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Strengthening TB Diagnostic Services during COVID-19 in eThekweni Primary Health Clinics

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Background

Tuberculosis (TB) remains a public health challenge in South Africa
Classified among WHO high TB burden countries

COVID-19 greatly impacted global health services by reducing access

TB programmes were disproportionately affected
In 2020, case notifications decreased by 18%
TB deaths increased for the first time since 2005

South Africa experienced drastic reductions in TB
detection and service delivery

The extent to which COVID-19 impacted TB diagnostic services at the primary healthcare level was not well understood.

Understanding the disruptions was important for identifying disruptions and informing strategies for maintaining essential TB services

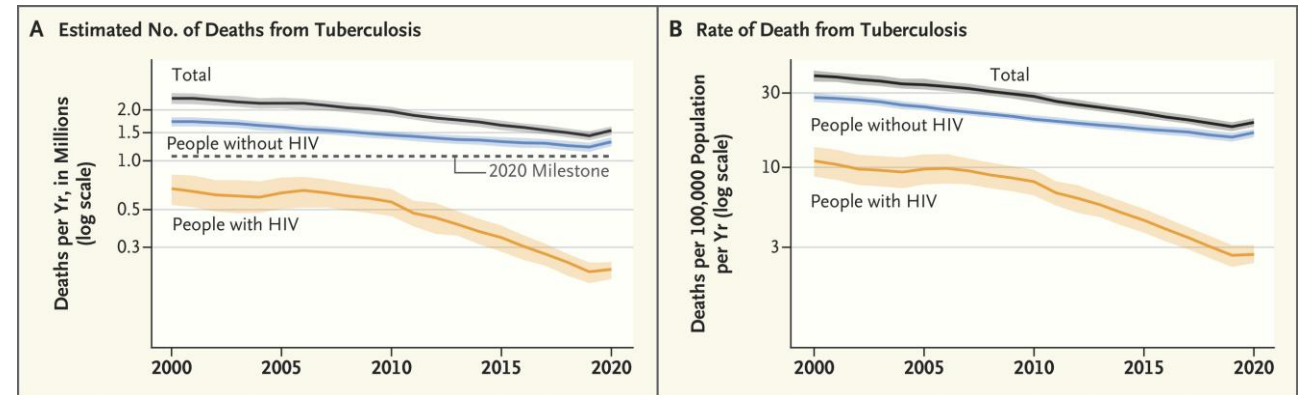


Figure 1: Trends in TB mortality from 200-2020 from the 2021 WHO Global TB report

