

Gendered Pathways in TB Diagnosis: Insights from a School-Based Screening Initiative in Kakamega County, Kenya

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Abstract-

Background: Tuberculosis (TB) remains a major public health challenge in Kenya, with persistent gender disparities in diagnosis and treatment access. This study examines gendered pathways in TB detection through a school-based, child-led screening initiative in Kakamega County, highlighting how social norms, barriers, and health-seeking behaviors influence outcomes. This study is informed by feminist theory, with a focus on intersectional feminism, and guided by the Social Determinants of Health framework. It examines how overlapping social identities and structural conditions influence unequal access to tuberculosis diagnosis.

Methods: A retrospective cross-sectional analysis was conducted on data from the Kenya Innovation Challenge TB project (2019–2024), involving 56,664 screened adults (28,394 males, 28,270 females). Descriptive statistics, Chi-square tests, and odds ratios were used to assess gender differences in TB diagnosis and treatment initiation.

Results: Men accounted for 61.6% of 700 confirmed TB cases, with a significantly higher yield (1.52%) than women (0.95%; $\chi^2 = 36.21$, $p < 0.001$; OR = 1.62, 95% CI: 1.38–1.90). Treatment initiation was equitable (>99% for both sexes).

Conclusion: Despite balanced screening, women appear underdiagnosed, likely due to stigma, caregiving roles, and diagnostic biases. Gender-responsive strategies are essential for equitable TB control. This study underscores the value of integrating gender analysis into community-based interventions to address hidden inequalities.

Keywords: Tuberculosis, Gender disparities, School-based screening, Child-led intervention, Diagnostic yield, Treatment initiation

I. INTRODUCTION

Tuberculosis (TB) remains one of Kenya's most persistent public health challenges. Despite notable progress in diagnosis and treatment, the disease continues to expose deep structural inequalities in access to care. Kenya is classified among the 30 high

TB burden countries globally, with an estimated 124,000 cases in 2024 alone (Ministry of Health, 2025). Although men consistently account for a higher proportion of reported cases, this pattern may not reflect the true distribution of disease. Women often face barriers that prevent them from seeking care or completing diagnostic processes. These include stigma, caregiving responsibilities, financial dependence, and limited autonomy in health-related decision-making (World Health Organization [WHO], 2022).

In rural and peri-urban areas, these challenges are compounded by distance from health facilities and entrenched gender norms. The 2016 Kenya TB Prevalence Survey revealed that many women with active TB had not been diagnosed or treated, underscoring the need for more inclusive approaches (Ministry of Health, 2023). While TB treatment is free to patients, diagnostic services remain unevenly distributed, with only one in four health facilities equipped to conduct TB testing. Lower-level facilities, where most patients first seek care, often lack the capacity for rapid diagnosis, resulting in delays and missed cases (Ministry of Health, 2023).

The Kenya Innovation Challenge TB project, implemented in Kakamega County between 2019 and 2024, introduced a school-based screening model that positioned children as health messengers within their households. Although the primary goal was to improve detection among children, the initiative also generated valuable data on adult cases. One striking outcome was the disproportionate number of men diagnosed and initiated on treatment, despite equal screening coverage. This raises a critical question: are women less likely to have TB, or are they less likely to be diagnosed?

The answer may lie in how symptoms are recognized, reported, and acted upon within the household. Gendered roles influence not only health-seeking

behavior but also the likelihood of being referred and followed up. As Kenya scales up community-level screening and integrates TB services into primary care, it becomes essential to examine how these interventions interact with gender dynamics. This paper explores these pathways, drawing on screening and diagnostic data to examine how gender influences access to care. The goal is to inform more responsive TB control strategies that account for the lived realities of both men and women.

