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Assisted TB Information System within the Private Sector to Improve Case Notification in Kenya

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Abstract:
Mycobacterium Tuberculosis (TB) is a major public health concern causing over a billion deaths in the last 200 years. Several countries have been affected, with the incidence projected to increase due to COVID-19. The WHO's global strategy to End TB recommends several strategies to support global efforts, including engaging private facilities to diagnose and treat TB.
TB reporting and documentation remain a challenge, with gaps between the number of new cases and the number reported/under-reported due to a mixture of underreporting and underdiagnoses. In Kenya, patient pathway analysis reveals that patients sought care in formal and informal private hospitals. However, underreporting TB notification among private facilities has not yet been systemically evaluated.
This study targeted private facilities in Meru, Mombasa, Kilifi, Nyeri, and Kirinyaga counties to assess actual levels of TB underreporting, improvement in TB yield with strategic support, and patient characteristics.
Study findings show low screening for TB. However, the strategic management of private facilities resulted in increased case notification, especially among children and men.
The researcher recommends the need to strengthen reporting of data by age and gender. The author also proposes prospective research while collecting age and gender data to inform the actual situation based on identified gaps.

Keywords: *Assisted, Additionality, case under reporting, notification*

1. Introduction

Mycobacterium Tuberculosis (TB) is a contagious disease ('What Is Tuberculosis (TB)?', 2017) and has been a major public health concern globally (Sulis et al., 2014; Glaziou et al., 2018). TB is identified as one of the leading causes of death, with over a billion deaths reported in the last 200 years from one infectious agent (Paulson, 2013). During the year 2018, it is estimated that 1.5 million people died of TB (WHO, 2019). These effects are mostly felt in developing and low-income countries (Miggiano et al., 2020). In the year 2019, an estimation by the World Health Organization (WHO) shows that among 10 million people, 5.7 million men and 3.2 million women, and among all, 1.1 million children fell ill with TB.[1]The report shows that over 1.5 million people died from TB (World Health Organization, 2020), with the TB Incidence projected to increase in the next 5 years by between 5% to 15% due to COVID-19 pandemic (McQuaid et al., 2021; Alene et al., 2020).

Globally, about 4 million people with TB go undetected (C. Hanson & Kibuga, 2000). Diagnosis and successful treatment of people with TB are bound to avert millions of deaths each year,[2]although there are large and persistent gaps in detection and treatment. (Testi et al., 2020; World Health Organization, 2018). It is estimated that about 23% of the world population has latent TB, and between 5 to 15% will progress to have TB (Saktiawati et al., 2021).

Kenya has been ranked as a high burden country for TB by WHO (WHO, 2016), with an estimated 150,000 people infected with TB. However, over 55,000 people go undetected (Enos et al., 2018; WHO, 2019; WHO, 2020). A report on the patient pathway (PPA) in Kenya reveals that a majority of Kenyans actively sought care in the formal and informal private sectors (Masini et al., 2017). Data extracted from the WHO website shows a decline in TB notification rate between 2016 and 2020 *(table 1)* against an expected annual target of 138,105 (Enos et al., 2018).

[1] https://apps.who.int/iris/bitstream/handle/10665/336069/9789240013131-eng.pdf
[2] https://www.who.int/tb/publications/global_report/tb18_ExecSum_web_4Oct18.pdf

Year	TB Notifications	
	TB (All Forms)	TB (New and Relapse Bacteriologically Confirmed Pulmonary Tuberculosis)
2015	81,518	81,292
2016	77,376	76,335
2017	85,188	83,599
2018	96,478	94,534
2019	86,385	84,345
2020	72,943	71,646

Table 1: Kenya TB Notifications
https://www.who.int/teams/global-tuberculosis-programme/data (accessed September 19th, 2021)

The WHO's End TB Strategy 2016-2035 recommends a raft of strategies to respond to the global fight against TB, which includes engaging the Private Public Mix (PPM) (Lönnroth et al., 2015; Lei et al., 2015). The emphasis is on building strong linkages with all health care providers. In addition, various Patient Pathway Analyses have been conducted. They indicate that most initial care seeking for patients occurred in private institutions (Surya et al., 2017; Christy Hanson et al., 2017) and, therefore, the need for PPM.

TB reporting and documentation have been identified as a challenge among private facilities and specialists (Thomas et al., 2016; Fatima et al., 2019) and in countries like Indonesia (Artawan Eka Putra et al., 2013). Despite the need for early diagnosis and treatment of TB (Kuupiel et al., 2019; Muttamba et al., 2019), there are gaps that exist between the estimated numbers of new cases, quality of care to the patients, and the number actually reported/under-reported to national systems. The gaps are due to a mixture of underreporting and underdiagnosis along the TB cascade (Jamieson et al., 2019; World Health Organisation, 2018).