Problem statement

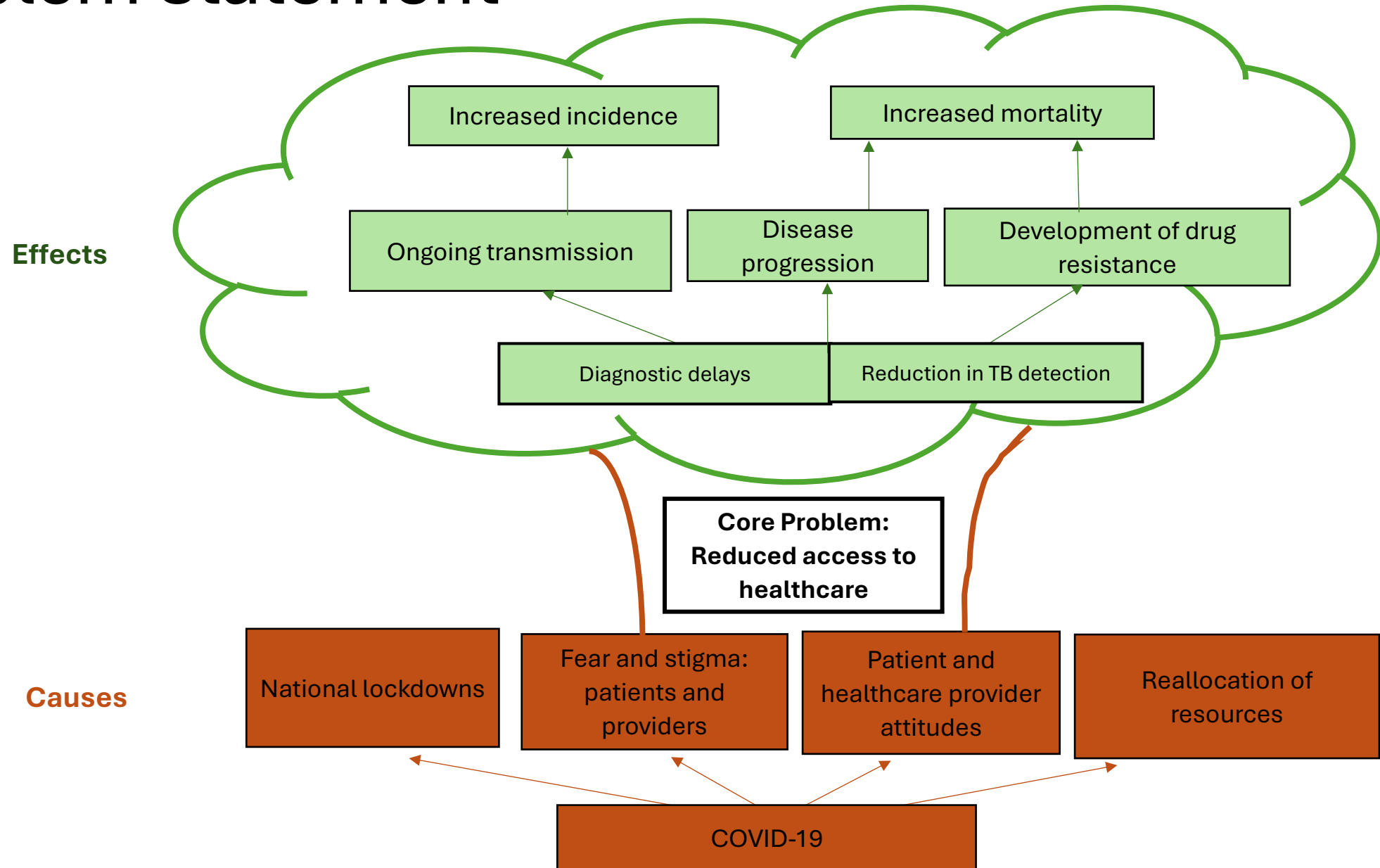


Figure 2: Problem analysis diagram depicting causes and effects of reduced access to healthcare due to COVID-19

Aims and objectives

Aim

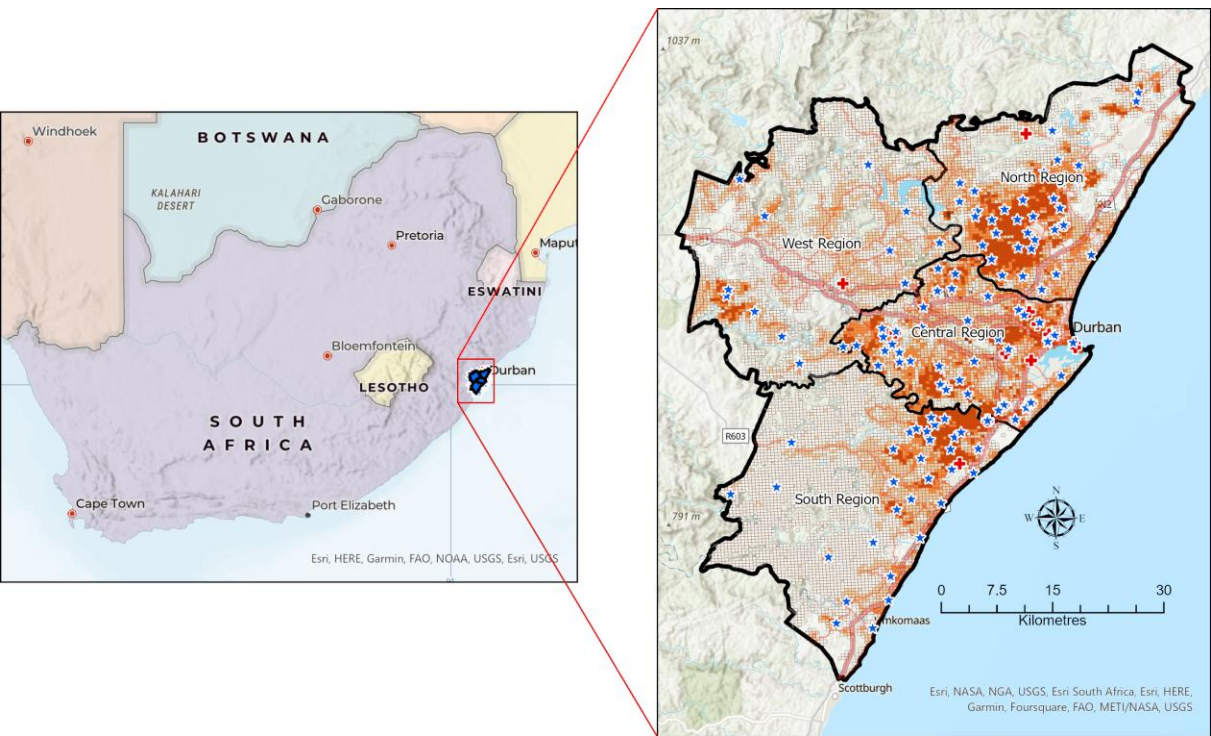
This study aimed to inform the development of approaches to strengthen TB diagnostic services during pandemics in high-burden primary healthcare settings, using the eThekweni district as a case study.