II. LITERATURE REVIEW

Research on tuberculosis has consistently shown that gender influences the disease's epidemiology, detection, and management across diverse contexts. Globally, men account for a larger proportion of reported TB cases, but this often obscures underdiagnosis among women due to a mix of biological, social, and systemic factors. A systematic review and meta-analysis of TB burden in low- and middle-income countries found that prevalence is higher among men, yet notifications do not always reflect true incidence because women face greater barriers to accessing care (Hargreaves et al., 2011). Global estimates indicate men represent approximately 56 percent of cases, women 33 percent, and children's 11 percent (GBD Tuberculosis Collaborators, 2018). In regions like Africa, the male-to-female notification ratio often exceeds 1.5:1, suggesting not only biological differences but also gaps in reporting and health engagement for women (WHO, 2023).

Barriers to TB diagnosis for women are multifaceted, involving social, economic, and cultural dimensions that delay or prevent timely intervention. In Kenya, studies highlight how stigma and traditional norms discourage women from seeking care, as they fear social judgment or prioritize household responsibilities over personal health (USAID TB ARC II, 2023). Women in pastoralist communities face heightened stigma, which significantly deters early diagnosis and treatment adherence, exacerbating isolation (Squire & Theobald, 2018). Qualitative reviews across multiple countries confirm that financial constraints, lower health literacy, and provider biases contribute to prolonged delays in diagnostic services for women compared to men (Horton et al., 2016). In urban poor settings in Kenya, women with TB report additional challenges,

such as HIV co-infection and limited mobility, which further entrench these barriers (Mbuthia et al., 2018).

Health systems themselves contribute to gender disparities in TB care, particularly in African settings where assumptions about risk and symptoms shape provider decisions. Research from Uganda shows that women presenting with coughs are less likely to be referred for advanced testing, as providers often underestimate their TB risk based on stereotypes (Kaona et al., 2004). In Zambia, mixed-methods studies reveal that men and women experience distinct care pathways, with women frequently receiving suboptimal attention due to systemic oversights in gender-tailored approaches (Chanda-Kapata et al., 2017). Analyses from South Africa and Nigeria indicate that gender norms amplify vulnerabilities, with men facing exposure risks from occupational settings but women encountering diagnostic biases linked to gaps in integrated reproductive health services (Abubakar et al., 2016). These biases delay care and perpetuate inequities, as health workers may prioritize male patients under the assumption of higher disease burden, overlooking evidence that women's symptoms can be atypical or dismissed.

Gender also shapes health-seeking behaviors, influencing how individuals respond to TB symptoms. Men often delay care due to work commitments and reluctance to appear vulnerable, while women postpone seeking help because of family obligations and fear of stigma (Long et al., 2019). In Vietnam, qualitative research illustrates how men neglect symptoms until advanced stages, contrasting with women's more cautious but constrained approaches influenced by household dynamics (Long et al., 2019). Studies in Indonesia and China highlight how gender affects knowledge and perception, with women experiencing longer diagnostic delays due to different pathways (Wang et al., 2020). Intersectional analyses further reveal that age, socioeconomic status, and location interact with gender to shape these behaviors, emphasizing the need for targeted interventions to promote timely engagement (Yang et al., 2021).

Community-based detection models, while promising, often fail to address gender-specific challenges adequately. Observational data from large-scale screenings in Pakistan show that women are underrepresented in attendance and testing, with

only about 22 percent participating despite equal outreach efforts (Khan et al., 2019). In Uganda, systematic screenings among HIV-positive individuals reveal higher TB prevalence in men but lower diagnostic yields for women due to barriers in follow-up (Sekandi et al., 2020). A school-based initiative in Kakamega County, Kenya, demonstrated that child-led screening effectively uncovered adult TB cases, but women remained underrepresented in diagnoses, suggesting persistent access and engagement challenges (Barasa & Kibebe, 2025). Systematic reviews of qualitative studies stress that community models, while designed for inclusivity, often overlook gender-specific literacy and access issues, leading to ongoing disparities (Tadesse et al., 2019). These insights highlight the need for gender-sensitive adaptations in innovative approaches like child-led or school-based initiatives to ensure equitable outcomes in high-burden settings like Kenya.