The TB care cascade has been identified as a framework for measuring the quality of TB care (Subbaraman et al., 2020). It includes case detection, contact detection, diagnosis, linkage to care, case retention, and post-treatment follow-up (Yuen et al., 2021) (Amisi et al., 2021). The cascade provides methods to quantify gaps in the TB cascade (Subbaraman et al., 2019).

TB case finding is an important step that can reduce TB transmission (Bigogo et al., 2018). The WHO[3]defines 'case detection' as when a TB-infected patient is diagnosed and reported within the national surveillance system and then to WHO. Further, the case detection rate is calculated as the number of cases notified divided by the number of cases estimated in a population within a year and is expressed as a percentage. With the renewed commitment to combat TB through the End TB strategy[4], case detection rate, and the TB cascade are essential considerations for countries to monitor trends in key indicators and provide reliable data for accurate measurement of TB incidence and mortality effects with steps, as shown in figure 1 (Osei et al., 2020). The Zimbabwe guide for collection and analysis of TB data[5]with the expected values are shown in table 1. To end TB, WHO recommends expanding coverage of TB services (Active Case Finding), which include:

- Screening,
- Testing and
- Treatment

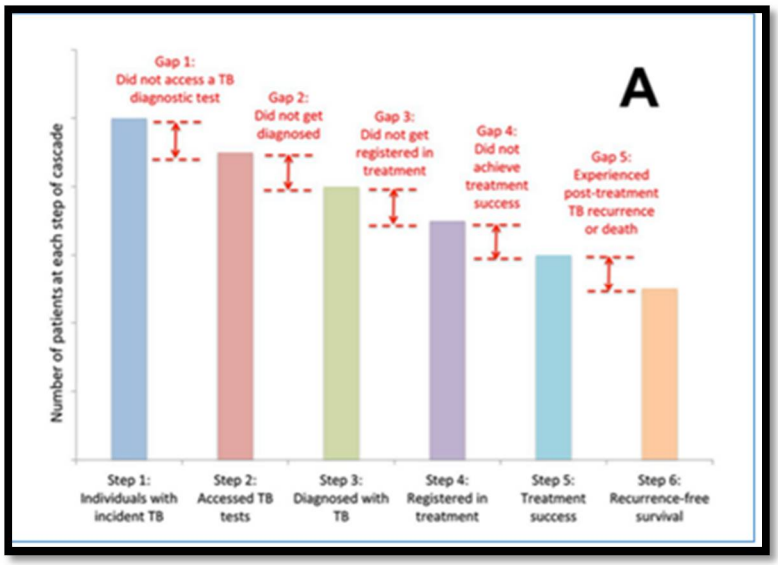

Figure 1: TB Cascade

[3] https://www.who.int/whosis/whostat2006TuberculosisDOTSDetectionRate.pdf
[4] https://www.who.int/tb/strategy/End_TB_Strategy.pdf
[5] https://www.kncvtbc.org/uploaded/2017/08/Making_Sense_of_TB_Data.pdf

Indicator	Expected Value
Workload	**No Expected Value**
% of people with RTI recorded and assessed	15% to 30%
% of persons with presumptive TB who have their sputum test result recorded in the presumptive TB register	100%
% of persons with presumptive TB who have their sputum test result recorded in the presumptive TB register and have a positive test result	5% to 15%
Number of presumptive TB cases per 100,000 population	Compared with the next level
Percentage of presumptive TB cases screened by smear microscopy or Xpert who had a positive result	5% to 15%
Notification rate of all TB cases per 100,000 population	Compared with the next level

Table 2: TB Indicators and Expected Values

Respiratory infections have been identified as common risks/considerations for TB assessment (Rylance et al., 2020). In Kenya, research on TB underreporting is limited and has focused on reporting lab results to TIBU (Tollefson et al., 2016).

The Kenya Prevalence survey forms a basis for calculating the TB incidence and care cascade in Kenya (Enos et al., 2018). In addition, strategic planning is one of the most important issues in productive health care centers (Dennis, 2019; Rasouli et al., 2020). Strategic planning includes reviewing the organization's needs, environmental conditions, customers' organizational capabilities, and weaknesses with the goal of deciding on the organization's mission, goals, and strategies (Rasouli et al., 2020). Performance measurement is key in identifying and responding to gaps in health settings (Rodríguez-Labajos et al., 2018).