Objectives

- To map the geographic accessibility of TB diagnostics services using geospatial analysis
- To determine the effect of the COVID-19 pandemic on TB diagnostic services
- To investigate the challenges and enablers of TB diagnostics services during the COVID-19 pandemic
- To collaborate with local stakeholders in designing an approach for enhancing the current TB diagnostics services

Methods

Study setting : PHCs in eThekweni district



Study design: Sequential mixed methods study

Phase	Sample	Outcome/s	Analysis
1) Geospatial analysis	All clinics in eThekweni	Distance to PHCs	Dasymetric mapping technique- ArcGIS
2) Interrupted time series analysis	All clinics in eThekweni	- TB investigations - Confirmed cases	Segmented linear regression- STATA
3) Facility Audit	Selected clinics from four districts in eThekweni	Aspects of TB Dx services highlighted by national priorities	T-test Anova Pearson-pairwise Linear regression STATA
4) Nominal group technique	Eight TB stakeholders	Barriers and facilitators of TB dx services	Priority scoring & Thematic analysis



Results

Geospatial analysis

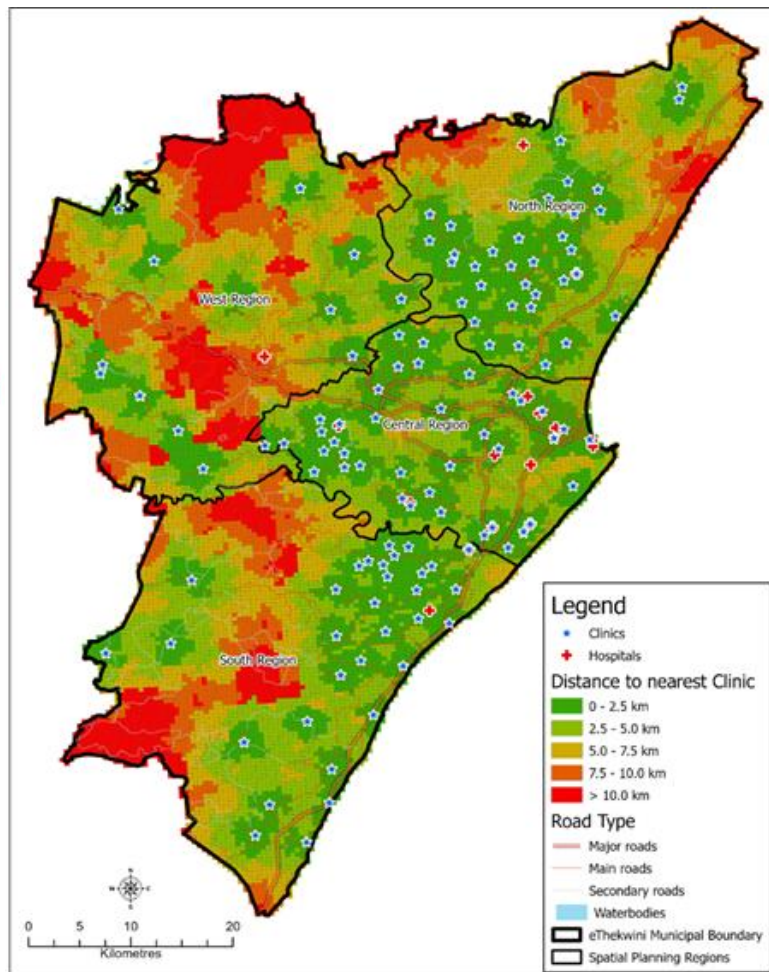


Figure 3: Travel Distance to TB Diagnostic Services Facilities in eThekweni District

