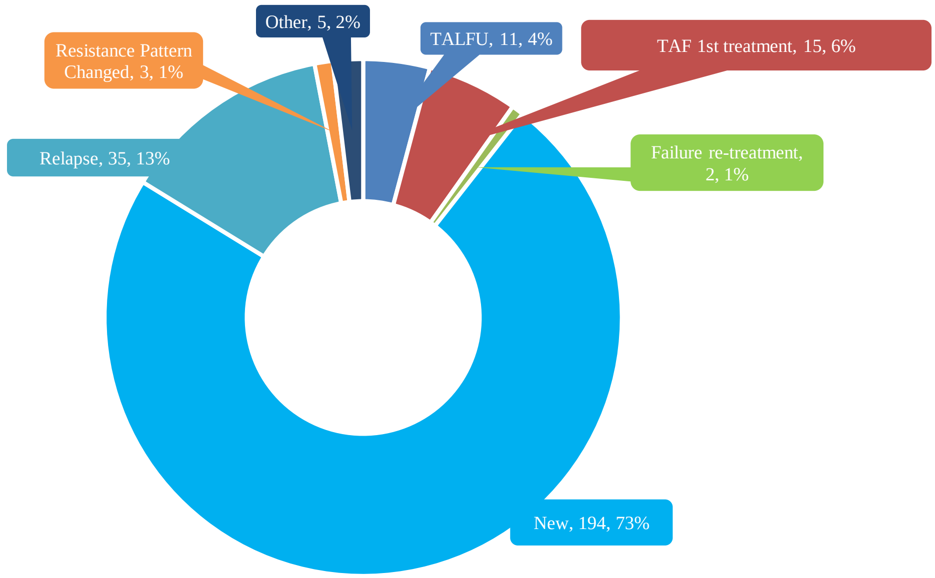


Figure 42: Distribution of drug resistant TB cases by Treatment History, 2022

6.2 DR-TB treatment

In general, drug-resistant tuberculosis (DR-TB) is treated using second-line anti-TB medicines because the standard first-line regimens are unlikely to be effective for these cases. The treatment success of DR-TB depends on starting the appropriate medication as soon as possible, which is reflected in the data presented below.

The graph shows the proportion of DR-TB patients treated by region in 2022. Seven regions: Otjozondjupa, Khomas, Kavango, Erongo, Ohangwena, Hardap, and Oshikoto treated less than 100% of the DR-TB patients notified in their areas. Out of 265 notified DR-TB patients, 255 were started on treatment, which means 10 patients did not receive timely treatment. Of these ten, 8 patients died, and 2 were lost to follow-up before they could begin treatment. This indicates a slight but concerning gap in treatment initiation.

Among the regions, Otjozondjupa treated 98% of its cases, starting treatment for 45 out of 46 patients. Khomas and Kavango regions treated 97% of their notified patients, starting treatment for 34 out of 35 and 31 out of 32 patients respectively. Erongo region had a lower rate of treatment initiation at 92%, with only 24 out of 26 patients receiving treatment. However, several regions showed exemplary results, including Omusati, Oshana, Omaheke, Zambezi, Karas, and Kunene, all of which successfully treated 100% of their notified DR-TB cases.

At the national level, 96% of the 265 DR-TB patients notified across the country were started on treatment, reflecting a high overall treatment initiation rate. However, the variation in regional treatment coverage highlights the need for targeted efforts to improve treatment initiation, especially in the regions with lower coverage.

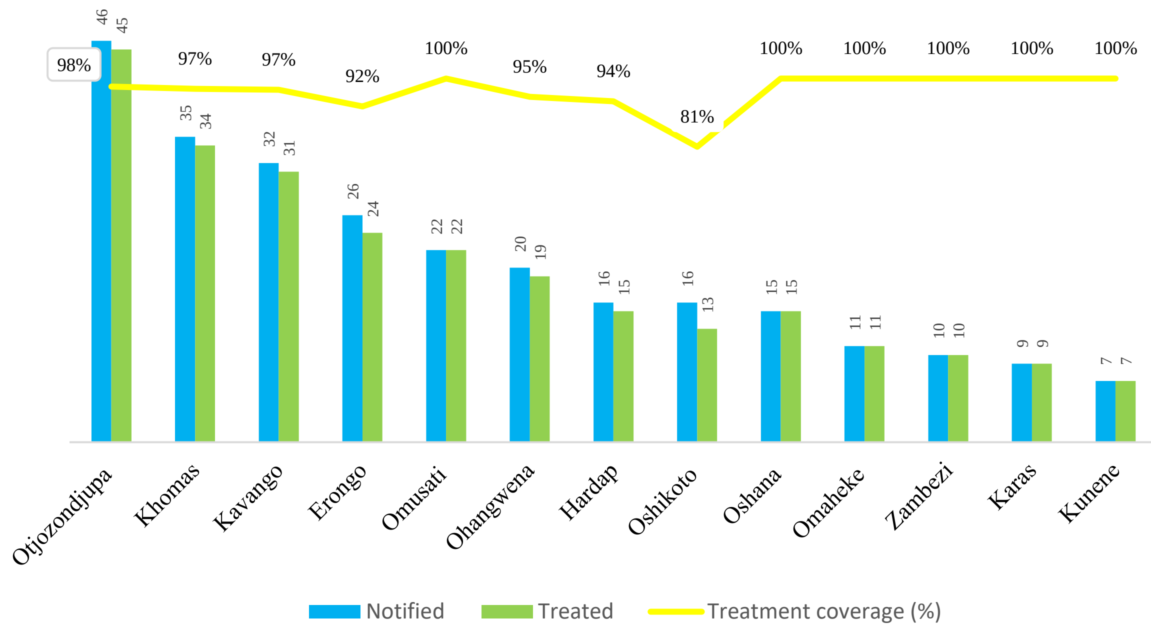


Figure 43: Drug Resistant TB Treatment coverage by Region, 2022

6.3 DR-TB and HIV

In 2022, the integration of HIV services into the care of Drug-Resistant Tuberculosis (DR-TB) patients remained strong. As in previous years, all DR-TB patients were offered an HIV test, and 99.2% of them had a known HIV status. This high testing rate ensures that most DR-TB patients are screened for HIV, allowing for timely diagnosis and treatment. However, three (3) patients were not tested during this period, indicating a small gap in HIV service delivery.

Among the DR-TB patients with a known HIV status, 30% were found to be HIV positive, which aligns with the HIV prevalence observed in the drug susceptible TB cases. Among the HIV-positive DR-TB patients, nearly all (98.8%) were receiving Antiretroviral Therapy (ART), reflecting a robust commitment to providing HIV treatment alongside DR-TB care.

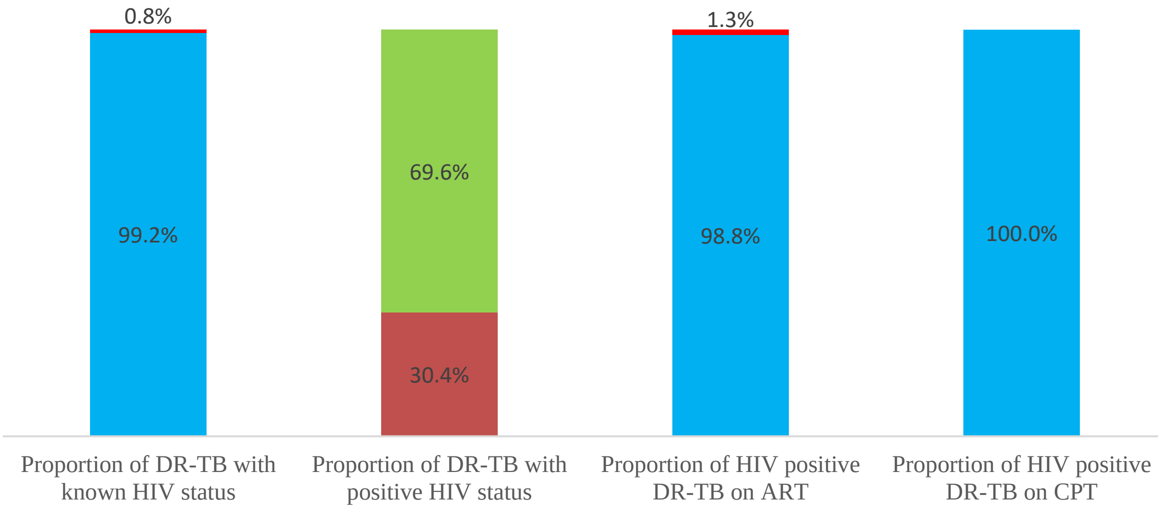


Figure 44: DR-TB and HIV indicators, 2022

6.4 Treatment outcomes for DR-TB patients

All DR-TB patients are assigned a final outcome after completing the treatment regimen and/or at the end of the two-year cohort reporting period. A total of 218 patients were evaluated in 2019. However, 9 patients did not start treatment. Of these, three were lost to follow-up before treatment, and six died before starting treatment. Thus, the data below only includes patients who were actually started on treatment.

The national treatment success rate (TSR) for DR-TB patients in 2020 cohort was 71%, which represents a slight decrease compared to the 75% treatment success rate reported for the 2019 cohort. However, several regions showed strong performance, with treatment success rates exceeding 75%. These regions include Zambezi (89%), Kunene (80%), Ohangwena (80%), Omaheke (82%), Kavango (77%), Erongo (76%), Otjozondjupa (75%), Oshikoto (77%), and Omusati (77%).

On the other hand, Khomas (52%) and Hardap (14%) regions reported notably lower success rates. The death rate of 40 patients (19%) and the loss to follow-up (LTFU) rate of 15 patients (7%) remain significant challenges across the country.