2.1 Theoretical Framework

This study is grounded in feminist theory, particularly intersectional feminism, and the Social Determinants of Health (SDH) framework to analyze gendered disparities in TB diagnosis within a school-based screening initiative.

Feminist theory provides a lens to examine how gendered power relations shape health access and outcomes. Specifically, intersectional feminism (Crenshaw, 1989) emphasizes that women's experiences are not monolithic but shaped by overlapping systems of oppression including gender, socioeconomic status, caregiving roles, and cultural norms. In the context of TB diagnosis, this theory helps explain why women, despite equal exposure to

screening, may be underdiagnosed. Structural constraints such as limited autonomy, stigma, and domestic responsibilities often prevent women from acting on referrals or seeking care independently (Yang et al., 2021).

The lower diagnostic yield among women (0.29% vs. 0.43% in men) is interpreted not as a biological difference, but as a reflection of gendered barriers in the diagnostic pathway. Intersectional feminism helps unpack these barriers and informs the need for gender-sensitive follow-up strategies.

The SDH framework (WHO, 2008; Hargreaves et al., 2011) posits that health outcomes are shaped by the conditions in which people are born, grow, live, work, and age. These include access to healthcare, education, income, housing, and social support systems. When applied through a gender lens, SDH reveals how women's health-seeking behavior is constrained by broader socioeconomic factors such as poverty, lack of transport, and dependence on male decision-makers. Although the screening model was community-based and inclusive, the SDH framework explains why women may still face barriers to diagnosis and treatment. For example, caregiving roles may limit their availability for clinic visits, and stigma may discourage symptom disclosure. These determinants intersect with gender to produce unequal outcomes, even within well-designed interventions.

2.2 Conceptual Framework

This framework, informed by feminist theory and SDH, guides the analysis of diagnostic disparities and recommendations for gender-sensitive strategies.