Strategic management has been documented as an essential process in management (Gupta, 2020) and has been consistently and increasingly promoted within the health system (Jasper & Crossan, 2012). Strategic management aids in addressing inequalities specific to availability, accessibility, cost-effectiveness, and quality (Swain et al., 2020). Strategic Management requires agility, flexibility, and friendly partnerships among key actors to manage existing challenges (Oh, 2021). Measurement of strategic value includes:

- Planning,
- Refining,
- Quantifying and
- Measuring additional increase[6],[7]

1.1. Statement of the Problem

In Kenya, research on TB underreporting is limited and has focused on reporting lab results to TIBU. The government has invested heavily in improving reporting of TB. However, the underreporting of TB notification among private facilities has not been systemically evaluated. Data quality issues, particularly reporting gaps, need to be identified and addressed to provide a clear situation on TB incidence among private facilities in Kenya. The basis of this study is identified in the existing literature gaps. It, therefore, seeks to assess the actual levels of TB underreporting along the cascade from identification to completion of treatment with strategic support to private facilities in Kenya.

1.2. Objective of the Study

To estimate characteristics of TB under-reported cases among private facilities offered strategic support in Meru, Mombasa, Kilifi, Nyeri, and Kirinyaga counties in Kenya.

1.3. Research Question

The study questions include:

- What is the level of patient underreporting among private facilities in Kenya?
- Are patient characteristics (Age, Gender, HIV status, Urban/Rural settings) contributing to underreporting among private facilities in Kenya?
- Is there value in strategic implementation with partners to TB surveillance among private facilities?

1.4. Significance of the Study

This paper provides clear evidence of the current reporting systems among private facilities in Kenya and whether the reporting systems capture all (or virtually all) cases that are reported (notified), including the outcomes. The paper illustrates the value of strategic partnership to support TB Case findings.

Findings from this study will therefore provide an estimation of levels of underreporting and inform areas to strengthen TB surveillance towards measuring TB incidence. The findings will also inform gaps in strengthening the countries' recording and reporting of TB cases considering the different patient health-seeking pathways and characteristics.

[6] http://www.primeresource.com/strategic-value-measurement-performance
[7] https://www.people-doc.com/blog/3-ways-to-measure-the-value-of-your-strategic-efforts

2. Methodology

2.1. Scope of the Study

This study adopted a retrospective analysis of data from facility reporting charts (Wall Charts) TIBU, GXLmis, Facility Lab registers, Facility TB4 register, and facility EMRs as appropriate for TB management from private facilities. The study evaluated both exposed and non-exposed (Klebanoff & Snowden, 2018) clients at private facilities along the TB treatment cascade.

The study reviewed data populated through the facility wall charts and compared the same with expected facility targets. A comparison of the findings and the reported data through TIBU, GXLmis, Lab registers, and facility registers was made through the TB treatment cascade. Retrospective studies are key to investigating diseases and help to inform future interventions (Talari & Goyal, 2020). It uses collected data and describes a new research direction (Hess, 2004).

The study reviewed data notified by the counties and data reported by private facilities from October 2019 to September 2020, which was compared to data collected between October 2020 and September 2021 to assess additionality due to strategic support by partners.

The study sites were purposively selected based on:

- High Number of private facilities within the counties
- Willingness to engage in the study by the private facilities
- High burden of TB in the selected counties

The study focused on estimating the level and characteristics of TB under-reported cases among private facilities in Kenya, specifically in Meru, Mombasa, Kilifi, Nyeri, and Kirinyaga counties.

2.2. Study Philosophy

Research philosophy deals with the source, nature, and development of knowledge (Research-methodology, 2018). It is a belief about how data about a phenomenon is to be gathered, analyzed, and used. Philosophy is a framework that guides how research is to be conducted based on ideas about reality and the nature of knowledge. In this study, the researcher adopts a positivism philosophy by ensuring objectivity and proving or disproving hypotheses (Ryan, 2018) by providing scientific knowledge (Michele, 2019).

The study uses predictor variables, including patient characteristics and documentation (age, gender, HIV/AIDS status, urban/rural settings), measured as a percent of the total population and the significance levels indicated. The study measured health systems gaps in relation to strategic support provided.

2.3. Study Design

This study adopts a retrospective analysis of Facility reporting charts (Wall Charts) TIBU, GXLmis, Facility Lab registers, Facility TB4 register, KHIS, and facility EMRs as appropriate for TB design.

The target population for the study is private health facilities in five counties: Mombasa, Meru, Kirinyaga, Nyeri, and Kilifi.

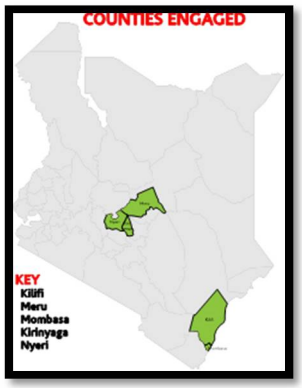

Figure 2: Study Sites - Author

The study compares findings from the five counties where one county has an urban mix (Mombasa County), two have a rural mix (Kilifi and Nyeri), and the other with a rural/urban mix (Meru and Kirinyaga Counties) to inform the scenario in Kenya. The counties have also been selected based on the presence of private facilities and the TB burden.