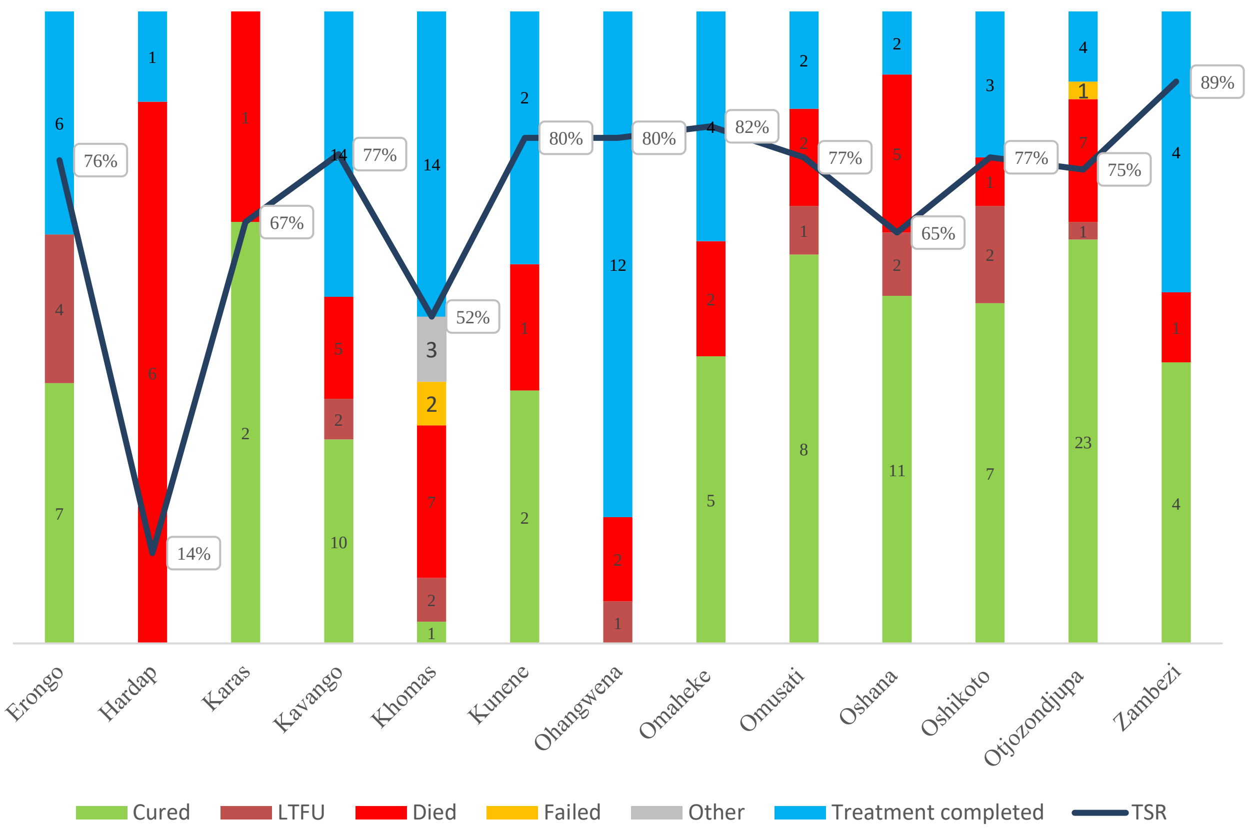


Figure 45: Regional Distribution of DR-TB Treatment outcomes, 2020 cohort

In the 2020 DR-TB treatment cohort, a total of 209 patients started treatment. Of these, 80 patients were cured, and 68 completed their treatment, resulting in a treatment success rate of 71%.

However, the cohort also experience significant challenges, with 15 patients defaulting on treatment, 40 patients dying, and 3 patients failing treatment. Additionally, 3 patients were classified under "other" outcomes.

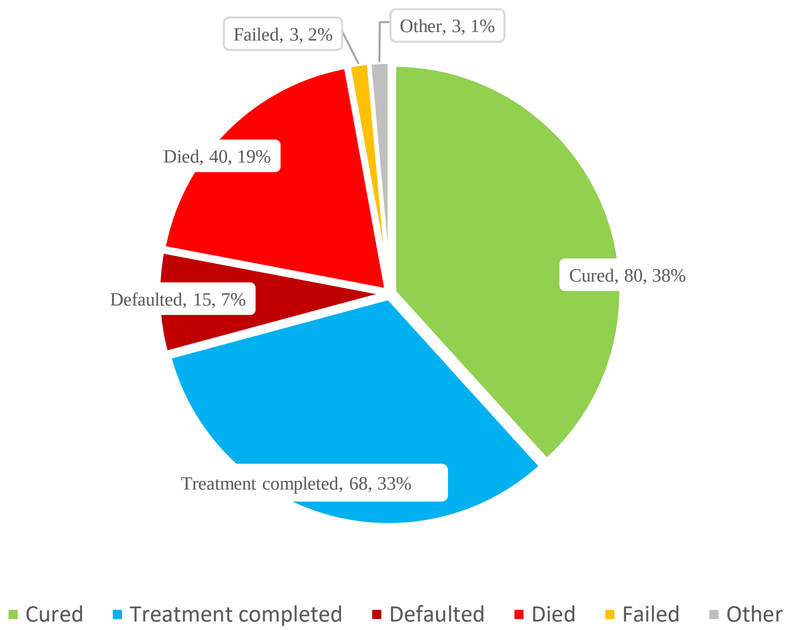


Figure 46: Treatment outcomes for MDR-TB patients, 2020 cohort

7 PHARMACEUTICAL SUPPLIES

In general, the availability of medicines is reflected by the Central Medical Stores (CMS) service level, which measures the CMS's capacity to fulfil the demands of health facilities. The service level at CMS was consistently low for the past few years. In the period under review, 60% service level was reported for all pharmaceutical and clinical supplies requests, as shown in Figure 47.

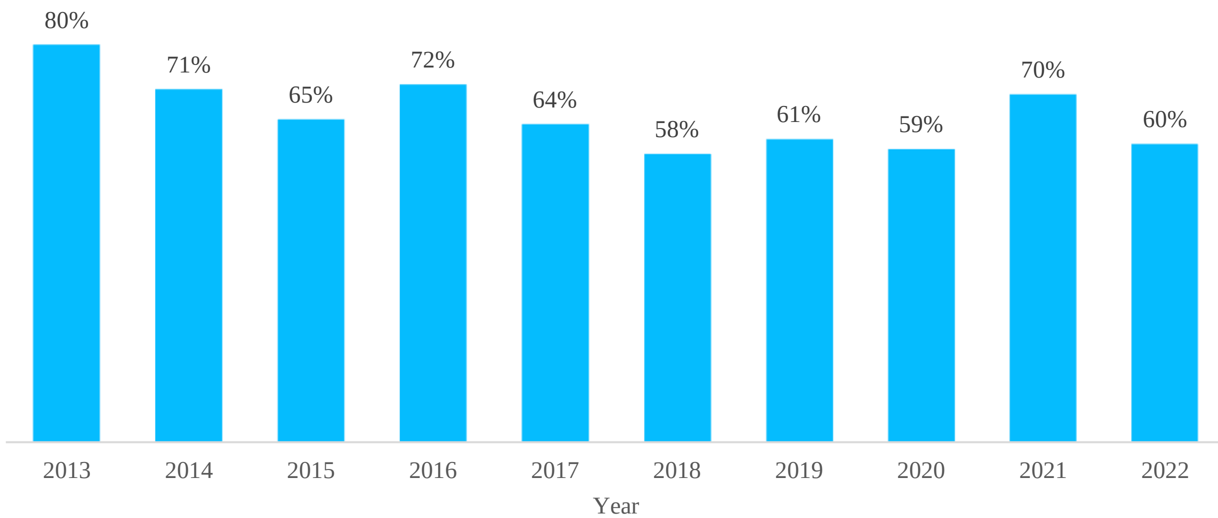


Figure 47: The Central Medical Stores service level, 2013-2022

During the period under review, the frequency of significant stock-outs was minimal. Several anti-TB and anti-Leprosy medicines were reported to be outs of stock at some health facilities. The total value of anti-TB and Leprosy pharmaceutical products issued by Central Medical Stores (CMS) in 2022 was 30,720,272 million Namibian Dollars.

8 COMMUNITY ENGAGEMENT ACTIVITIES BY THE NTLP

8.1 World TB Day commemoration

World TB Day, commemorated annually on March 24th, serves to raise public awareness about the severe health, social, and economic impacts of tuberculosis (TB) and to reinforce efforts to end the global TB epidemic. First celebrated in 1882 to mark Dr. Robert Koch's discovery of the TB bacillus, the 2022 commemoration marked the 140th anniversary of this milestone. While significant progress has been made in combating TB, the disease continues to claim around 1.7 million lives annually, highlighting the need for sustained efforts toward its elimination.

Namibia, as highlighted by the World Health Organization (WHO), remains one of the countries with the highest TB burden globally. According to the 2023 Global TB Report, the country is missing approximately 25% of its TB cases in 2022, ranking it among the highest countries affected by the disease. This situation calls for urgent and innovative approaches to address TB prevention, diagnosis, and treatment.

In alignment with the global theme, *"YES, We Can End TB,"* the Ministry of Health and Social Services (MoHSS), in partnership with government ministries, development partners, and civil society organizations, used World TB Day 2023 to remind world leaders of their commitments made at the 2018 United Nations High-Level Meeting (UNHLM) on TB. Efforts emphasized the need for renewed focus on communities, rights, gender, research, and improved treatment access for both children and adults, including those with drug-resistant TB.

The main national commemoration for 2023 was held on April 27th in Grootfontein District, Otjozondjupa Region. This region was chosen due to its notable challenges, including limited access to care, low treatment success rates, and high cases of drug-resistant TB. The event was attended by key stakeholders, including government representatives, development partners, community leaders, and members of the public, and featured speeches and activities aimed at mobilizing the community against TB.

The founder of TB Free Foundation of Namibia, **Mrs. Karin Husselmann** (left), receiving a cheque from **Dudee Precious Metal Tsumeb** (DPMT) in support of the TB Free Foundation

The Key objectives included creating TB awareness among political leaders, promoting health education, encouraging TB screening among high-risk populations, and providing information on available diagnosis and treatment services. Publicity for the event included media campaigns, distribution of informational materials, and community engagement activities. Additionally, the event saw significant partner contributions, including a donation of N$60,000 for e-bikes to aid community health workers and food packages for TB patients.

Through collaborative efforts, the commemoration highlighted the importance of multi-sectoral partnerships, sustained community engagement, and resource investment in achieving Namibia's TB elimination goals.

8.2 Community based TB care and overview of partner engagement

The implementation of community-based TB care (CBTBC) activities has contributed to the improvement of key indicators such as treatment success rate and has reversed adverse outcomes such as loss to follow-up and treatment failure over the years. CBTBC, operate in all 14 regions of Namibia. Advocacy, Communication and Social Mobilization (ACSM) activities are part of the CBTBC approach. The table below lists the partners and civil society organisations (CSOs) officially working with NTLP in 2022.

