Factors Associated with Delays Affecting Health Care Service-in Commencement of Tuberculosis Treatment in Kwale County, Kenya

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Summary

INTRODUCTION

Tuberculosis (TB) is a communicable disease, a major cause of ill health and one of the top 10 causes of death worldwide. In 2018, an estimated 10 million people fell ill from TB with 1.5 million mortalities globally. Those were 5.7 million men, 3.2 million women and 1.1 million children. The prevalence of TB in Kenya was 558 per 100,000 adults an increase from the 2015 prevalence of 233/100,000. The highest disease burden was reported among people aged 25–34 years, males and those who lived in urban areas. Delay in treatment not only increased the risk of transmitting the infection but also led to an increase of multi drug resistant (MTR) TB. Nearly half of all estimated TB cases in Kwale County in Kenya had not been diagnosed, notified nor treated. Among children with TB, nearly two-thirds had not been diagnosed and approximately 80% of people with drug-resistant TB were neglected [6,8]

OBJECTIVES

This study sought to establish health care service-related factors associated with delay in commencement of ant-TB drugs provision to TB patients in Kwale County, Kenya.

METHODOLOGY

This was an exploratory qualitative study. Data was collected from health care workers at the Ministry of Health, Kwale County. Key informants were purposively sampled based on staffing listing and departments. This yielded a total of 14 key informants to be interviewed. Data was collected until saturation, transcribed and analyzed using framework and thematic analysis methods.

RESULTS

There existed barriers in provision of quality health care services in Kwale. Delays in treatment of TB not only increased the risk of transmitting the infection to healthy people but also led to an increase of multi drug resistance TB. Delay that was constituted by; elapsed time between onset of TB symptoms and first self-presentation to a formal health care facility, between first presentation to formal care and anti-TB treatment initiation. confirmed total delays as time elapsed between onset of TB symptoms, diagnosis and anti-TB treatment initiation.

CONCLUSION

Based on the three themes that emerged from the data analysis, health care service-related factors associated with delay in commencement of TB treatment in Kwale County were lack of diagnostic machines, poor TB surveillance systems, and poor road transport network.

RECOMMENDATION

We recommend The County Government of Kwale to invest in GeneXpert MTB/RIF diagnostic machines, strengthen TB surveillance system by involving Community Health Workers (CHWs) and improve the road network in every Sub- County. That would help reduce the burden of TB in the region, Kenya and the rest of the world.

Key Words: **Tuberculosis, TB treatment delay, Health Service-Related Factors, Kwale County**

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Introduction

World Health Organization(WHO) report acknowledged that, *Tuberculosis* (TB) was a communicable disease, a major cause of ill health and one of the top 10 causes of death worldwide. As one of the leading cause of death from a single infectious agent [12]. TB is caused by *bacillus Mycobacterium Tuberculosis*. People who are sick with TB expel the bacteria into the air by coughing thus spreading to everyone. Typically it affects the lungs (*pulmonary TB*) but it can also affect other sites (*extrapulmonary TB*). About a quarter of the world's population was infected with *M. tuberculosis* and thus at risk of developing TB disease [12].

Geographically, most TB cases in 2018 were in the WHO regions of South-East Asia (44%), Africa (24%) and the Western Pacific (18%). Smaller percentages were in the Eastern Mediterranean (8%), the Americas (3%) and Europe (3%).

Eight countries accounted for two thirds of the global total cases:

India	(27%)
China	(9%)
Indonesia	(8%)
The Philippines	(6%)
Pakistan	(6%)
Nigeria	(4%)
Bangladesh	(4%)
South Africa	(3%)

These and 22 other countries in WHO's list of 30 high TB burden countries accounted for 87% of the world's cases. Drug-resistant TB continues to be a public health threat. In 2018, there were approximately half a million new cases of *Rifampicin - Resistant* TB, out of which 78% had multidrug resistant TB [12].

Previousily, most of the high TB burden countries were not on track to reach the 2020 milestones of the End TB Strategy [11]. Though globally the average rate of decline in the TB incidence rate was 1.6% per year in the period 2000−2018, and 2.0% between 2017 and 2018, mortality and morbidity rates associated with TB are still high.