The study reviews data for the period October 2019 to September 2021. This is to neutralize other external factors like COVID-19 effects and the industrial actions by health care workers.

The inclusion criteria were:

- Private facilities in select counties,
- Facilities that have been in operation for the period of study, and Facilities that are linked to a TB diagnosis lab

Further, abstraction from facility records and TIBU was done. Thereafter data analysis was conducted, and results from the analysis were interpreted. The study adopted a quantitative research design to discover leaks in the TB patient cascade.

2.4 Approach

The study involved a review of records from October 2020 to September 2021 to capture the complete TB cascade and outcomes. The study measured and quantifies the actual levels of TB underreporting in Kenya. The study examined patient characteristics (for the underreported) to complement other surveys.

2.5 Strategic Management Approaches

The study involved a raft of strategic implementation measures to address inequalities, specifically availability, accessibility, cost-effectiveness, and quality.

2.5.1. Engagement of Technical Officers

Technical officers were identified, trained on TB case finding, and deployed to the counties to support the daily management of TB activities among the private facilities.

2.5.2. County Engagement

The engagement entailed an official communication by the County Directors of Health inviting the selected facilities to a TB sensitization meeting. During the meeting, willing facilities were provided with recording and reporting tools to facilitate documentation.

2.5.3. Linkage to Treatment Sites

Engaged facilities were linked with the county and sub-county teams to support their linkage to the diagnosis and the treatment of TB patients.

2.5.4. Consent

Identified facilities were visited by TB ARC II Officers in the company of county/sub-county TB coordinators, who officially informed them of the engagement and sought their consent to engage.

2.5.5. CMEs and Sensitizations

Facility staff were supported through CMEs on TB management and documentation.

2.5.6. Goals and Targets

The TB coordinators and PPM officers facilitated setting goals and targets for facilities in TB case-finding.

2.6 Methodologies

The data were collected using a structured tool informed by the TB cascade and focused on the concept and context of the study, objectives explored, methodology used, results obtained, and conclusions. Various datasets were reviewed, and they include:

- TIBU data,
- KHIS data,
- Facility wall charts,
- Master Facility List data and
- GXLmis data

2.6.1. Master Facility List (MFL) Data

Database was used to identify private facilities which are registered with the Ministry of health.

2.6.2. TIBU Data

A digital reporting system was dedicated to sustainable lung health reporting and routine TB surveillance. Data from the national TB surveillance system were used to identify patient characteristics, specifically notification, gender, age, and outcomes.

2.6.3. KHIS Data

Monthly facility level aggregated data were extracted from KHIS for the period to inform facility workload and patients presenting with RTIs.

2.6.4. GXlmis Data

Gene Xpert data were used to identify patients who received a gene expert test.

2.6.5. Facility Wall Charts

Data from facility wall charts were abstracted to assess notification and confirm targets set by facilities.

Data were abstracted by technical officers and recorded in MS Excel from the engaged facilities. The data were shared for analysis to identify leakages in the TB cascade, the thematic analysis along with the TB cascade, and comparison to evaluate additionality due to the Technical officers' support.

2.7. Strategic Management Matrix

Quarter	Previous Year	Implementation
Q1	Oct 2019 to Dec 2019	Oct 2020 to Dec 2020
Q2	Jan 2020 to Mar 2020	Jan 2021 to Mar 2021
Q3	Apr 2020 to June 2020	Apr 2021 to June 2021
Q4	Jul 2020 to Sep 2020	Jul 2021 to Sep 2021

Table 3: Quarters to Compare for Strategic Value

To assess the strategic value, notification data for different periods were compared, as shown in table 3, to measure the increase due to engagement.

The Strategic Management Basic Management Unit (BMU) was the county considering that the technical officers provided support to the County Health Management Team (CHMT) and the sub-county health management team (SCHMT) to accommodate transfer in and transfer out to facilities within the county.

3. Results

3.1. Patient Characteristics

3.1.1. Workload

From October 2020 to September 2021, a total of 883,589 patients visited 117 private health facilities. A majority of 33% (293,094) were recorded in Kilifi County, followed by Mombasa County at 26% (226,801), as shown in table 4 below:

County	Workload	%	RTI Cases	RTI Rate	Screened for TB	Screening Rate
Kilifi	293,094	33%	62092	21%	45112	73%
Kirinyaga	139,598	16%	28035	20%	2733	10%
Meru	116,682	13%	17268	15%	52255	303%*
Mombasa	226,801	26%	35208	16%	12663	36%
Nyeri	107,414	12%	22632	21%	6420	28%
Total	883,589		165235	19%	119183	72%

Table 4: County Workload
**Documentation Challenges at the Facilities*

3.1.2. Level of Case under Reporting

When comparing the gaps in underreporting along the TB cascade, Kirinyaga County performed below the expected values in the screening of RTI patients. Generally, testing of presumptive TB cases was low in all the counties, as shown in table 5 below, when compared to the expected values.