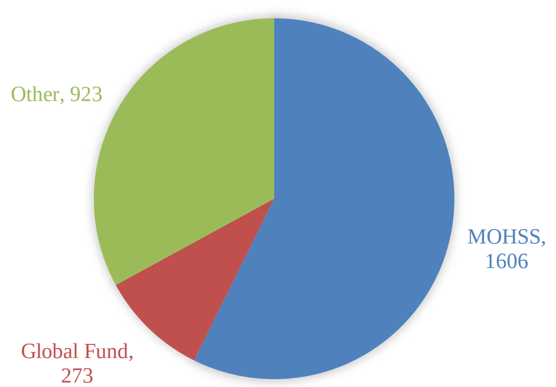
Table 8: List of partners and CSOs working with NTLP in 2022

Name of Partner	Areas of Support
WHO	All programme areas for both TB and Leprosy
Global Fund	All programme areas for both TB
CDC	Laboratory strengthening, TB/HIV, human resources, intermittent technical support, and renovation
USAID	All programme areas for TB
CoHeNa	Community based TB care and Global Fund Sub-recipient under MoHSS
Namibia Correctional Service	TB screening, awareness and treatment services for offenders
Namibian Police Force	TB screening for the inmates and awareness
Namibia Defence Forces	TB awareness and treatment services for staff members

In 2022, Community Health Workers (CHWs) played a significant role in delivering care and support to TB patients in all 14 regions. A total of 2,802 CHWs were actively involved in these efforts. Of these, 237 CHWs operated under the National Tuberculosis and Leprosy Programme (NTLP), covering 11 regions, while 90 CHWs functioned under CoHeNa in the Khomas, Hardap, and Omaheke regions. The Ministry of Health and Social Services (MoHSS) contributed the largest number of CHWs, underscoring its commitment to facilitating community engagement activities aimed at improving TB care and prevention.

In addition to supporting patients, CHWs were deeply involved in raising awareness and empowering communities through education. In 2022, they conducted an impressive 18,567 health education sessions, focusing on topics such as TB prevention, early detection, and treatment adherence. These sessions were vital in increasing community knowledge and fostering healthier behaviors, ultimately contributing to the fight against TB.

CHWs also organized 214 health committee meetings to foster collaboration and collective decision-making among community members and stakeholders. These meetings provided a platform to discuss health challenges, strategize interventions, and strengthen local health systems.



Health education sessions conducted; 2022	**18567**
Community/Village/Facility Health Committee meetings; 2022	214

Figure 48: Number of Community Health Care Workers, 2022

The figure below shows that 8,041 drug-susceptible TB (DS-TB) and 257 drug-resistant TB (DR-TB) patients were registered under CBTBC in 2022. Of these, 4.4% of DS-TB patients and 7.8% of DR-TB patients experienced treatment interruptions or were lost to follow-up. However, a significant proportion of these patients were traced and placed back on treatment, with 78.4% of DS-TB interrupters and 70% of DR-TB interrupters successfully re-engaged in their TB treatment during the same year.

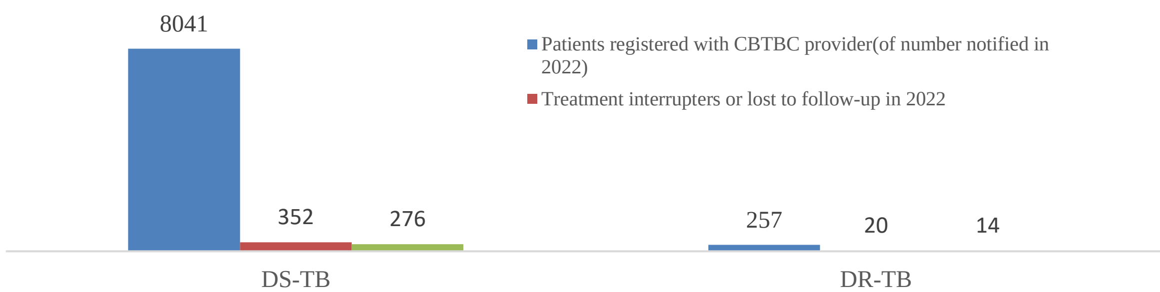


Figure 49: Community Based TB Care Services, 2022

8.3 Advanced Community Health Care Services Namibia (CoHeNa) Report

Advance Community Health Care Services Namibia (CoHeNa) is a locally registered none-profit organisation, providing CBTBC prevention and care in Hardap, Khomas and Omaheke regions. The organisation focuses on community health education, TB case finding and treatment support. Funding for these activities is primarily from the Global Fund. The table below shows selected statistics of CoHeNa for 2022.

The number of notified TB cases (all forms) contributed by CoHeNa increased by 31% in 2022, rising from 1,733 cases in 2021 to 2,270 cases in 2022. CoHeNa's total contribution to TB notifications for 2022 was 82%, reflecting a 4% increase compared to 2021. In the Omaheke and

Hardap regions, CoHeNa contributed 88%, while in Khomas, the contribution was 75%. Table below provides a detailed breakdown of CoHeNa's contribution to the diagnosis of new TB cases across these three regions.

Table 9: CoHeNa New TB Cases contribution: Hardap, Khomas and Omaheke regions, 2022

Region	CoHeNa New TB Cases Identified					MoHSS Registered New TB Cases					
	Jan -Mar 2022	Apr-May 2022	Jul-Sept 2022	Oct-Dec 2022	CoHeNa Total	Jan -Mar 2022	Apr-May 2022	Jul-Sept 2022	Oct-Dec 2022	MoHSS Total	*% CoHeNa Contr..*
Maheke	134	183	149	177	**643**	184	193	151	203	**731**	*88%*
Hardap	139	181	185	154	**659**	165	184	219	179	**747**	*88%*
Khomas	220	249	272	227	**968**	290	296	342	366	**1294**	*75%*
Total	**493**	**613**	**606**	**558**	**2270**	**639**	**673**	**712**	**748**	**2772**	***82%***

The table below presents CoHeNa's indicators and targets for 2022, along with the extent to which these targets were achieved. It provides a clear overview of performance outcomes, highlighting areas of success and identifying gaps that may require attention for future planning and improvement.

Table 10: CoHeNa indicators and targets as well as actual achievements

	Actual #	***% against target***
No. of notified TB cases (all forms) contributed by non-national TB programme providers	2270	140%
No. of Field Promoters trainings conducted on TB	3	300%
No. of TB, TB/HIV and Leprosy mentorship visits and onsite data verification of CSO	8	67%
No. of Programme Review Meetings conducted	6	150%
No. of TB suspects referred to health facilities for TB examination	12831	135%
No. of new TB pts (all forms) registered under CoHeNa community base DOT	2153	140%
No of new registered TB patients (all forms) who successfully completed treatment	1733	119%
Proportion of interrupters+ LTFU traced and restarted on treatment out of the total interrupters and LTFU reported	114	72%
Number of community sensitization sessions (outreach events) on TB conducted	8670	134%
Number of people reached with TB messages	133656	138%

8.4 TB in the mining sector

Namibia was among the ten countries to implement the TB prevention and control programme targeting miners, ex-miners, and their families. Key interventions during the initial phase included TB screening and active case finding, community strengthening, regional health management information systems, and the establishment of occupational health services centers.

Following the successful completion of the first phase, the second phase was launched, spanning three years. Its objectives encompassed TB care and prevention, strengthening health information systems and M&E, addressing legal barriers to accessing TB services, enhancing policy and governance frameworks, and strengthening community systems.

Currently, Namibia is part of the TB in the Mining Sector (TIMS) Phase III initiative, which has received funding from the Global Fund for 2021-2024. This phase supports 16 SADC countries, including Namibia, in sustaining efforts to combat TB in mining communities.

In 2021, the National Tuberculosis and Leprosy Programme (NTLP) conducted supervisory support visits and a mapping exercise to evaluate the implementation of TIMS Phase II activities in regions supported by the programme. This exercise aimed to establish a robust database for future TB management initiatives and to provide an accurate representation of the operational mining facilities in the country.

The figure below shows that in 2022, a total of 24 out of 28 operational mining facilities were referring presumptive TB patients, reflecting an increase from the 2021 total of 20 out of 22. Additionally, in 2022, 1,023 individuals were screened for TB (excluding new mine workers), compared to 201 in 2021. Only seven of the screened patients were diagnosed with TB in 2022, significantly fewer than the 39 cases reported in 2021. This improvement highlights progress in managing TB among mining communities.

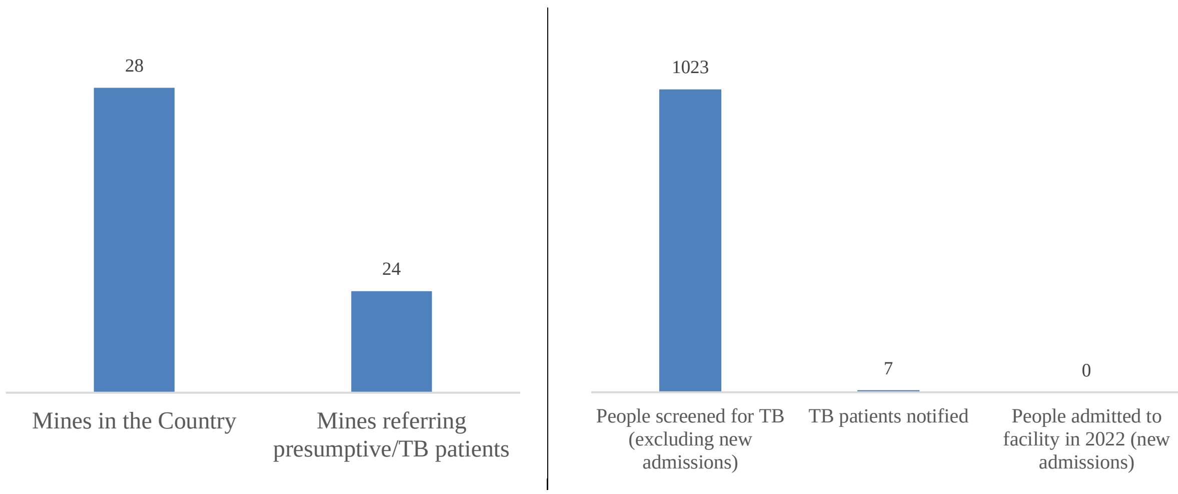


Figure 50: Number of mines referring and screening presumptive TB patients, 2022

8.5 TB in the Correctional facilities and Police holding cells

Namibia has a policy to screen all inmates for TB, HIV, and other health conditions upon admission. Additionally, routine TB screenings are conducted biannually for everyone in prison settings, including inmates, healthcare workers, and correctional services officers. To support TB management, correctional service facilities are equipped with isolation units for TB patients.

The figure below illustrates the TB cases notified in police holding cells and correctional facilities in 2022. A total of 5,561 inmates were screened in police holding cells, with 43 diagnosed with TB. In correctional facilities, 2,543 inmates were screened, resulting in 27 TB diagnoses. Across the country, 85 police holding cells and 13 correctional facilities actively refer presumptive TB patients for further evaluation and care.