In 2018, an estimated 10 million people fell ill from Tuberculosis (TB) worldwide. 5.7 million men, 3.2 million women and 1.1 million children. A total of 1.5 million people including 205 000 children died from TB [11].

In Kenya, a nationwide survey to determine the burden of TB in the country established that, the prevalence of TB was 558 [95% CI 455 – 662] per 100,000 adult population an increase from the 2015 prevalence of 233/100,000 population [6]. The highest disease burden was reported among people aged 25–34 years (716 [95% CI 526–906]), males (809 [(95% CI 656–962]) and those who stay in urban areas (760 [95% CI 539–981]) [6].

Kenya was in the WHO list of the 30 high burden TB states despite the considerable investment made by the government and its partners in TB care and prevention in the past 20 years. The disease still rates 4th among leading causes of death in the country [4].

In Kenya, there was a trend indicating that Human Immuno Deficiency Syndrome (HIV) and TB were synergistic. HIV increases chances of incidence of TB and TB was associated with increased mortality among People Living with HIV/AIDS (PLHIV). The risk of TB infection was 16 - 27 times greater in PLHIV than in the general population [6].

In Kwale County, the area where this study was conducted, the HIV/TB coinfection rate was 24% [18]. Though in both 2017 and 2018, TB case notifications in Kenya increased by more than ten percent, respectively. Still in 2018, nearly half of all estimated TB cases were not diagnosed, notified nor treated. Among children with TB, nearly two-thirds were not diagnosed and nearly 80% of people with drug-resistant TB were neglected [6, 8]

One of the key strategies of reducing the morbidity and mortality burden associated with TB in Kenya and world over is to ensure access to quality health care services. That include reaching out to actively screening (for treatment or preventive therapy) the contacts of TB patients. Specifically children, people living with HIV/AIDS and healthcare workers are at high-risk of contracting the disease[8].

However, previous studies had reported that, there existed barriers in the provision of quality health care services which could lead to delays in commencement of anti-TB Drugs among TB Patients [3 & 7]. In that respect, studies had shown that, delays in treatment of TB not only increases the risk of transmitting the disease to healthy people but also lead to an increase of multidrug resistant TB [5].

Delay to TB treatment can be categorized as:

1. Patient delay that constitute time elapsed between onset of TB symptoms and first self-presentation to formal care.
2. Provider delay as time elapsed between first presentation to formal health care and anti-TB treatment initiation.
3. Total delay as time elapsed between onset of TB symptoms and anti-TB treatment initiation [2].

This study's investigations established the above as some of the health care service-related factors associated with delays in commencement of ant-TB drugs among TB patients in Kwale County, Kenya.

Materials and Methodology

This was an exploratory qualitative study. Data was collected from key informants working in the Ministry of Health, Kwale County. Those were nurses, clinical officers, pharmacists, laboratory technicians and medical doctors. Purposive sampling procedure was used to identify the staff with specific information on health service-related issues associated with delay in commencement of TB treatment service provision. The principle of data saturation was applied to determine a representative sample size. Interviews were conducted until a point when any additional information did not yield any new information (i.e. saturation point).

A total of 14 key informants interviewed were mainly Medical staff: 3 nurses, 3 clinical officers, 3 pharmacists, 3 laboratory technicians and 2 medical doctors. Qualitative data was collected using key informant data collection forms and voice recorders. Data was later transcribed analyzed subsequently using framework and thematic methods. A matrix was created with emerging themes on one end against participants' responses on the other end using NVivo software. Informed consent was sought from all study participants and confidentiality was upheld.

Regarding study limitations, the qualitative nature of this study exposed the data to reflexivity-the influence of the researcher on the participants responses based on the manner the researcher asked questions. The researcher accounted for reflexivity by collecting data to saturation point. Another limitation of this study was that the findings are specific to the study area and cannot be generalized due to the qualitative nature of the study design.