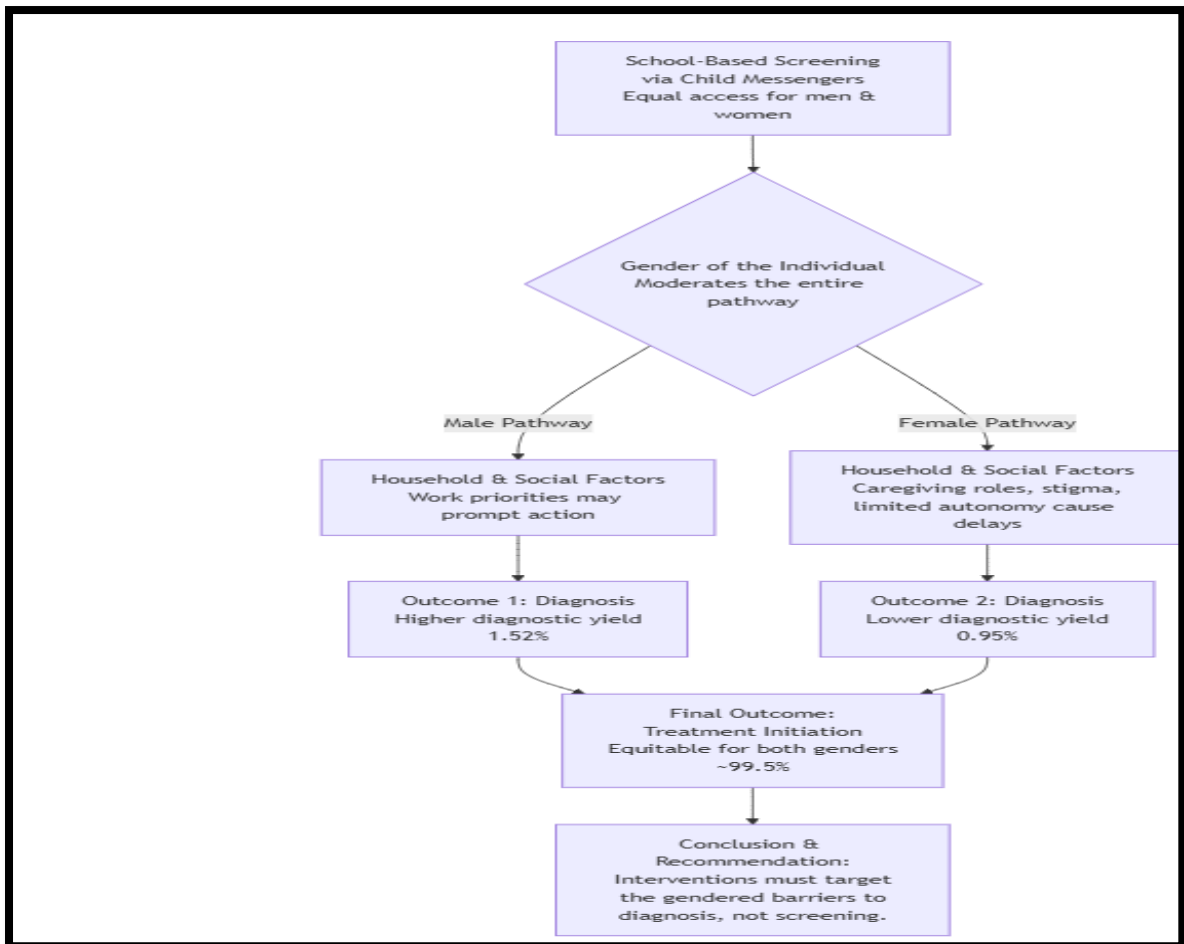


Figure 1: Conceptual Framework on Gendered Pathways in TB Screening, Diagnosis, and Treatment within a School-Based Intervention

Source: Authors (2025)

This framework illustrates how gender shapes the pathway from TB screening to diagnosis and treatment within a school-based intervention. While the screening platform provided equal access to men and women, gender acted as a key moderator influencing follow-up behaviour. Men, often driven by work-related urgency, were more likely to pursue diagnosis promptly, resulting in a higher diagnostic yield. Women, on the other hand, faced barriers such as caregiving responsibilities, stigma, and limited autonomy, leading to underdiagnosis despite similar symptom profiles. Once diagnosed, both sexes-initiated treatment at nearly equal rates, highlighting that the health system functions equitably post-diagnosis. The core insight: screening is equal, diagnosis is unequal, treatment is equal pointing to gendered barriers in the diagnostic phase as the critical gap to address.

III. METHODOLOGY

3.1 Study Design

This study employed a retrospective, descriptive cross-sectional design to examine data collected through the Kenya Innovation Challenge TB (KIC-TB) project, implemented between 2019 and 2024 in Kakamega County, western Kenya. The project aimed to improve tuberculosis case detection using a school-based, child-led screening model. By analyzing existing records, the study sought to understand gender-related differences in diagnosis and treatment initiation without introducing new interventions. This design was selected for its practicality in evaluating real-world outcomes across a large dataset generated by a community-driven initiative (Barasa & Kibebe, 2025). It also allowed for a focused snapshot of diagnostic patterns while preserving the integrity of the original program delivery.

The initiative was implemented by the Community Support Platform (CSP), with AMREF Health Africa serving as the principal recipient and funding provided by the Global Fund to Fight AIDS, Tuberculosis and Malaria.

3.2 Study Setting

The research was conducted in Kakamega County, a region with a high TB burden and a mix of rural and peri-urban populations. The study covered 205 primary and secondary schools across eight sub-counties, selected based on geographic spread, enrollment size, and willingness to participate. Kakamega's limited diagnostic infrastructure and entrenched gender norms made it a relevant setting for evaluating community-embedded TB case finding. The school-based approach offered a practical entry point into households, particularly in areas where formal health services are distant and health-seeking behavior is shaped by social roles and economic constraints (USAID TB ARC II, 2023).