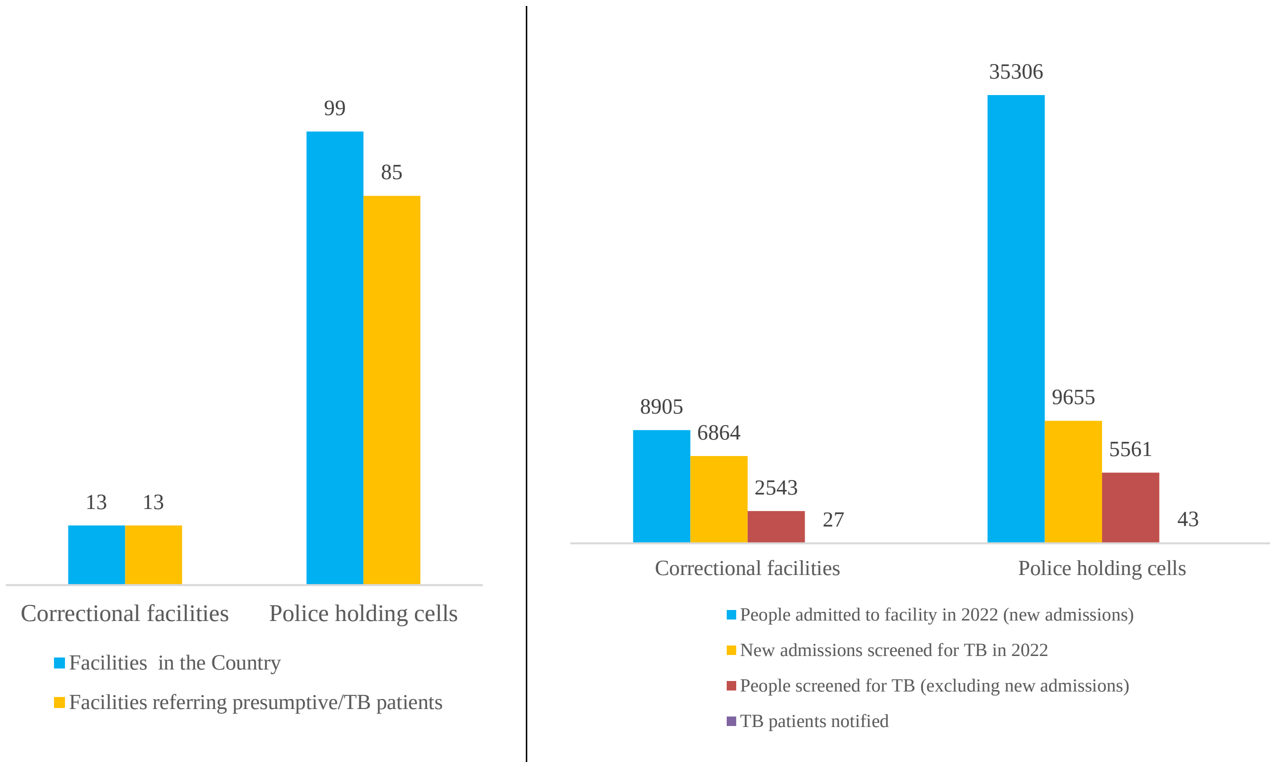


Figure 51: TB cases notified in correctional facilities and police holding cells, 2022

8.6 TB screening campaign in high-burden populations

According to the WHO report (2023), Namibia remains among the countries globally with the highest TB incidence rate and is listed among the 30 highest-burden countries for TB cases. WHO estimates suggest that approximately 25% of TB cases in Namibia were missed in 2022. These missed cases could result from individuals not being diagnosed, not being notified, or facing delays in starting treatment due to various challenges. The missed TB cases are likely to arise from communities in high-burden areas and marginalized groups. This situation is further compounded by factors such as limited TB screening, poor awareness of TB prevention and treatment, inadequate contact investigations, and challenges in diagnostic capacities.

The WHO emphasizes that missed TB cases significantly contribute to the continued high prevalence and incidence of TB, particularly in low- and middle-income countries. In response to this challenge, Namibia undertook targeted TB mass screening campaigns in 2022, focusing on selected high-burden areas and marginalized communities to close this gap.

In 2022, mass screening campaigns were conducted in the Otjozondjupa Region (Grootfontein District, Tsumkwe Constituency), Omaheke Region, and Hardap Region. A total of 16,913 individuals were screened for TB. Of these, 223 were newly diagnosed with TB, and 165 were identified as existing TB cases. These mass screening efforts highlight the importance of proactive measures in addressing the TB burden and ensuring early diagnosis and treatment, particularly among vulnerable populations.

The figure below shows the data from Tsumkwe Constituency, where 1,900 individuals were screened, and sputum was tested for 341, with 1,845 chest X-rays performed. Among those tested, 42 were diagnosed with TB, and 41 started treatment. Five cases (12% of those testing positive) had rifampicin resistance, and 31 were identified as existing TB cases. The TB prevalence rate in this community was 3,842 per 100,000 (95% CI: 3,023–4,806).

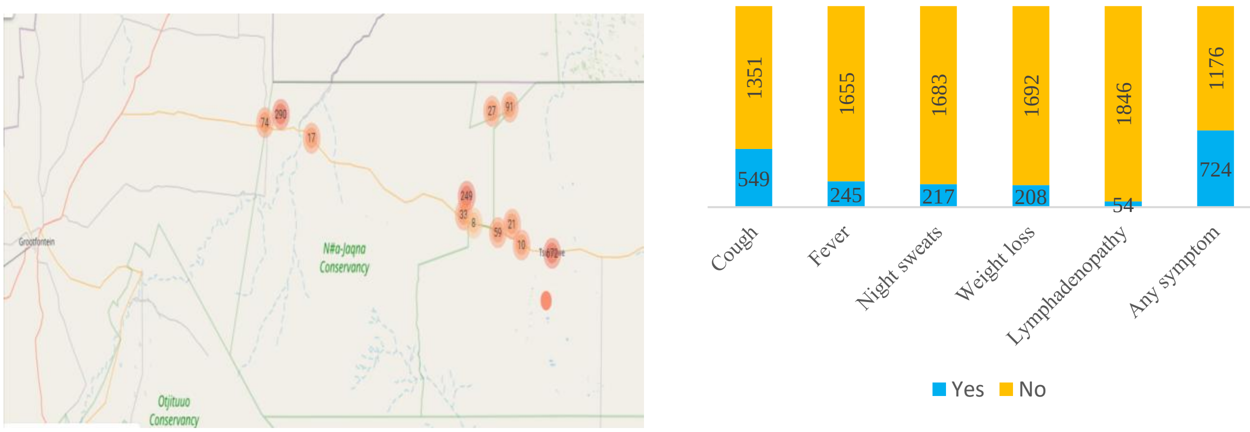


Figure 52: TB active case-finding activities in Tsumkwe, 2022

The figure below shows data from the Omaheke Region, where 2,261 individuals were screened, and sputum was tested for 641, with 643 chest X-rays performed. Among those tested, 40 were diagnosed with TB, and all started treatment. None of the TB-positive cases showed rifampicin resistance, and 25 were identified as existing TB cases. The TB prevalence rate in this community was 2,874 per 100,000 (95% CI: 2,223–3,650).

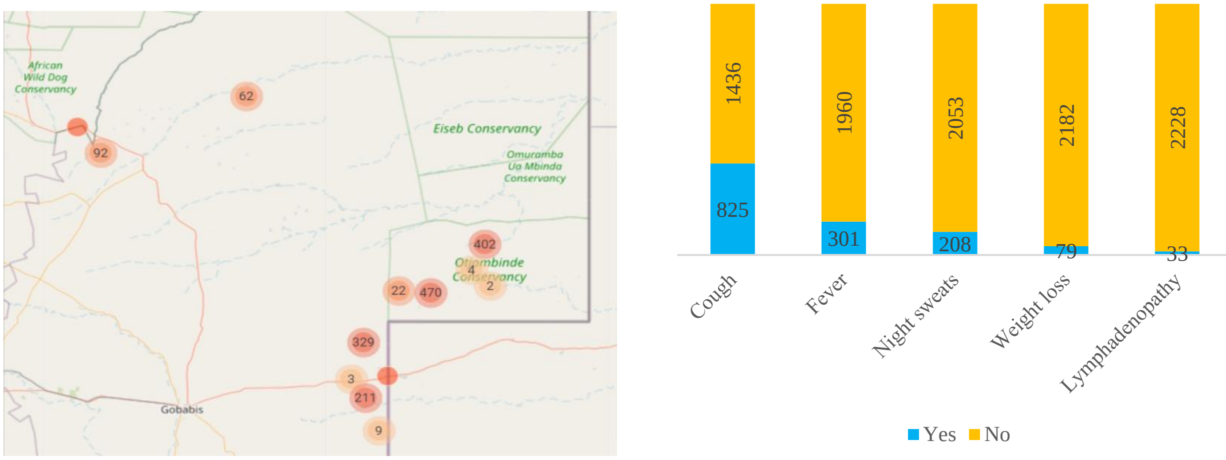


Figure 53: TB active case-finding activities in Omaheke region, 2022

In the Hardap Region, the figure below shows that 3,788 individuals were screened, and sputum was tested for 875, with 3,771 chest X-rays performed. Among those tested, 52 were diagnosed with TB, and all started treatment. None of the TB-positive cases showed rifampicin resistance, and 36 were identified as existing TB cases. The TB prevalence rate in this community was 2,323 per 100,000 (95% CI: 1,867–2,854).

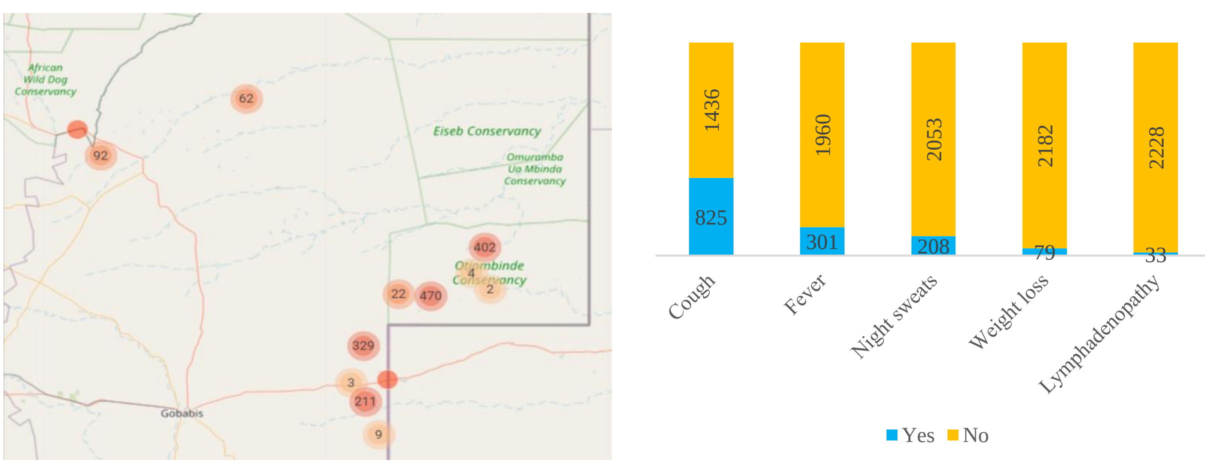


Figure 54: TB active case-finding activities in Hardap region, 2022

9 SOCIAL SUPPORT AND REHABILITATION SERVICES

9.1 Social support

TB treatment often extends beyond medical care, as psychological, social, and economic challenges significantly impact patients' ability to complete treatment. Providing social support is essential to address these barriers, reduce personal and environmental challenges, and improve treatment outcomes. Integrating social support services into TB management aligns with human rights, ethical standards, and financial risk protection.