	Workload	RTI Cases	RTI Assessed /Screened	% Screened	Presumptive TB Cases	Tested	% Tested	Positive Test	% Positive Test
County	No Expected Value	No Expected Value	15% to 30%		No Expected Value	100%		5% To 15%	
Kilifi	293,094	62,092	45,112	73%	2,283	1,696	74%	142	8%
Kirinyaga	139,598	28,035	2,733	10%	608	503	83%	58	12%
Meru	116,682	17,268	52,255	303%*	1,428	736	52%	69	9%
Mombasa	226,801	35,208	12,663	36%	795	529	67%	88	17%
Nyeri	107,414	22,632	6,420	28%	448	235	52%	37	16%
Total	883,589	165,235	119,183	72%	5,562	3,699	67%	394	11%

Table 5: TB Cascade Gaps
**Data Quality Issues Specifically Documentation*

Table 5 displays the yield across counties, with Mombasa and Nyeri counties having a yield that is above the expected values with an overall 394 (11%) TB yield.

3.1.3. TB Cascade

Among the patients, 19% (165,235) presented with RTIs. Among those who presented with RTIs, 72% (119,183) were screened for TB, with 5% (5562) documented as presumptive. Only 67% (3,699) of the presumptive cases were tested for TB, and 89% (3298) of them had documented results. The number of TB cases diagnosed (All Forms) represented 11% (394). Among them, 56% (222) were bacteriologically confirmed, while 43% (170) were clinically diagnosed. Among 394 patients who were diagnosed with TB, 383 (97%) were initiated on TB treatment, and 326 (85%) were notified in TIBU. The children diagnosed with TB were 9% (35) among all those identified and notified with TB.

When reviewing county data, Mombasa County had 40,670, Kilifi County had 66,121 RTI cases, Nyeri County had 19,698, Kirinyaga 28,308 while Meru County had 19,635 RTI cases, as shown below:

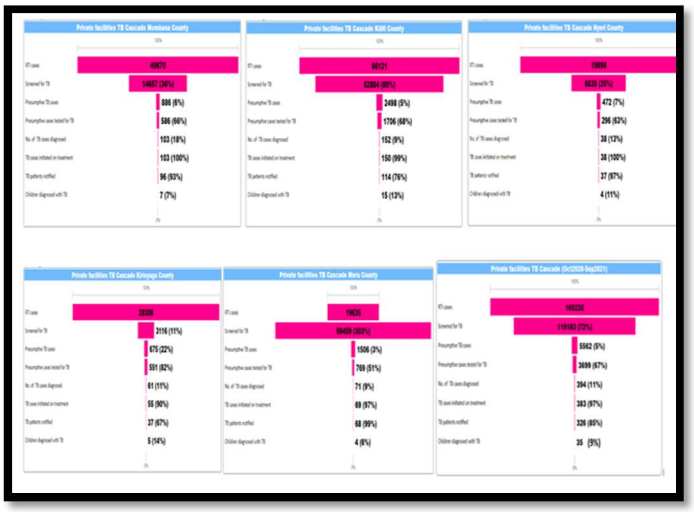

Figure 3: TB Cascade

Low screening rates were realized in Kirinyaga County at 11% (3,116), with Meru county having the lowest 3% (1,506) presumptive TB cases, including a low 51% (769) testing of the presumptive cases. The yield from counties shows Kilifi County had the highest yield across counties at 32% (114), followed by Mombasa at 27% (96) and Meru at 19% (68). However, when comparing the cascade within each county, Meru county had the highest yield at 99% (68), followed by Nyeri County at 97% (37) and Mombasa County at 93% (96).

3.1.4. Contacts Identified

The contacts management process included 222 bacteriologically index cases, among whom 60% 133 were asked about contacts, with 140 contacts being listed. Among those enlisted, 28 (21%) of contacts were aged under 5 years. Among this population, 3 (6%) contacts were diagnosed with TB, while 23 (47%) were eligible for TPT. Contacts initiated on TPT were 83% (19) among all identified.