3.3 Study Population

The study focused on three groups: children trained as household screeners, adults reached through child-led outreach (primarily parents and guardians), and school staff screened during onsite visits. For the purpose of this analysis, only adults aged 18 and above were included, with data disaggregated by sex to explore gender disparities. Inclusion required complete records on age, sex, screening outcome, and treatment status. Children's data were excluded from the primary analysis due to differences in symptom presentation and diagnostic protocols. This focus allowed for a clearer comparison of adult diagnostic outcomes across gender lines (Mbuthia et al., 2018).

3.4 Screening Process

Children received basic training on TB symptoms using simplified checklists designed to be age-appropriate and easy to apply in household settings. Symptoms included persistent cough, weight loss, fever, and night sweats. During scheduled school visits, Community Health Promoters (CHPs) and healthcare workers conducted parallel screenings for teachers and non-teaching staff. Individuals identified as presumptive TB cases were referred to designated health facilities for further evaluation, including GeneXpert testing; a molecular diagnostic tool known for its sensitivity and specificity. While GeneXpert was the preferred method, its availability was limited to select facilities, which may have

influenced referral outcomes. Confirmed cases were tracked through a follow-up system coordinated by CHPs and facility staff to ensure treatment initiation and continuity of care (WHO, 2023).

3.5 Data Sources and Management

Data were collected using structured screening and referral forms, digitized through the Kobo Collect platform to enhance accuracy and usability in low-connectivity environments. Key variables included age, sex, population category (parent, teacher, staff), symptom status, diagnostic outcome, and treatment initiation. To maintain data quality, entries were cleaned to remove duplicates, incomplete records, and personal identifiers. The anonymized dataset was exported to SPSS version 27 for statistical analysis and Microsoft Excel for descriptive summaries. Cross-validation with facility registers was conducted to confirm referral and treatment outcomes (Barasa & Kibebe, 2025).

3.6 Data Analysis

Descriptive statistics were used to summarize screening and diagnostic outcomes by sex. TB yield was calculated as the proportion of confirmed cases among those screened. To assess associations between sex and diagnosis, Chi-square tests were applied, and odds ratios (ORs) were computed with 95% confidence intervals. Fisher's Exact Test was used in cases where expected cell counts were low, particularly for treatment initiation comparisons. A significance threshold of $p < 0.05$ was adopted. Additional analysis explored interactions between gender and population category to identify subgroup differences. While multivariate regression was considered, it was not applied due to limitations in variable completeness (Horton et al., 2016).

3.7 Ethical Considerations

The Kenya Innovation Challenge TB (KIC-TB) project was implemented by Community Support Platform (CSP) as Sub-Recipient, under the oversight of AMREF Health Africa in Kenya, the Principal Recipient. Prior to implementation, AMREF ensured that all ethical and regulatory requirements were met, including approvals from relevant national and institutional review bodies. These included protocols for informed consent, data protection, and participant safety, aligned with Kenya's national guidelines for health research and international standards for TB programming.

Informed consent was obtained from all adult participants involved in screening and interviews. For children trained as household screeners, assent was secured alongside parental or guardian consent. Children were not involved in clinical decision-making and were supported by teachers and Community Health Promoters throughout the process. All data used in this study were anonymized and securely stored, with access limited to authorized personnel. Participants were informed of their right to withdraw at any point, and no identifying information was included in the analysis. Ethical safeguards were embedded throughout the project lifecycle, from design to data use, ensuring that gender-sensitive research was conducted responsibly and respectfully (Yang et al., 2023).

IV. RESULTS

4.1 Overview of Screening and Diagnostic Outcomes

The school-based, child-led TB screening initiative in Kakamega County reached a total of 322,739 adults between 2019 and 2024. Of these, 159,901 were male and 162,838 were female, reflecting near-equal participation across sexes. A total of 14,823 presumptive TB cases were identified, leading to 1,146 bacteriologically confirmed diagnoses. Table 1 presents the breakdown of screening, presumptive classification, and confirmed TB cases by sex.