In line with this approach, the NTLP incorporated Social Protection as a thematic area in the Medium-Term Plan III (MTP-III) and the National TB Treatment Guidelines. These frameworks guide the NTLP in developing and administering social support systems for TB patients while mobilizing resources to sustain these interventions.

The NTLP facilitates access to various social support packages, including disability grants, the orphans and vulnerable children’s fund, nutritional support, and income-generating activities. Additionally, the NTLP tracks two socio-economic support indicators: the number of TB patients with documented socio-economic assessments and the number of patients referred for economic support or grants.

The graph below shows that 96% of new and relapse TB patients underwent socio-economic assessments in 2022. However, variations were noted across regions. Omaheke (83%), Erongo (90%), and Khomas (93%) recorded the lowest percentages of patients with documented assessments. In contrast, seven regions, including Kavango, Oshana, Hardap, Zambezi, Oshikoto, and //Kharas, achieved 100% documentation for new and relapse TB patients.

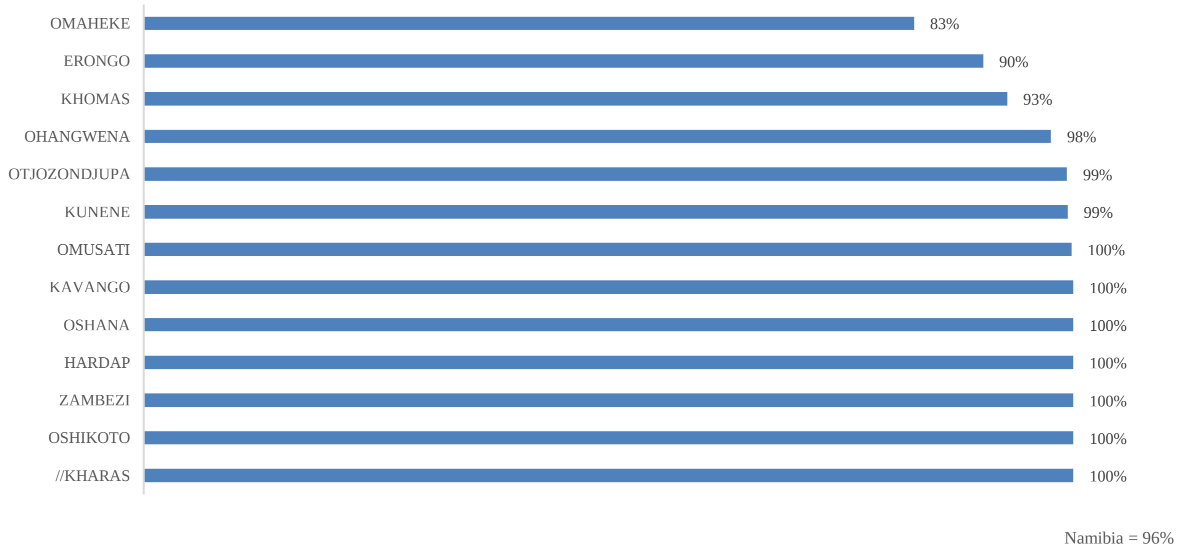


Figure 55: Percentage of new and relapse TB patients with documented socio-economic assessment, 2022

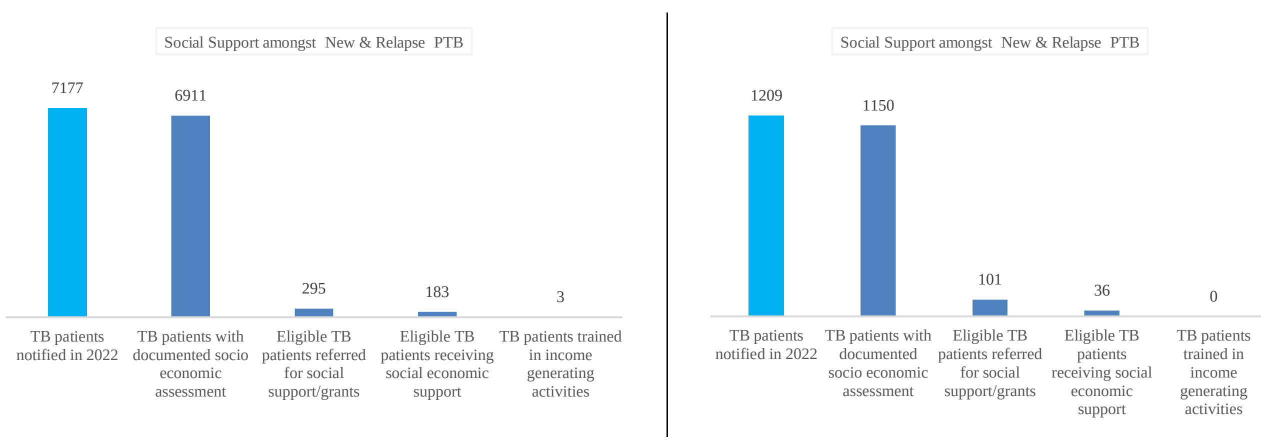


Figure 56: Social support among new and relapse TB patients, 2022

The graph below illustrates the proportion of DR-TB patients assessed for socio-economic support in 2022. Overall, 96% of notified DR-TB patients underwent socio-economic assessments. While most regions achieved 100% coverage, notable exceptions included Omaheke (73%), Zambezi (90%), Khomas (91%), Oshikoto (94%), Hardap (94%), and Ohangwena (95%). These variations highlight areas requiring targeted efforts to ensure comprehensive socio-economic assessments for all DR-TB patients across the country.

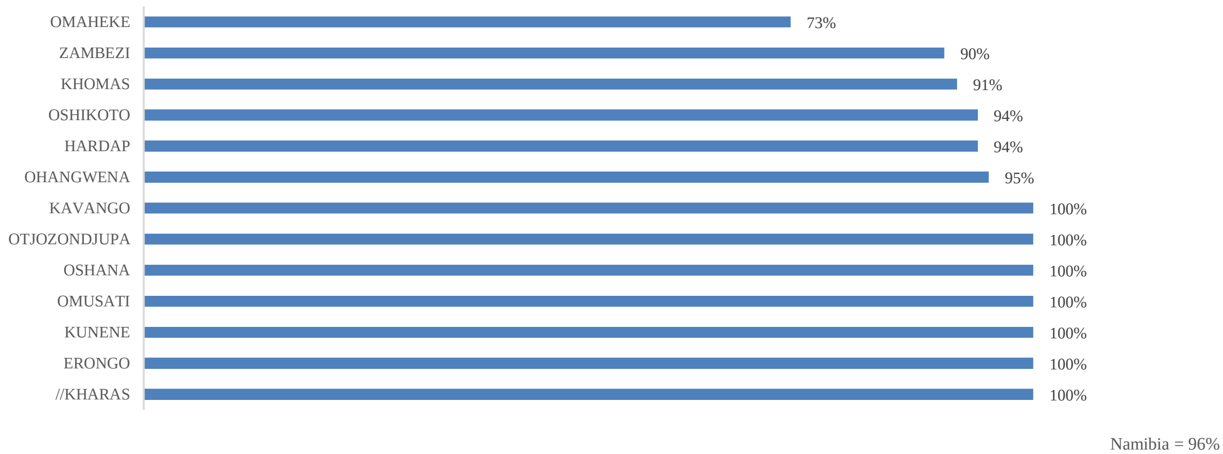


Figure 57: Percentage of DR-TB patients with documented socio-economic assessment, 2022

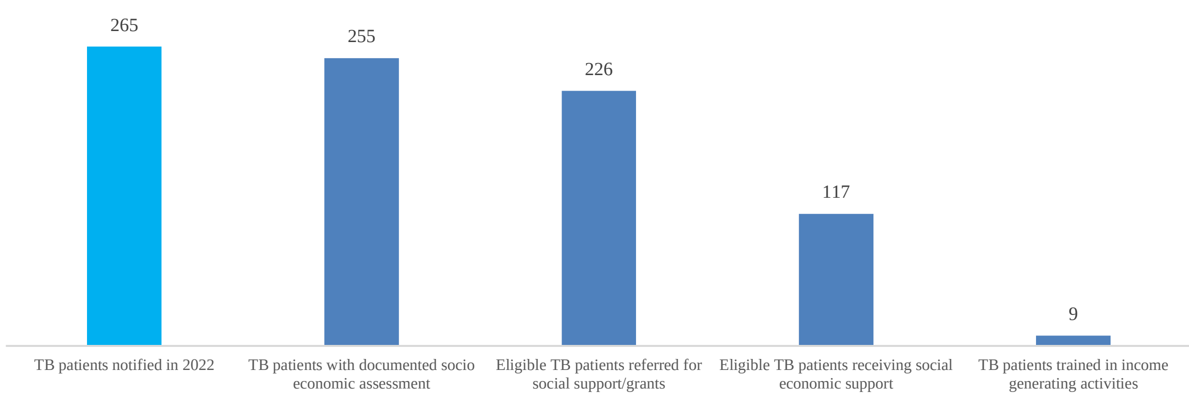


Figure 58: Social support among DR-TB patients, 2022

The figure below presents the proportion of new and relapse TB patients who received socio-economic support following referral in 2022. Erongo and Zambezi regions achieved full coverage, with 100% of referred new and relapse patients receiving socio-economic support. In contrast, none of the referred patients from //Kharas, Khomas, and Ohangwena regions received such support. Additionally, Oshana region did not refer any patients for socio-economic support during the year. These variations highlight the need for strengthened referral mechanisms and resource allocation to ensure equitable access to socio-economic support services for TB patients.