- 92% of the population had good access to Dx services
- 4.7km was the approximate travel distance

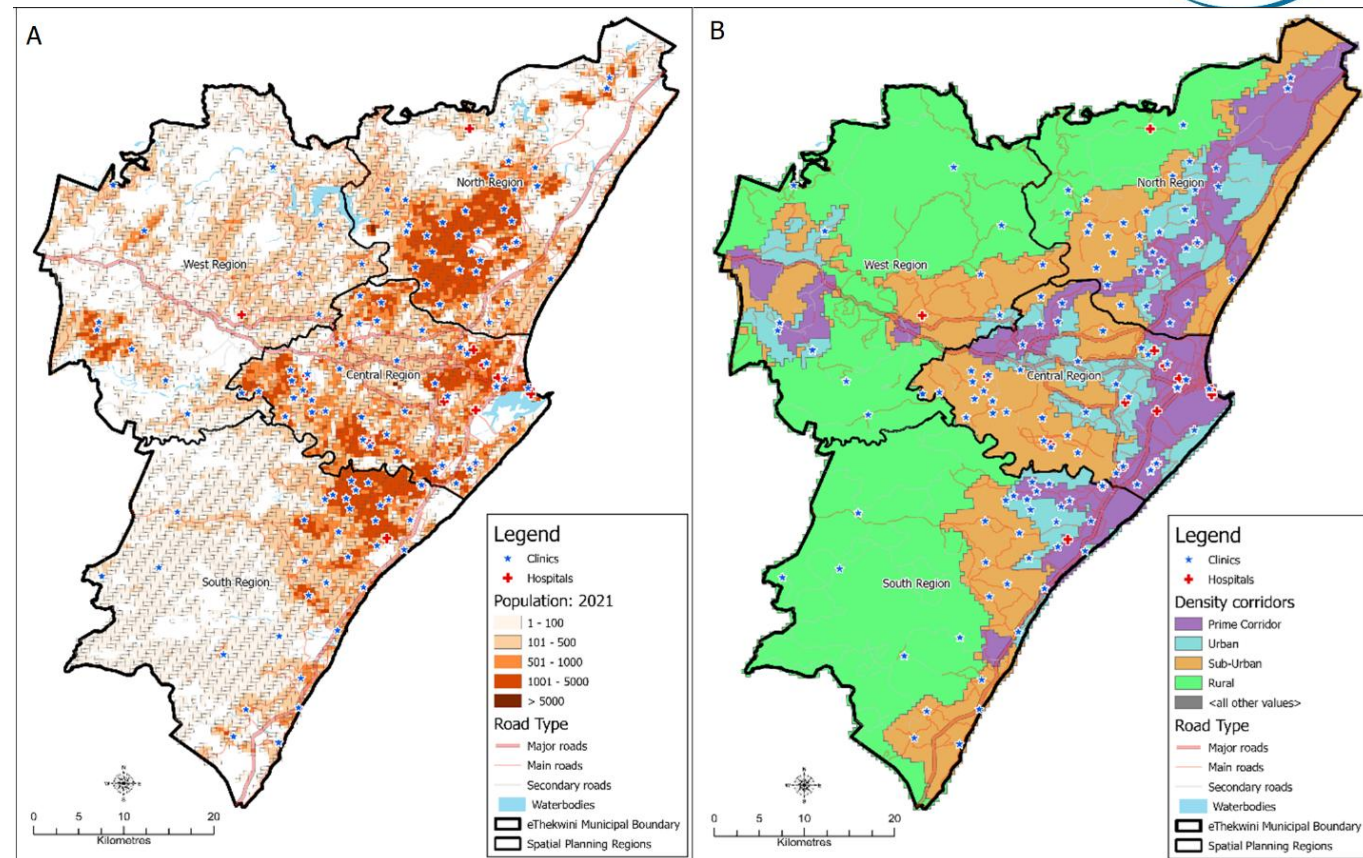


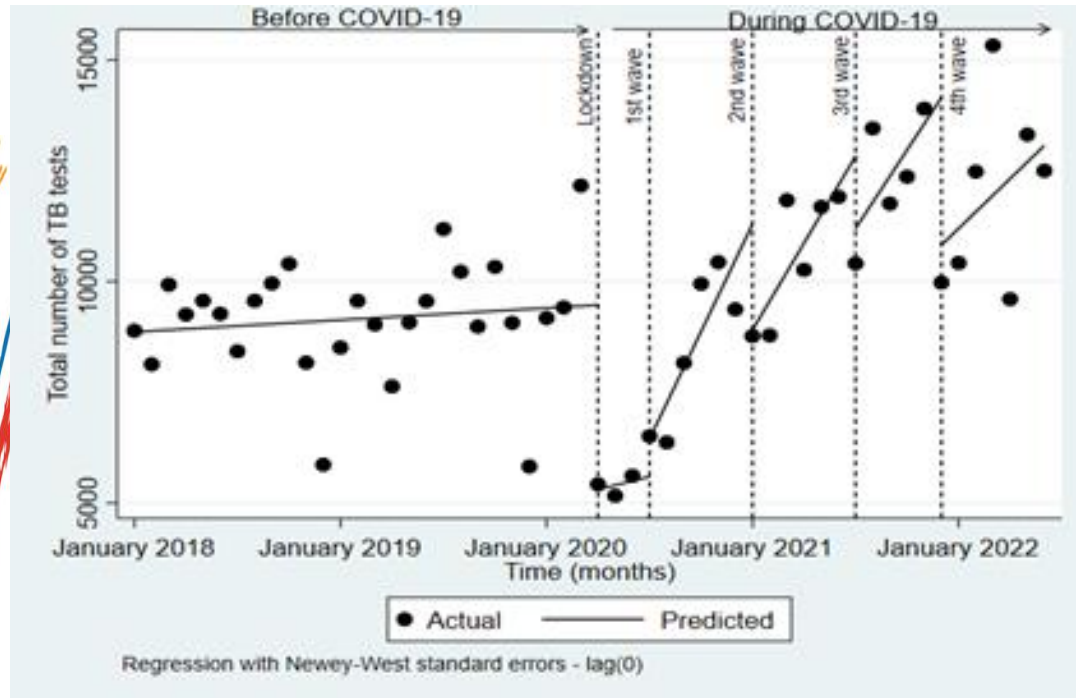
Figure 4: Population distribution and level of urbanization within the eThekweni district in 2021

- Highest accessibility was in the predominantly urban Central and North regions- Avg distances (2.6-4.5 km)
- Predominately rural South and West regions had moderate accessibility – Avg distances (5.3- 6.7 km)