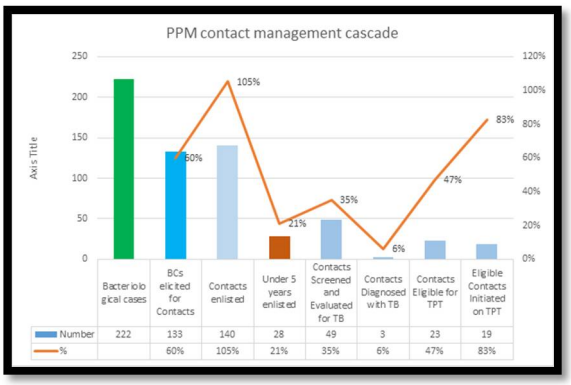

Figure 4: Contacts Identified

3.2. Patient Characteristics

3.2.1. Age and Gender

Gender and Age were not captured on the workload registers with the data aggregated on a daily basis.

3.2.2. HIV Status

Data on the HIV status of the patients visiting facilities was not captured. However, HIV status data on patients notified is presented in the section below.

3.2.3. Urban and Rural Status

Type	Number	%
Rural/Urban	256,280	29%
Rural	400,508	45%
Urban	226,801	26%
	883,589	

Table 6: Urban and Rural Status

Findings from the study show that a majority of 45% (400,508) of patients visited facilities in rural settings, while 26% (226,801) and 29% (256,280) visited urban and mixed settings, respectively.

3.2.4. Strategic Value

To evaluate the strategic value, the researcher compared the total yield from the counties during the implementation period (October 2020 to September 2021) with the total yield from the counties before the implementation period (October 2019 to September 2020) to assess for differences in yield, as shown in the figures below per county.

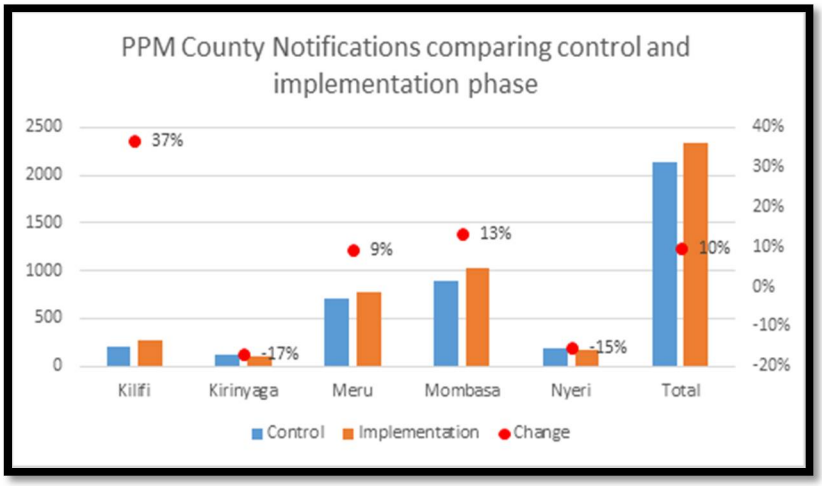

Figure 5: Comparing Control Implementation Notifications

Data from the five supported counties shows that there was an overall 210 (10%) increase in notified cases while comparing the control and intervention period, as shown in figure 5 and table 4. Kilifi county had the highest 74 (37%) change in yield, followed by Mombasa at 120 (13%), Meru at 66 (9%), with Kirinyaga and Nyeri showing a decrease of -20 (-17%) and -30 (-15%), respectively.

County	Type	Male	Female	Children	Adults	Total Notifications
Kilifi	Implementation	181	95	30	246	276
	Control	113	89	22	180	202
	Change	68	6	8	66	74
	% Change	60%	7%	36%	37%	37%
		Male	Female	Children	Adults	Total
Kirinyaga	Implementation	71	28	4	95	99
	Control	82	37	11	108	119
	Change	-11	-9	-7	-13	-20
	% Change	-13%	-24%	-64%	-12%	-17%
		Male	Female	Children	Adults	Total
Meru	Implementation	537	244	61	720	781
	Control	504	211	49	666	715
	Change	33	33	12	54	66
	% Change	7%	16%	24%	8%	9%
		Male	Female	Children	Adults	Total
Mombasa	Implementation	619	402	85	936	1021
	Control	559	342	81	820	901
	Change	60	60	4	116	120
	% Change	11%	18%	5%	14%	13%
		Male	Female	Children	Adults	Total

County	Type	Male	Female	Children	Adults	Total Notifications
Nyeri	Implementation	114	51	13	152	165
	Control	123	72	10	185	195
	Change	-9	-21	3	-33	-30
	% Change	-7%	-29%	30%	-18%	-15%
		Male	Female	Children	Adults	Total
Total	Implementation	1522	820	193	2149	2342
	Control	1381	751	173	1959	2132
	Change	141	69	20	190	210
	% Change	10%	9%	12%	10%	10%

Table 7: County Yield

The highest yield while comparing gender due to the strategic support was 10% (141) among men and (9%) 69 among females. While comparing age, children had a higher yield of 12% (20) compared to Adults at 10% (190).