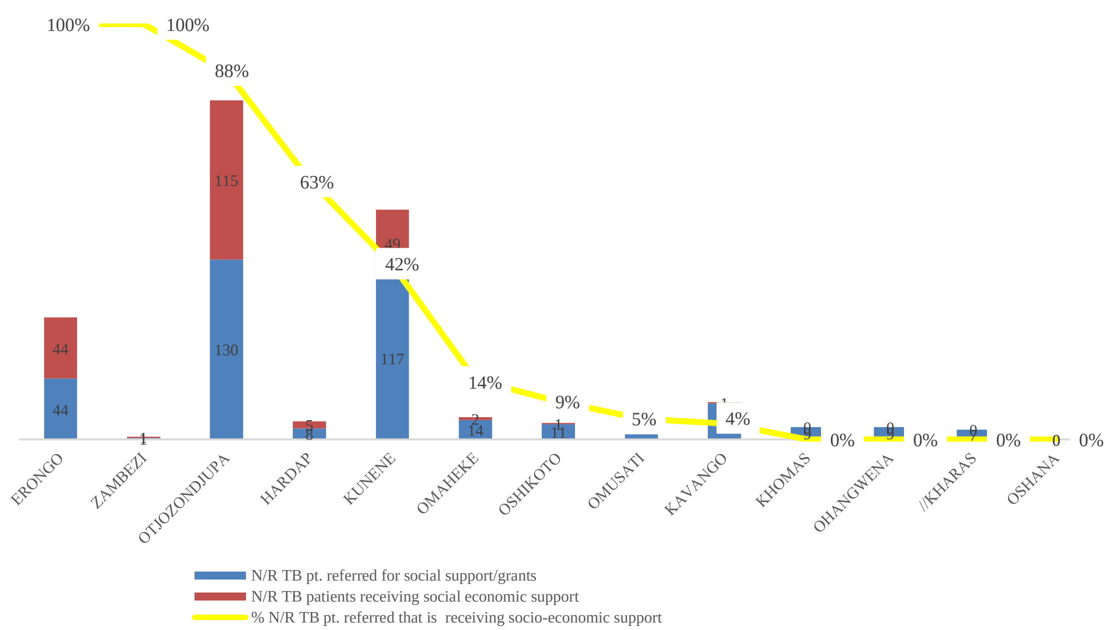


Figure 59: Percentage of new and relapse TB patients receiving socio-economic support, 2022

The figure below shows the proportion of DR-TB patients who received socio-economic support after referral in 2022. Otjozondjupa region achieved over 90% coverage for referred DR-TB patients receiving socio-economic support. In contrast, none of the referred DR-TB patients in

Ohangwena region received such support. The remaining regions recorded less than 75% coverage, highlighting gaps in the provision of socio-economic support to referred DR-TB patients.

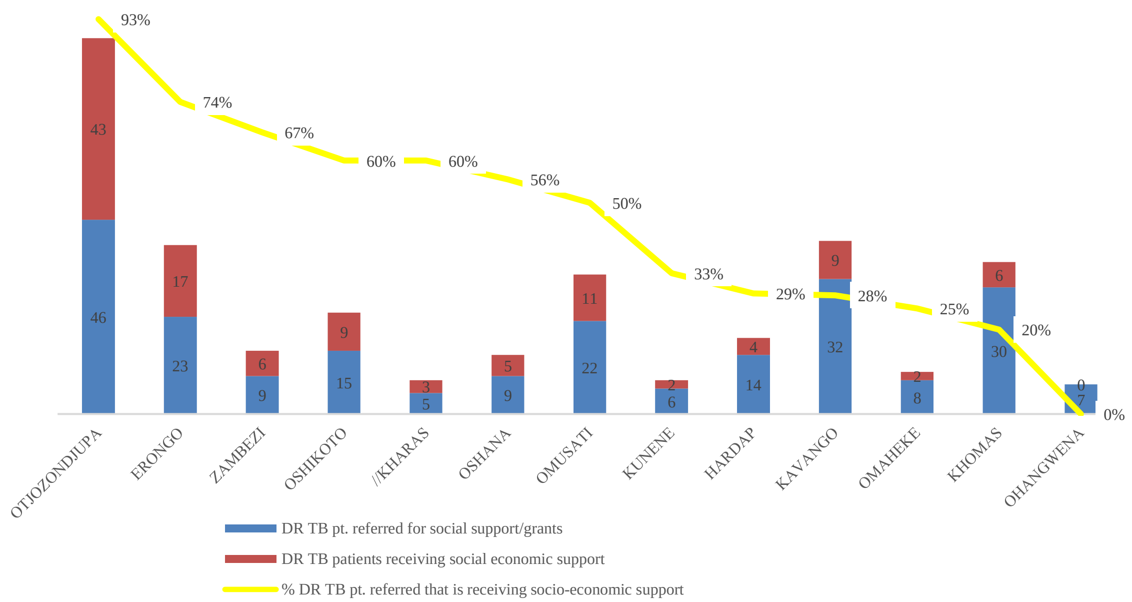


Figure 60: Percentage of DR-TB patients receiving socio-economic support, 2022

9.2 Rehabilitation

Rehabilitation involves a set of interventions aimed at optimizing functioning and reducing disabilities for individuals with health conditions. For some TB and leprosy patients, rehabilitation can improve functional difficulties and significantly improve their quality of life. This care is typically provided by professionals such as occupational therapists, physiotherapists, and medical rehabilitation workers. However, the availability of these professionals is limited, and advocacy by regional and district staff remains critical to addressing this gap.

To improve patient care, the NTLP introduced screening for new and relapse TB patients, including both drug-susceptible (DS) and drug-resistant (DR-TB) cases, prioritizing them for disability assessment. This screening process evaluates pre-treatment disabilities, including mobility and body movement impairments, and identifies any functional impairments related to the disease process. Additionally, screening for hearing loss has been incorporated as a core activity.

The graphs below illustrate the number of new and relapse pulmonary TB (PTB) and extrapulmonary TB (EPTB) patients assessed for physical and functional disabilities, including hearing loss, in 2022. Notably, all three new and relapse TB patients with significant hearing loss (moderate to severe) were pulmonary TB cases.

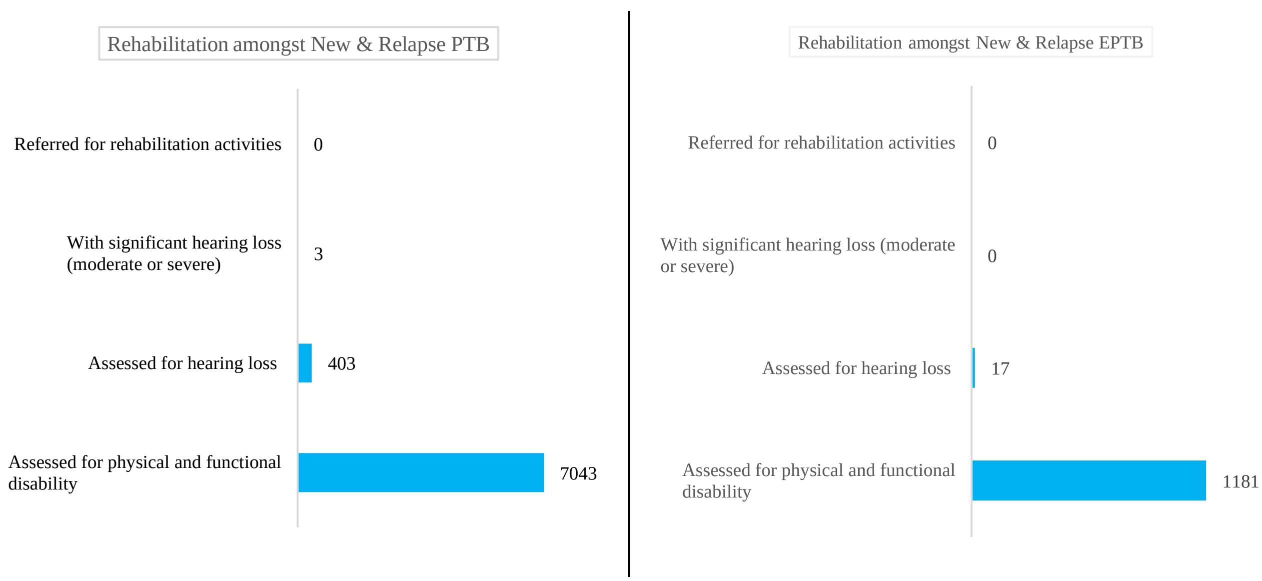


Figure 61: Rehabilitation among New and Relapse PTB and EPTB patients, 2022

The graph below highlights the number of DR-TB patients assessed for physical and functional disabilities, including hearing loss, in 2022. Out of 265 DR-TB patients, 259 underwent assessments for physical and functional impairments, with 90 cases also screened for hearing loss. Among these, one patient was identified with significant hearing loss (moderate to severe). Additionally, 12 DR-TB patients were referred for rehabilitation services.

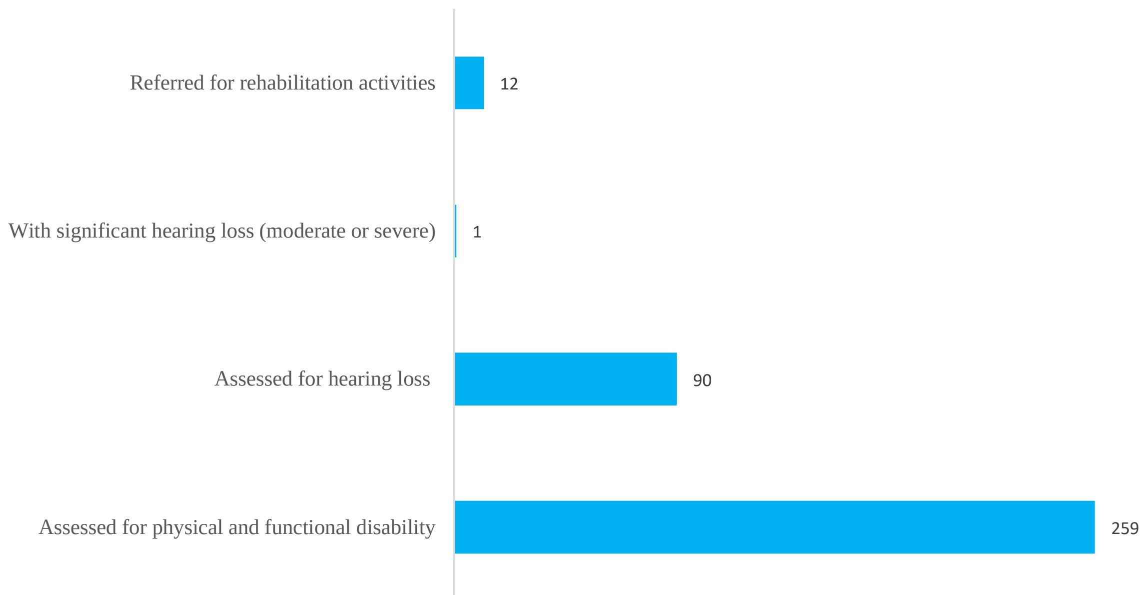


Figure 62: Rehabilitation among Drug Resistant TB patients, 2022

10 CAPACITY BUILDING AND SYSTEM STRENGTHENING

Capacity building for healthcare workers is a critical component of improving service delivery for TB control. To support this goal, budgetary allocations are made to finance training programs for healthcare workers (HCWs). These training initiatives are further reinforced through annual supervision and mentorship visits, ensuring that skills are applied effectively in the field.