Results

Interrupted time series analysis

A) Total number of TB investigations



B) Total number of confirmed TB cases

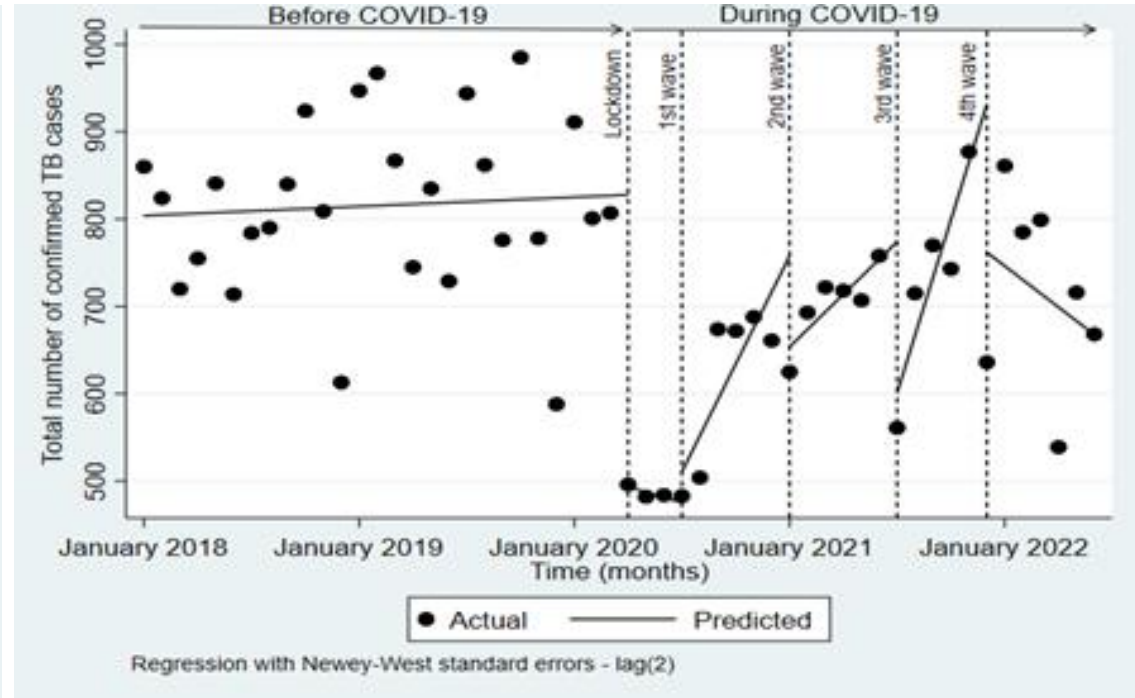


Figure 6: Impact of COVID-19 on TB investigations (A) and confirmed cases B in eThekweni district (Jan 2018-June 2022)

- The lockdown resulted in 45% and 40% declines in TB investigations and confirmed cases, respectively.
- Both recovered substantially in the following months – coinciding with the easing of restrictions.
- TB investigations sustained smaller declines through subsequent waves of infection
 - Recovered to pre-pandemic levels by mid-2022
- The confirmed cases of TB were more severely impacted
 - reductions that persisted until the end of the observation period (June 2022)

Results

Facility audit



eThekweni PHCs audit scores by region

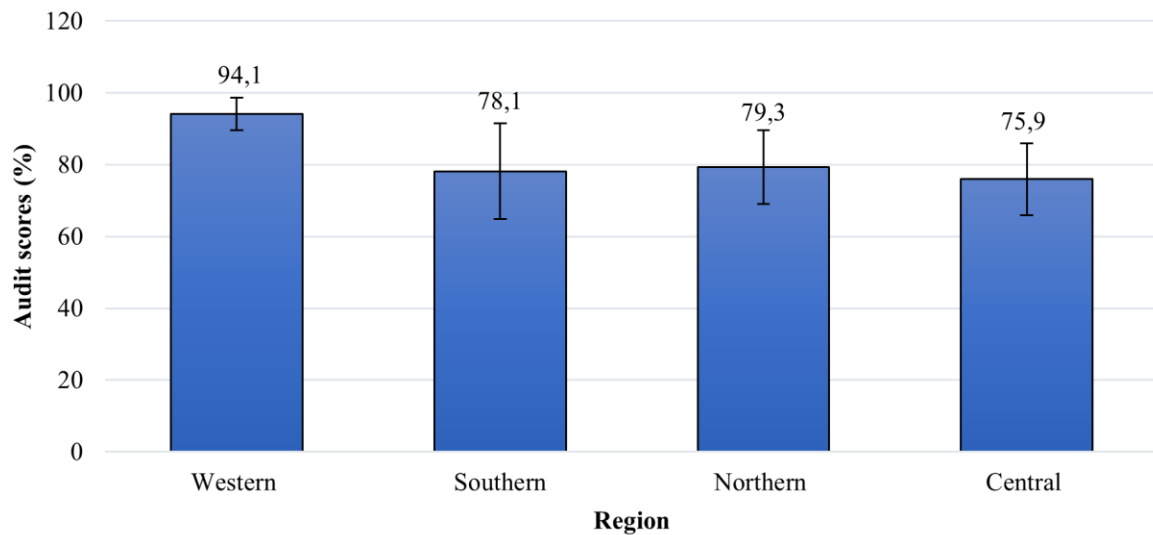


Figure 7 Facility audit scores by regions

- The scores of the audit ranged between moderate and excellent
- Clinics in the west achieved an excellent rating (94.1%) and central region achieved the lowest score (75.8%)