4. Discussion

4.1. Levels of Underreporting

Findings from the study indicate that Kirinyaga County demonstrated low screening rates compared to the expected along the TB cascade. Kilifi, Mombasa, and Nyeri counties had higher screening rates than expected, with Meru county having over 300% screening rate demonstrating documentation challenges.

Testing of TB patients is the most underreported part of the TB cascade compared to other areas in all the counties. The positivity yield in Mombasa and Nyeri was higher than the expected values Contacts identification is also not optimally done and therefore results in low identification of contacts for TB treatment. Data from the counties demonstrate low screening rates for contacts resulting in a low yield for TB treatment.

4.2. Patient Characteristics

Evaluation of patient characteristics shows that data quality challenges affected the collection of age, HIV status, and gender data for most parts of the TB cascade. The findings show that a majority of the patients visited private facilities in rural settings.

4.2.1. Strategic Value

Engagement of technical officers to support counties demonstrated an improvement in TB yield while comparing the control and implementation counties. The strategic value is demonstrated more in Kilifi, Meru, and Mombasa counties.

In Kilifi, the strategic value supported the identification of male patients more than females.

In Meru County, the strategic value supported the identification of children, while in Mombasa, the value strengthened the identification of adults.

In Kirinyaga and Meru counties, the strategic value did not demonstrate additional case notification.

5. Conclusions and Recommendations

5.1. Conclusions

The study reveals low screening rates for TB in private facilities. However, the findings reveal that strategic management of PPM facilities resulted in an increase in case notification, especially among children and men.

5.2. Recommendations

The researcher recommends that facilities need to strengthen reporting of data by age and gender. The author also proposes to conduct a prospective research while collecting age and gender data to inform the actual situation based on identified gaps.

6. Limitations

During the study, some of the challenges experienced include that KHIS reporting is aggregated. Therefore, the researcher could not disaggregate by gender on realizing the inconsistent case-based characteristics reporting (Age and Gender). In addition, due to high staff turnover at facilities, there were clear data quality gaps, including poor documentation.

7. Acknowledgement

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8. Abbreviations

CHMT - County Health Management team
CME - Continuous Medical Examination
MFL - Master Facility List
PPM - Private Public Mix
SCHMT - Sun County Health Management team
TB ARC II- Tuberculosis Accelerated and Response Care II
TB - Tuberculosis
TI - Transfer In
TIBU - National case-based surveillance system that stores details on individual patient episodes of TB reported to the national TB program in Kenya
TO - Transfer Out

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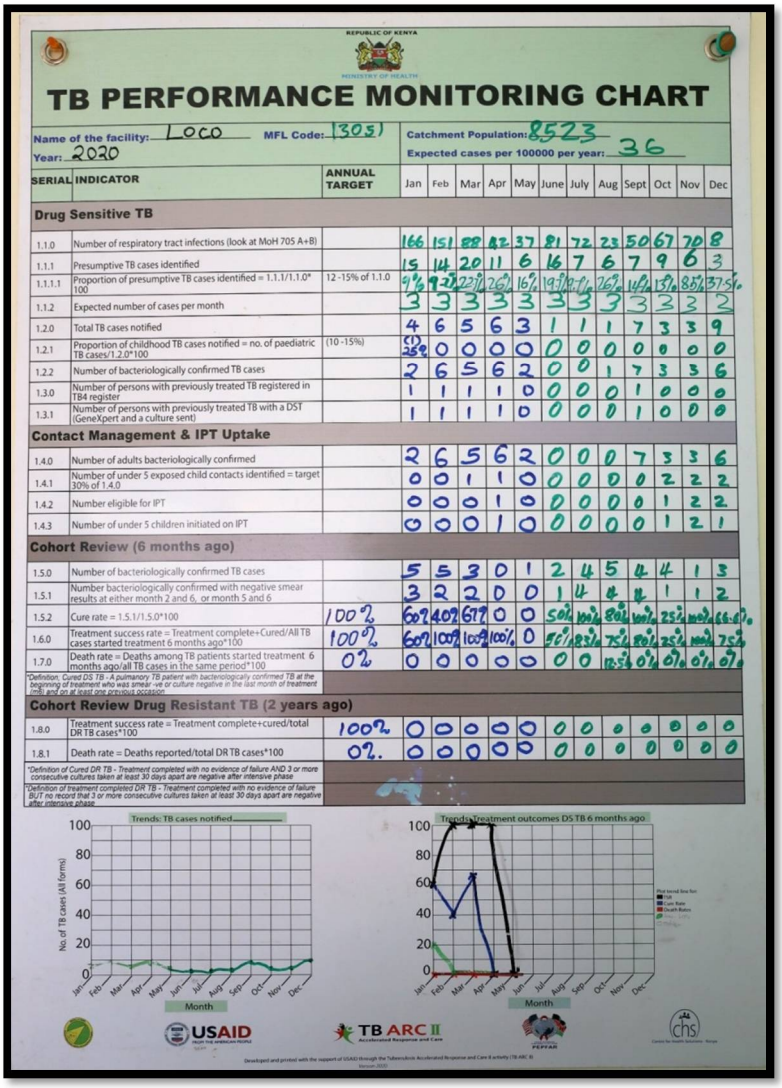
Appendix