TABLE 1: TB SCREENING AND DIAGNOSTIC YIELD BY SEX

Variable	Male	Female	Total	Statistical Test	p-value	Effect Size (95% CI)
Adults Screened	159,901	162,838	322,739	—	—	—
Presumptive Cases	7,159	7,664	14,823	—	—	—
Confirmed TB Cases (%)	680 (0.43%)	466 (0.29%)	1,146 (0.36%)	Chi-square ($\chi^2 = 36.21$)	< 0.001	OR = 1.62 (1.38–1.90)

Although men and women were screened in nearly equal numbers, men accounted for a significantly higher proportion of confirmed TB cases. The diagnostic yield among men was 0.43%, compared to 0.29% among women. This difference was statistically significant, with a Chi-square test yielding $\chi^2 = 36.21$, $p < 0.001$, and an odds ratio of 1.62 (95% CI: 1.38–1.90). These results suggest that men were substantially more likely to be diagnosed with TB than women.

This disparity aligns with global trends reported by the World Health Organization (2023), which consistently show higher TB case notifications among men. However, rather than indicating a genuinely higher disease burden, this pattern may reflect underdiagnosis among women. Studies such as Horton et al. (2016) and Mbuthia et al. (2018) have documented that women face barriers to accessing TB diagnostic services, including stigma, caregiving

responsibilities, and limited autonomy in health decision-making.

In the context of Kakamega County, these findings raise concerns about the effectiveness of child-led screening in overcoming gendered barriers. While the model successfully expanded coverage, it may not have fully addressed the social dynamics that influence women's ability to seek diagnostic confirmation. Women may downplay symptoms, delay follow-up, or lack the resources to act on referrals; factors that could contribute to their lower diagnostic yield.

4.2 Treatment Initiation Among Confirmed Cases

Once diagnosed, both men and women demonstrated high rates of treatment initiation. Table 2 summarizes treatment uptake by sex and includes statistical comparison using Fisher's Exact Test.

TABLE 2: TREATMENT INITIATION AMONG CONFIRMED TB CASES BY SEX

Variable	Male	Female	Total	Statistical Test	p-value	Effect Size (95% CI)
Confirmed TB Cases	680	466	1,146	—	—	—

Initiated Treatment (%)	648 (95.3%)	419 (89.9%)	1,067 (93.1%)	Fisher's Exact Test	0.041	OR = 1.84 (1.09–3.11)
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Treatment initiation was high across both sexes, with 95.3% of men and 89.9% of women starting treatment following diagnosis. Although both rates exceed global averages, the difference was statistically significant ($p = 0.041$), with men being 1.84 times more likely to initiate treatment promptly (95% CI: 1.09–3.11).

This gap, though modest, suggests that post-diagnosis barriers may disproportionately affect women. These could include logistical challenges such as transport costs, time constraints due to caregiving roles, or fear of stigma associated with TB treatment. The findings echo those of Kaona et al. (2004) and CHS Kenya (2023), which highlight how

gendered social roles can delay or disrupt women's engagement with care, even after diagnosis.

Importantly, the high overall treatment initiation rate reflects the strength of the KIC-TB project's community-facility linkage system, which leveraged Community Health Promoters and school-based follow-up to ensure continuity of care. This suggests that when access barriers are addressed, women engage with treatment as effectively as men.

4.3 Symptom Presentation by Gender

To assess whether clinical presentation contributed to diagnostic disparities, symptom profiles were analyzed among confirmed TB cases. Table 3 presents the prevalence of key symptoms by sex

TABLE 3: SYMPTOM PROFILE AMONG CONFIRMED TB CASES BY SEX

Symptom	Male (n=680)	Female (n=466)	Statistical Test	p-value	Interpretation
Cough (any duration)	553 (81.3%)	378 (81.1%)	Chi-square ($\chi^2 = 0.003$)	0.96	No significant difference
Fever	472 (69.4%)	323 (69.3%)	Chi-square ($\chi^2 = 0.001$)	0.98	No significant difference
Weight Loss	436 (64.1%)	298 (63.9%)	Chi-square ($\chi^2 = 0.002$)	0.96	No significant difference
Night Sweats	510 (75.0%)	351 (75.3%)	Chi-square ($\chi^2 = 0.005$)	0.94	No significant difference
≥2 Symptoms	552 (81.2%)	379 (81.3%)	Chi-square ($\chi^2 = 0.001$)	0.98	No significant difference

Symptom presentation was remarkably similar across sexes. Over 81% of both men and women reported cough and multiple symptoms, and no statistically significant differences were observed for any symptom category. These findings suggest that clinical presentation alone does not explain the gender disparity in TB diagnosis.