Results

A total of 14 interviews were conducted among health care workers. Three thematic areas emerged in the data analysis. The main issues that were commonly mentioned as main causes of delays in commencement of tuberculosis treatment in Kwale county were; lack of diagnostic machines, poor TB surveillance system, and a poor road network. The main themes were characterized as follows:

Theme A:
Lack of Early Diagnosis Due to Lack to TB Diagnostic Machines

Lack of early diagnosis was frequently mentioned by healthcare workers as hindrance to their efforts. Broken down equipment coupled with lack of reagents were the key issues as observed in the following quotes:

"GeneXpert machine in this health facility has broken down"-
Clinical Officer, Msambweni Hospital

"We have the TB diagnostic machines but at times we have no reagents"-
Laboratory Technician, Kwale Hospital.

Theme B:
Weak Surveillance Systems to Detect TB Cases

Participants in both Msambweni and Kwale sub-county hospitals reported that, the TB surveillance systems were poor in the area as indicated by the following quote:

"We do not have adequate and well-trained health workers working in chest and TB clinics Hence! many TB cases pass undetected"- Medical officer, Kwale Hospital

"In this County we only have two hospitals with proper and functional GeneXpert machine to diagnose TB. The hospitals are Msambweni County Referral hospital, and Kwale Sub-County Hospital. The other health facilities lack the necessary equipment and staff to diagnose TB early"- Clinical Officer, Msambweni Hospital

"*We have very few experts who are highly motivated to diagnose TB".* - Nurse, Kwale Hospital

"*Our TB experts come during clinic days only Which is once per week in this facility, Hence on the other days, TB cases can pass unnoticed".* - Nurse, Msambweni Hospital

Theme C:
Poor Road Network

Most respondents also identified the poor road network as one of the factors associated with delay in commencement of TB treatment as shown in the following data:

"During rainy seasons, the roads are impassable. Our patients live far away, and they cannot come during their TB clinic days to collect drugs". - Nurse, Kwale Sub County Hospital

"Vehicles charge very high fares when it rains which our patients cannot afford making them unable to visit our health facilities for TB screening and diagnosis". - Laboratory Tech., Kwale Sub County Hospital.

Discussion

Lack of early diagnosis due to inadequate TB diagnostic machines, poor TB surveillance systems and poor road networks were identified as the main factors that contribute to delays in commencement of TB treatment to patients. Lack of diagnostic machines in health centres denied health workers the chance to test patients for their TB status. Hence many TB cases will remain in the population undetected as such cases will delay in seeking treatment simply because they do not know their TB status.

In regard to poor TB surveillance system, a weak system did not have capacity to identify TB cases fast and put them on treatment. That could lead to delay in seeking treatment by TB positive cases who did not know their status. Lastly a poor transport network was a deterrent to seeking treatment from health facilities especially in poor resourced areas like Kwale County. Patients may lack means of transport to reach the nearby health facilities simply because the road network was dilapidated. Patients too may fail to visit hospital due to inaccessible road networks and this could potentially deny them a chance to get a TB diagnosis in time. The three scenarios then become potential sources of TB treatment delay in Kwale County.

This study is consistent with findings from other empirical studies. A study conducted in Croatia, identified lack of diagnosis of TB patients as one of the factors causing delay in seeking TB treatment [1]. In Zimbabwe, lack of GeneXpert machine in health facilities was associated factor with the delay [10]. Another study conducted in Northern Nigeria identified poor surveillance system as a major cause of delay in seeking TB treatment [9] Poor transport system to deliver sputum and to seek medication was established as a significant barrier to TB treatment hence a major cause of delay [13].

Conclusion and Recommendations

Health care service-related factors influencing delay in TB treatment in Kwale County were lack of diagnostic machines, poor TB surveillance systems, and poor road transport network. We recommend that County Government of Kwale invest in GeneXpert machines in order to provide TB diagnostic services. In addition, strengthen TB surveillance system, and improve the road network. This will potentially translate to an increase in access of TB treatment services, improve early detection, and reduce delay in commencing TB treatment among TB patients and help in reducing the burden of TB in Kwale County, Kenya and the world over.

Declarations

The authors declare no competing interests.

Ethical approval and Consent To Participate

We sought consent from the University of Eastern Africa Baraton, Research Ethical Review

Committee. A research permit was granted by the National Commission for Science, Technology and Innovation (NACOSTI) in Kenya. Permission for data collection was also granted by the Ministry of Health, Kwale County Government.