Data Schedule or Instrument Used to Collect the Data.



REPUBLIC OF KENYA

MINISTRY OF HEALTH

TB PERFORMANCE MONITORING CHART

Name of the facility: Loco MFL Code: 13051 Catchment Population: 8523

Year: 2020 Expected cases per 100000 per year: 36

SERIAL	INDICATOR	ANNUAL TARGET	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Drug Sensitive TB														
1.1.0	Number of respiratory tract infections (look at MoH 705 A+B)		166	151	88	82	37	81	72	23	50	67	70	8
1.1.1	Presumptive TB cases identified		15	14	20	11	6	16	7	6	7	9	6	3
1.1.1.1	Proportion of presumptive TB cases identified = 1.1.1/1.1.0* 100	12 -15% of 1.1.0	9%	9%	22%	26%	16%	19%	10%	26%	14%	13%	8.5%	37.5%
1.1.2	Expected number of cases per month		3	3	3	3	3	3	3	3	3	3	3	2
1.2.0	Total TB cases notified		4	6	5	6	3	1	1	1	7	3	3	9
1.2.1	Proportion of childhood TB cases notified = no. of paediatric TB cases/1.2.0*100	(10 -15%)	25%	0	0	0	0	0	0	0	0	0	0	0
1.2.2	Number of bacteriologically confirmed TB cases		2	6	5	6	2	0	0	1	7	3	3	6
1.3.0	Number of persons with previously treated TB registered in TB4 register		1	1	1	1	0	0	0	0	1	0	0	0
1.3.1	Number of persons with previously treated TB with a DST (GeneXpert and a culture sent)		1	1	1	1	0	0	0	0	1	0	0	0
Contact Management & IPT Uptake														
1.4.0	Number of adults bacteriologically confirmed		2	6	5	6	2	0	0	0	7	3	3	6
1.4.1	Number of under 5 exposed child contacts identified = target 30% of 1.4.0		0	0	1	1	0	0	0	0	0	2	2	2
1.4.2	Number eligible for IPT		0	0	0	1	0	0	0	0	0	1	2	2
1.4.3	Number of under 5 children initiated on IPT		0	0	0	1	0	0	0	0	0	1	2	1
Cohort Review (6 months ago)														
1.5.0	Number of bacteriologically confirmed TB cases		5	5	3	0	1	2	4	5	4	4	1	3
1.5.1	Number bacteriologically confirmed with negative smear results at either month 2 and 6, or month 5 and 6		3	2	2	0	0	1	4	4	4	1	1	2
1.5.2	Cure rate = 1.5.1/1.5.0*100	100%	60%	40%	67%	0	0	50%	100%	80%	100%	25%	100%	66.6%
1.6.0	Treatment success rate = Treatment complete+Cured/All TB cases started treatment 6 months ago*100	100%	60%	100%	100%	100%	0	50%	100%	75%	80%	25%	100%	75%
1.7.0	Death rate = Deaths among TB patients started treatment 6 months ago/all TB cases in the same period*100	0%	0	0	0	0	0	0	0	25%	0%	0%	0%	0%
*Definition: Cured DS TB - A pulmonary TB patient with bacteriologically confirmed TB at the beginning of treatment who was smear -ve or culture negative in the last month of treatment (m5) and on at least one previous occasion														
Cohort Review Drug Resistant TB (2 years ago)														
1.8.0	Treatment success rate = Treatment complete+cured/total DR TB cases*100	100%	0	0	0	0	0	0	0	0	0	0	0	0
1.8.1	Death rate = Deaths reported/total DR TB cases*100	0%	0	0	0	0	0	0	0	0	0	0	0	0
*Definition of Cured DR TB - Treatment completed with no evidence of failure AND 3 or more consecutive cultures taken at least 30 days apart are negative after intensive phase														
*Definition of treatment completed DR TB - Treatment completed with no evidence of failure BUT no record that 3 or more consecutive cultures taken at least 30 days apart are negative after intensive phase														

Figure 6: Sample Facility Wall Chart