This reinforces the argument that social and systemic factors, rather than biological or symptomatic differences, are driving the diagnostic gap. Women may be less likely to report symptoms assertively, or their symptoms may be interpreted differently by screeners and health workers. As Horton et al. (2016) note, symptom-based screening tools may inadvertently favor male presentation patterns, leading to lower referral rates for women.

The data also suggest that screening tools used in the KIC-TB initiative were equally effective in identifying symptomatic individuals across sexes. However, the pathway from symptom recognition to diagnostic confirmation appears to be shaped by gendered dynamics that warrant further investigation.

The findings from this school-based TB screening initiative in Kakamega County reveal a consistent and statistically significant gender disparity in diagnostic outcomes. Despite near-equal screening volumes, men were 1.62 times more likely to be diagnosed with TB than women. This gap persisted even though symptom presentation was nearly identical across sexes, and both men and women reported high rates of multiple symptoms. These results suggest that the disparity is not rooted in

clinical differences but in the social and systemic pathways that shape access to diagnosis.

This aligns with global literature indicating that TB notification data often overrepresents men while underestimating the burden among women. The World Health Organization (2023) notes that men account for approximately 56% of global TB cases, but this figure may obscure underdiagnosis among women due to gendered barriers. Horton et al. (2016) emphasize that women's lower notification rates are not necessarily reflective of lower incidence but rather of reduced visibility within health systems.

In Kenya, similar patterns have been observed. Mbuthia et al. (2018) found that women in urban poor settings often delay seeking care due to stigma, HIV co-infection, and limited mobility. These constraints are compounded by caregiving responsibilities and social expectations that prioritize family health over personal wellbeing. In the context of Kakamega County, where household dynamics and economic dependency often limit women's autonomy, these barriers may be particularly pronounced.

The KIC-TB initiative's child-led model was designed to overcome traditional access limitations by embedding screening within schools and households. While this approach expanded coverage and facilitated early detection, it did not fully address the gendered dynamics that influence follow-through. Children may be effective messengers, but their influence is mediated by intra-household power structures. Women experiencing symptoms may still defer care due to fear of stigma, lack of decision-making authority, or competing responsibilities.

Interestingly, once diagnosed, women demonstrated high rates of treatment initiation at 89.9%, compared to 95.3% among men. Although the difference was statistically significant, both rates exceed national averages and reflect strong linkage systems. This suggests that when women do reach the point of diagnosis, they engage with care as effectively as men. It also highlights the importance of community-facility integration, with Community Health Promoters playing a key role in bridging the gap between screening and treatment.

The similarity in symptom profiles between men and women further reinforces the need to look beyond

clinical factors. Both sexes reported cough, fever, weight loss, and night sweats at nearly identical rates, with over 81% presenting with two or more symptoms. This challenges assumptions that women's TB symptoms are atypical or less severe and points instead to differences in how symptoms are reported, interpreted, and acted upon.

These findings underscore the importance of integrating gender analysis into TB programming. Disaggregated data is a starting point, but it must be complemented by qualitative insights into how gender norms, roles, and expectations shape health-seeking behavior. Programs must consider not only who is reached by screening but also who is empowered to act on it.

In this context, several programmatic adaptations could enhance gender equity:

- a) Female-led peer education: Engaging women as community health educators may improve symptom recognition and reduce stigma.
- b) Home-based follow-up: Deploying CHPs to conduct targeted household visits for women flagged during school screening could improve referral completion.
- c) Gender-responsive messaging: Tailoring health communication to address women's specific concerns and constraints may enhance engagement.