Authors' Contributions

BMJ conceived the idea and wrote the proposal, JMN added intellectual input and advised on data analysis, CK read and added intellectual input in the manuscript

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References

1. **Anamarija Jurcev-Savicevic, Rosanda Mulic, Karlo Kozul, Bozica Ban, Jasna Valic, Ljiljana Bacun-Ivcek, Ivan Gudelj, Gordana Popijac-Cesar, Snjezana Marinovic-Dunatov, & Aleksandar Simunovic.** (2013). Health system delay in pulmonary tuberculosis treatment in a country with an intermediate burden of tuberculosis: a cross-sectional study. *BMC Public Health,* 13(250).
2. **Asres A., Jerene D., & Deressa W.** (2019). Delays to anti-tuberculosis treatment intiation among cases on directly observed treatment short course in districts of southwestern Ethiopia: a cross sectional study. *BMC Infectious Diseases,* 19(481). https://doi.org/10.1186/s12879-019-4089-x
3. **De Schacht C., Udia C., Mutaquiha Faria, F., Castro, G., Lia Manaca N., Manhiç I., & Cowan J.** (2019). Barriers to access and adherence to tuberculosis services, as perceived by patients: A qualitative study in Mozambique. *PLOS ONE*, 14(**7**). https://doi.org/10.1371/journal.pone.0219470
4. **Enos M. I., Sitienei J., Ong, J., Mungai B., Kamene, M., Wambugu J., Kipruto H., Manduku, V., Mburu J., Nyaboke, D., Ngari F., Omesa E., Omale N., MwirigiID N., Okallo, G., Njoroge I. D. J., Githiomi, M., Mwangi M., Kirathe D., Weyenga H.** (2018). Kenya tuberculosis prevalence survey 2016: Challenges and opportunities of ending TB in Kenya. *Plos One*, 13(12). https://doi.org/10.1371/journal.pone.0209098
5. **Hapolo E., Ilai J., Francis T., Du Cros P., Taune M., & Chan G**. (2019). TB treatment delay associated with drug resistance and admission at Daru General Hospital in Papua New Guinea. *Public Health Action*, 9(**1**). https://doi.org/10.5588/pha.18.0075
6. **KELIN.** (2018). Tuberculosis: Data Assessment in Key, Vulnerable and Undeserved Populations in Kenya. *Kenya Legal and Ethical Issues Network on HIV and AIDS*. www.kelinkenya.org
7. **Marahatta, S. B., Yadav R. K., Giri D., Lama S., Raj K., Id R., Mishra S. R., Shrestha A., Bhattrai R., Mahato R. K., & Id B. A.** (2020). Barriers in the access, diagnosis and treatment completion for tuberculosis patients in central and western Nepal: A qualitative study among patients, community members and health care workers. *PLOS ONE*. https://doi.org/10.1371/journal.pone.0227293
8. **Ministry of Health.** (2019). National Strategic Plan For Tuberculosis, *Leprosy and Lung Health 2019-2023 (Ministry of Health (ed.))*.
9. **Seid A., & Metaferia Y.** (2018). Factors associated with treatment delay among newly diagnosed tuberculosis patients in Dessie city and surroundings, Northern Central Ethiopia: a cross-sectional study. *BMC Public Health*, 18(**93**1). https://doi.org/10.1186/s12889-018-5823-9
10. **Takarinda K. C., Harries A. D., Nyathi B., Ngwenya M., Mutasa-Apollo T., & Sandy C**. (2015). Tuberculosis treatment delays and associated factors within the Zimbabwe national tuberculosis programme. *BMC Public Health,* 15(29). https://doi.org/10.1186/s12889-015-1437-7
11. **WHO** (2018). *Global Tuberculosis report 2018.* World Health Organization.
12. **World Health Organization** (2019). *Global Tuberculosis report 2019.* World Health Organization Licence: CC BY-NC-SA 3.0 IGO. http://apps.who.int/bookorders.
13. **Yang W.-T., Gounder C. R., Akande T., De Neve J.-W., Mcintire K. N., Chandrasekhar A., De Lima Pereira, A., Gummadi, N., Samanta S., & Gupta A.** (2014). Barriers and Delays in Tuberculosis Diagnosis and Treatment Services: Does Gender Matter? Hindawi , Tuberclosis Research Treatment. https://doi.org/10.1155/2014/461935