In 2022, a total of 1,355 HCWs were trained on various TB-HIV-related guidelines and programmatic areas. Among those trained, 84 were doctors, 717 were nurses, 32 were pharmacists, 20 were rehabilitation staff (including occupational therapists, physiotherapists, and medical rehabilitation workers) or social workers, and 824 were categorized as other personnel, such as community health workers (CHWs) and volunteers.

Table 11: TB HIV related Health Trainings conducted in 2022

Training Conducted	Doctors	Nurses	Pharmacists	Rehabilitation (OT, Physio, MRW) & social workers	Other (CHW's volunteers, etc.)	DTLC (Nurses)
TB guidelines	49	246	19	12	104	25
Leprosy	9	28	3	1	10	6
TB Infection Control	3	95	0	2	160	9
Leadership	0	0	0	0	0	0
Operational Research (OR)	0	0	0	0	0	0
TB HIV related trainings	16	221	5	4	399	17
Other TB related trainings (specify)	7	49	5	1	151	21
Total	**84**	**639**	**32**	**20**	**824**	**78**

11 LEPROSY

11.1 Leprosy Elimination status

Leprosy is a chronic infectious disease caused by *Mycobacterium leprae*. It primarily affects the skin and peripheral nerves, presenting a wide range of clinical manifestations. The disease is classified as either paucibacillary or multibacillary, based on the bacterial load and the number of skin lesions. Leprosy develops slowly, with an incubation period of five to seven years. It typically presents with pale or reddish skin patches that show loss or decreased sensation. If left untreated, leprosy can lead to progressive and permanent disabilities. However, the disease is curable, and early treatment prevents disability.

Leprosy is considered a neglected tropical disease and predominantly occurs in warmer regions of the world. While Namibia reports a few leprosy cases annually, the country has achieved elimination (defined as fewer than one case per 10,000 population) and is now working toward complete eradication.

The figure below illustrates the trend in reported leprosy cases in Namibia from 2008 to 2022. The number of cases has shown fluctuations without a consistent trend. The highest number of cases (42) was reported in 2010, driven by a leprosy case-finding initiative. Another increase occurred in 2013, following a Training of Trainers (ToT) session in the Zambezi region conducted by a consultant from Angola. Similarly, from 2018 to 2020, there was a rise in cases due to awareness activities during the 2019 World Leprosy Day, which improved knowledge and practices among healthcare workers and communities. However, a decline in cases was noted during 2020-2021, likely influenced by the COVID-19 pandemic. In 2022, the number of reported cases rose again to 34.

The identification, diagnosis, and notification of leprosy cases have been hampered by several factors, including limited training for healthcare workers, the absence of technical guidelines for case management, and a lack of information, education, and communication (IEC) materials for awareness. Additional challenges include weaknesses in supervision, monitoring, and evaluation systems, the impact of the COVID-19 pandemic, and limited resources for program implementation.

Strengthening leprosy control through enhanced training, resource allocation, and awareness-raising efforts is critical to sustaining progress toward the complete eradication of leprosy in Namibia.

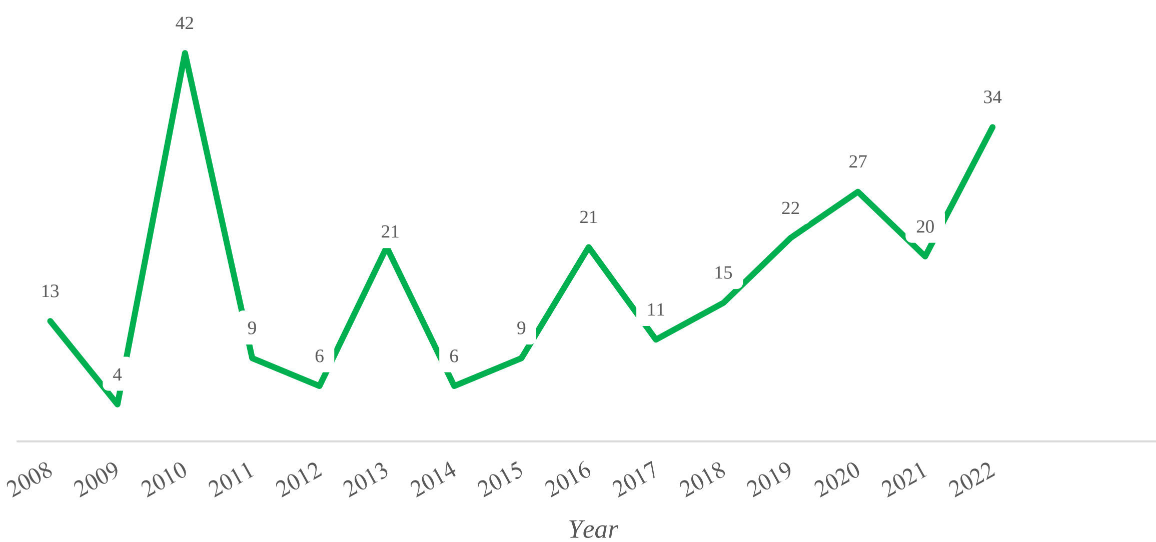


Figure 63: Trends in the number of notified cases of Leprosy, 2008- 2022

In 2022, Namibia reported a total of 34 new leprosy cases. Among these cases, 33 patients had their HIV status documented, reflecting an excellent level of integration between leprosy and HIV services. Additionally, all 34 patients had documented socio-economic assessment, highlighting a comprehensive approach to addressing the broader social and economic challenges faced by individuals affected by leprosy.

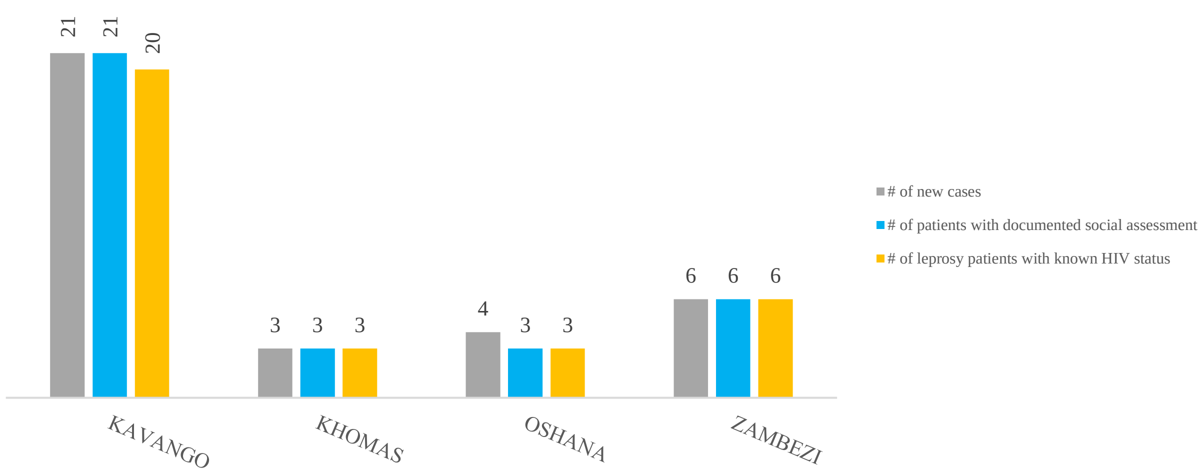


Figure 64: Regional Leprosy Case Management and Support, 2022

The table below shows that despite a 26% reduction in leprosy cases between 2020 to 2021, the number of cases increased by 70% in 2022, with Kavango region reporting the highest number of new leprosy cases, contributing 62% of the total cases in the country. The increase in reported cases is significant, as a total of 34 new leprosy cases were documented across the four regions.

Table 12: Notified New Leprosy cases by Region, 2022

REGION	MB	PB	CATEGORY
KAVANGO	20	1	NEW
KHOMAS	3	0	NEW
OSHANA	4	0	NEW
ZAMBEZI	6	0	NEW
NAMIBIA	33	1	NEW

In 2022, Namibia's overall treatment completion rate for leprosy cases (2021 treatment cohort) was 30%. The treatment completion rates varied significantly across regions, with some regions experiencing higher completion rates, while others faced challenges in ensuring patients completed their treatment.

The graph below shows that Kavango had 10 notified cases, with 4 completing treatment (40% completion rate). Khomas and Ohangwena regions each had 1 and 2 notified cases, respectively, but no treatments were completed, resulting in a 0% completion rate. Omusati achieved a 100% completion rate with 1 case successfully treated. Oshikoto had 1 case but no treatment completions (0%), while Zambezi reported 5 cases, with 1 completing treatment (20%).

These regional variations in treatment completion rates highlight the need for targeted interventions to improve treatment adherence and support in areas with lower completion rates.

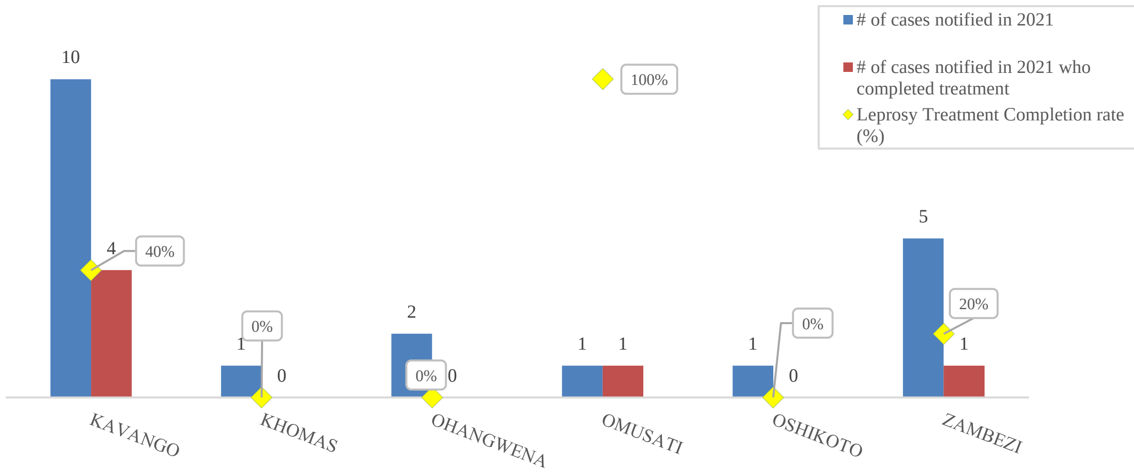


Figure 65: Leprosy Treatment Completion rate (2021 cohort), 30% TSR

11.2 Leprosy Medicines

In order to promote shorter and uniform treatment regimens, WHO recommends multidrug therapy (MDT) for both multi-bacillary (MB) and pauci-bacillary (PB) leprosy cases. NTLP continues to receive MDTs donations via the WHO at no cost.