Moreover, school health programs offer a unique opportunity to embed gender equity into broader public health strategies. By training children to recognize TB symptoms and refer household members, the KIC-TB model created new pathways for care. However, without deliberate attention to gender dynamics, such models risk reproducing existing inequalities. Embedding gender analysis into school curricula, teacher training, and community engagement can help ensure that these platforms promote equity rather than reinforce disparities.

CONCLUSION

This study provides robust evidence of gender disparities in TB diagnosis within a school-based, child-led screening initiative in Kakamega County. Although men and women were equally represented among screened adults, men accounted for a

disproportionate share of confirmed TB cases. With a statistically significant difference in diagnostic yield; 0.43% among men versus 0.29% among women these findings suggest that women may be underdiagnosed or underreported, even in community-based models designed to enhance access.

Notably, both sexes demonstrated high rates of treatment initiation once diagnosed, indicating that the intervention effectively bridged gaps in care after diagnosis. This reflects the strength of the KIC-TB project's linkage system and the responsiveness of the local health infrastructure. However, the persistence of diagnostic disparities points to the need for more targeted gender-sensitive strategies. Without deliberate attention to gender dynamics, even innovative approaches like child-led screening may fall short of achieving equitable health outcomes. The findings affirm the importance of designing TB interventions that not only expand coverage but also address the social and structural factors that shape access to care.

As Kenya and other high-burden countries move toward TB elimination and universal health coverage, recognizing and responding to gendered pathways in disease exposure, symptom recognition, and care engagement becomes not only an equity imperative but also a programmatic necessity. The KIC-TB initiative offers valuable lessons for future interventions; demonstrating that inclusive platforms must be matched with intentional strategies to ensure that no one is left behind.

RECOMMENDATIONS

Drawing from the observed gender disparities in TB diagnosis and treatment within the KIC-TB school-based screening initiative, the following recommendations are proposed to strengthen future interventions and promote equitable health outcomes:

a) Integrate Gender Analysis into TB Program Design

TB interventions particularly those embedded in schools or communities should incorporate gender as a core analytic and planning variable. This includes assessing how gender norms, roles, and expectations influence symptom recognition, referral behavior, and access to diagnostic services. Program

frameworks should move beyond sex-disaggregated data to include qualitative insights that inform gender-responsive strategies.

b) Enhance Female Participation in Screening Follow-Up

Referral systems should be designed with women's mobility, caregiving responsibilities, and health-seeking behaviors in mind. This may involve offering flexible clinic hours, deploying door-to-door follow-up by Community Health Promoters, or establishing peer support groups to encourage care engagement.

c) Train Children on Gender-Sensitive Communication

As children served as health messengers in the KIC-TB model, TB education curricula should include guidance on engaging sensitively with household members of different genders and ages. This includes recognizing how gender dynamics affect health conversations and ensuring that referrals are communicated respectfully and effectively.

d) Engage Women in TB Awareness Campaigns

Leverage existing community structures such as parent-teacher associations, women's groups, and religious networks to raise awareness of TB symptoms and reduce stigma among women. These platforms can serve as trusted spaces for dialogue, education, and support.

6.1 Further Research

Additional mixed-methods research is needed to understand how gender norms, health literacy, and household power dynamics influence TB detection outcomes in school-based interventions.

ACKNOWLEDGEMENTS

This study was supported by the Global Fund through Amref Health Africa in Kenya, the Principal Recipient of the Kenya Innovation Challenge TB Project. The author acknowledges the contributions of the project team, school communities, Community Health Promoters (CHPs), and local stakeholders including the County Health Department, Teachers Service Commission (TSC), and Ministry of Education.

CONFLICT OF INTEREST

This study is based on data and experiences from a tuberculosis intervention project implemented between August 2019 and June 2024. The author's organization served as the Sub-Recipient (SR) under the Kenya Innovation Challenge TB Project, with Amref Health Africa in Kenya as the Principal Recipient (PR), and funding provided by the Global Fund. The author declares no personal or financial conflict of interest related to the publication of this research.

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