Individual component scores

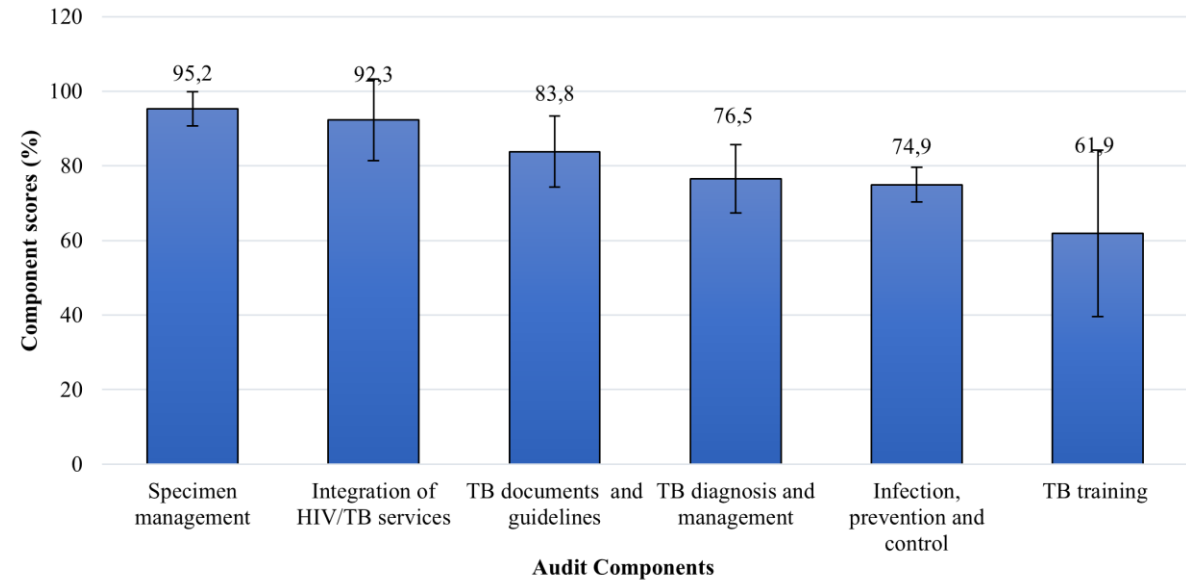


Figure 8 Audit scores by individual component

- Individual components show that specimen management & Integration of HIV/TB services had the highest scores
- IPC and TB training scored the lowest (74.9% & 61.9%)
TB patients were not required to wear masks in waiting areas, nurses did not have access to N-95 masks, clinics were short staffed could not allow nurses to leave for training.

Results

Nominal group technique



Table 1: Top 5 barriers identified with corresponding solutions

Barriers	Strategies
1) Misdiagnosis of TB	Refresher TB training
	Health education on TB for communities
	integrated screening and testing
2) Financial barriers to accessing TB Dx services	Expand mobile/community based testing
	Promote development of home tests
3) Fear of COVID-19 exposure risk at clinics	Improve IPC at clinics
	Enforce respiratory protection measures
	Digital health communication
4) Reduced prioritization of TB	TB training and multi-disease testing platforms
5) Long waiting periods	Expand mobile and decentralized POC diagnostic
	Strengthen workforce capacity

Recommendations



STRENGTHENING ACCESS

Expand decentralized Dx services via mobile health units in rural regions according to the need.

Expand community-based active case finding strategies among high-risk populations to reduce diagnostic delays

BUILDING HEALTH SYSTEM RESILIENCE

Promote integrated respiratory disease screening and diagnostic pathways

Strengthen surveillance and real-time monitoring systems to enable rapid identification of service disruption

Strengthen workforce capacity through ongoing competency-based training- TB dx, IPC & integrated outbreak response

ENHANCING IPC

Strengthen IPC through improved ventilation and respiratory protection

MAINTAINING PATIENT-CENTRED CARE

Implement targeted risk communication and community engagement strategies to maintain public trust.

Improve patient flow and service organization to reduce waiting times, transmission risk and improve patient experience

Conclusion



COVID-19 disrupted TB diagnostic services at PHCs
Access, case detection, and service delivery

Addressing these challenges by strengthening access, building resilient DX services, improving IPC, and maintaining patient-centred care will be critical to ensuring continuity of TB services



Acknowledgements



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