12 Annexures

12.1 Annex A: Health Facilities providing TB services in Namibia

		ZAMBEZI	OTJOZONDJUPA	OSHIKOTO	OSHANA	OMUSATI	OMAHEKE	OHANGWENA	KUNENE	KHOMAS	KHARAS	KAVANGO	HARDAP	ERONGO
Hospital	Facilities	**1**	**4**	**3**	**1**	4	**1**	3	3	2	3	4	2	4
	Revised* TB-IC plans	1	4	3	1	3	1	3	2	2	3	4	2	1
	Outdoor waiting areas	1	1	2	1	0	0	3	0	0	0	1	0	0
Health centres	Facilities	3	2	3	5	6	1	2	3	2	3	7	3	2
	Revised TB-IC plans	3	2	3	5	5	1	2	2	2	3	7	3	0
	Outdoor waiting areas	3	2	3	3	0	0	2	3	0	2	4	2	0
Clinics	Facilities	26	19	23	13	40	13	27	26	10	13	45	12	18
	Revised TB-IC plans	14	16	23	8	28	13	27	17	10	13	45	12	1
	Outdoor waiting areas	13	12	21	10	19	9	27	21	7	8	43	9	7
DOT points	Facilities	6	9	2	4	4	0	1	5	7	1	3	0	4
	Revised TB-IC plans	0	7	1	4	2	0	1	1	7	1	3	0	0
	Outdoor waiting areas	6	1	2	4	3	0	1	0	7	1	3	0	0

12.2 Annex B: HIV/Diabetes summary for TB patients

	ERONGO	HARDAP	KAVANGO EAST	KAVANGO WEST	KHARAS	KHOMAS	KUNENE	OHANGWENA	OMAHEKE	OMUSATI	OSHANA	OSHIKOTO	OTJOZONDJUPA	ZAMBEZI
Total # of New and relapse	888	733	480	208	556	1266	329	707	730	514	466	507	545	417
N/R Patients with known HIV Status	880	725	479	208	546	1244	325	706	727	513	460	504	584	417
N/R HIV Positive patients	213	203	152	43	205	402	130	196	145	150	176	177	133	184
N/R HIV positive patients on ART	214	202	151	43	204	389	130	195	144	150	176	177	131	184
N/R HIV positive patients on CPT	215	203	151	43	205	399	130	194	144	149	176	173	130	184
N/R TB patients tested for diabetes	570	727	333	No data	503	550	327	638	426	513	420	404	584	254
N/R # patients test positive for diabetes	3	3	3	No data	0	3	1	4	0	2	7	5	1	0
# of DR-TB patients notified	26	16	32	No data	9	35	7	20	11	22	15	16	46	10
# of DR-TB patients with known HIV status	26	15	32	No data	9	34	7	20	11	22	15	15	46	9
# of DR-TB patients who are HIV positive	6	6	10	No data	4	18	3	7	2	4	8	5	8	3
# of DR-TB patients who are on ART	5	6	9	No data	4	18	3	7	2	4	8	5	8	3

12.3 Annex C: Number of TB patient with Xpert MTB/RIF test results

Region	Total New & relapse	Total All Forms	Number of presumptive TB cases in laboratory registers				Number of New patients in TB treatment Register			
			GxP +ve	GxP –ve	No GxP results	Total	GxP +ve	GxP –ve	No GxP results	Total
ERONGO	888	908	570	3473	719	4762	457	175	94	726
HARDAP	733	742	599	3130	1161	4890	439	61	39	539
KAVANGO	688	701	371	3015	1315	4701	334	91	214	639
KHARAS	556	571	421	2294	575	3290	350	60	19	429
KHOMAS	1266	1301	857	2420	150	3427	646	138	267	1051
KUNENE	329	331	232	2297	1	2530	199	70	23	292
OHANGWENA	707	737	425	3294	2137	5856	504	72	47	623
OMAHEKE	730	742	459	2239	2426	5124	433	117	31	581
OMUSATI	514	536	346	2145	453	2944	278	55	86	419
OSHANA	466	487	187	1973	1135	3295	198	96	105	399
OSHIKOTO	507	525	352	4139	861	5352	270	73	74	417
OTJOZONDJUPA	585	595	490	5009	174	5673	372	106	24	502
ZAMBEZI	417	428	195	1403	55	1653	149	108	96	353
TOTAL	**8386**	**8604**	**5504**	**36831**	**11162**	**53497**	**4629**	**1222**	**1119**	**6970**

12.4 Annex D: TB and Leprosy Medicine Expenditure 2021-22

Description	Pack Size	Invoice QTY	Value N$	Category	Category
RIFAMPICIN 150+PYRAZINAMID 400 ISONIAZID75+ETHAMBUTOL 275MG	672	2,538	2,896,543.26	1ST Line TB Med	Drug -susceptible TB
RIFAMPICIN 150+ISONIAZID 75+ ETHAMBUTOL 275MG TABS	672	3,215	3,044,839.39	1ST Line TB Med	Drug -susceptible TB
RIFAMPICIN 75MG+ISONIAZID 50MG TABS (DISPERSABLE)	84	1,776	160,497.12	1ST Line TB Med	Drug -susceptible TB
RIFAMPICIN 75MG+ISONIAZID 50MG PYRAZINAMIDE 150MG TABS (DISPE	84	1,703	236,677.93	1ST Line TB Med	Drug -susceptible TB
AMIKACIN500MG/2ML INJECTION	10	390	32,623.50	2nd Line TB Med	Drug - resistant TB
AMIKACIN 250MG/ML INJ 2ML	10	105	18,741.45	2nd Line TB Med.	Drug - resistant TB
MEROPENEM 1G INJ	1	21,518	2,274,022.24	2nd Line TB Med.	Drug - resistant TB
MEROPENEM 500MG INJ	1	7,389	358,735.95	2nd Line TB Med.	Drug - resistant TB
BEDAQUILINE 100MG TABS (Sirturo)	188	310	1,824,926.60	2nd Line TB Med.	Drug - resistant TB
CLOFAZIMINE 100MG TABS	100	934	808,143.50	2nd Line TB Med.	Drug - resistant TB
DELAMANID 50MG TABS	48	327	2,114,208.69	2nd Line TB Med.	Drug - resistant TB
DELAMANID 50MG TABS	672	26	541.32	2nd Line TB Med.	Drug - resistant TB
ETHAMBUTOL 100MG TABS	100	1,979	793,282.15	2nd Line TB Med.	Drug - resistant TB
ETHAMBUTOL HCL 400MG TABS	672	198	150,232.96	2nd Line TB Med.	Drug - resistant TB
ETHIONAMIDE 250MG TABS	100	6	693.00	2nd Line TB Med.	Drug - resistant TB
ETHIONAMIDE 250MG TABS	250	465	250,700.10	2nd Line TB Med.	Drug - resistant TB
LINEZOLID 600MG TABS	100	390	468,756.60	2nd Line TB Med.	Drug - resistant TB
PYRAZINAMIDE 400MG TABS	672	264	45,268.08	2nd Line TB Med.	Drug - resistant TB
RIFAMPICIN 150MG CAPS	100	621	114,065.28	2nd Line TB Med.	Drug - resistant TB
RIFAMPICIN 300MG FILM COATED TAB	100	57	14,867.31	2nd Line TB Med.	Drug - resistant TB
RIFAMPICIN 450MG CAPS	100	444	221,129.76	2nd Line TB Med.	Drug - resistant TB
CYCLOSERINE 250MG TABS	100	1,305	880,875.00	2nd Line TB Med.	Drug - resistant TB
PARA AMINOSALICYLIC ACID (PAS) GRANULES 4G SACHET	30	6	7,471.68	2nd Line TB Med.	Drug - resistant TB
PARA AMINOSALICYLIC ACID (PAS) GRANULES 4G SACHET	25	141	202,061.46	2nd Line TB Med.	Drug - resistant TB
MOXIFLOXACIN 400MG TABS	100	802	215,609.78	2nd Line TB Med.	Drug - resistant TB
LEVOFLOXACIN 250MG TABS	100	1,151	37,361.46	2nd Line TB Med.	Drug - resistant TB
PRETOMANID 200MG FILM UNCOATED TABS	26	4	7,520.00	2nd Line TB Med.	Drug - resistant TB
STREPTOMYCIN SULPHATE 1GM PFI	100	21	16,461.27	1ST Line TB Med	Drug -susceptible TB
RIFAMPICIN 600MG DAPSONE 100MG	186	1	5.22	MDR-Leprosy	MDR-Leprosy
RIFAMPICIN 600MG DAPSONE 100MG	372	16	19.60	MDR-Leprosy	MDR-Leprosy
RIFAMPICIN 450MG DAPSONE 50MG	186	1	0.84	MDR-Leprosy	MDR-Leprosy
RIFAMPICIN 450MG DAPSONE 50MG	372	4	4.92	MDR-Leprosy	MDR-Leprosy
ISONIAZID (INH) 100MG TABS	1000	228	48,384.04	TB-IPT	TB-IPT
ISONIAZID (INH) 300MG TABS	672	2,775	596,625.00	TB-IPT	TB-IPT
ISONIAZID (INH) 100MG TABS	100	1,590	258,216.00	TB-IPT	TB-IPT
RIFAPENTINE 300MG + ISONIAZID 300MG FILM COATED TAB	36	7,380	1,355,853.60	TB-IPT	TB-IPT
PYRIDOXINE HCL 25MG TABS	500	8,789	275,095.72	TB-IPT Ancillary	TB-IPT Ancillary
PYRIDOXINE HCL 25MG TABS	1000	3	189.12	TB-IPT Ancillary	TB-IPT Ancillary
PYRIDOXINE HCL 50MG TABS	1000	775	86,854.25	TB-IPT Ancillary	TB-IPT Ancillary
FACE MASK PARTICULATE RESPIRAT CONE-SHAPE N95 - 1860 REGULAR	120	519	2,978,608.47		
FACE MASK PARTICULATE RESPIRAT CONE-SHAPE N95 - 1860 SMALL	120	267	1,206,723.86		
FACE MASK PARTICULATE RESPIRAT OR CONE-SHAPE KN95	1	121,240	1,052,363.20		
			25,055,800.68		