An Assessment on the Capacity of Health Facility Staff in Implementing Strategic Management Practices for Active TB Case Finding in Nairobi, Kenya

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Abstract:
Tuberculosis (TB) is a contagious disease caused by the bacteria Mycobacterium tuberculosis. This bacterium primarily targets the lungs but can also affect other body parts, including the kidneys, spine, and brain. TB spreads through airborne droplets when an infected person coughs, sneezes, or even breathes. Symptoms of TB include a persistent cough, fever, chest pain, fatigue, night sweats, and loss of appetite. TB remains one of the most widespread infections globally and continues to be a significant cause of illness and death. In 2019, the World Health Organization (WHO) reported that 10 million people contracted TB, resulting in approximately 1.2 million deaths. Additionally, the Centers for Disease Control and Prevention (CDC) highlighted that around 3.6 million people with TB go undetected annually, thus not receiving the necessary care. Effective TB management requires strategic planning, including setting clear goals based on comprehensive assessments, prioritizing TB screening and detection, focusing on high-risk groups, and implementing appropriate screening and diagnostic methods. Despite these efforts, active TB case finding faces several challenges. These include diagnosing extrapulmonary TB, executing healthcare plans, delivering healthcare, and addressing patient obstacles. Healthcare facilities also struggle with community delays in seeking care, insufficient awareness among healthcare professionals, financial barriers, inadequate training, staffing shortages, and community stigma. The study aimed to assess the capacity of health facility staff in Nairobi County to implement strategic management practices for active TB case finding. This study utilized both quantitative and qualitative methodologies. Structured questionnaires were used for quantitative data, while focus group discussions and open-ended questionnaires provided qualitative insights. The target population consisted of 3,290 individuals, including 2,604 healthcare workers and 686 non-health technical staff across healthcare facilities in Nairobi County. During the study period from April to June 2024, 406 respondents, representing an 81% response rate of the targeted 501 healthcare workers at 239 TB treatment sites in Nairobi, were reached. Most respondents (86%) reported receiving specialized training in TB case finding, indicating a proactive approach to skill development. However, 14% had not received such training due to various reasons like not having started training yet or staff shortages. Training modalities included Continuing Medical Education (CMEs), on-the-job training, virtual training, and didactic training. On-the-job training was rated the most effective (4.5 out of 5), followed by CMEs (4.4), with virtual and didactic trainings receiving lower ratings (3.7 and 3.5, respectively). Addressing skill gaps was a priority, with 94% of respondents relying on on-the-job training, 74% on specialized capacity-building training, and 69% on mentorship strategies. Regular training, often conducted quarterly, demonstrated a commitment to ongoing learning. Strategic management training covered various aspects from TB case finding protocols to leadership and project management, reflecting a comprehensive approach to workforce development. High self-rated skills in clinical assessment (4.6), communication with patients, and teamwork (both 4.5) validated the effectiveness of the training. However, logistical challenges and staffing shortages still hindered some training efforts. The study recommends developing and implementing structured mentorship and continuous professional development programs, utilizing both in-person and remote methods. Ensuring all health facility staff have ongoing access to specialized TB case management education will address logistical challenges and staffing shortages, enhancing clinical capacity and effectiveness in TB case finding and management

Keywords: Strategic Management, Facility staff capacity, TB case finding, Nairobi, Kenya

1. Introduction

1.1. Background of the Study

Tuberculosis (TB) is a contagious disease caused by a bacterium called *Mycobacterium tuberculosis* that primarily affects the lungs and is transmitted from person to person through coughing, sneezing and breathing in airborne droplets of the bacteria. TB is known to also affect other parts of the body, such as the kidneys, spine and brain. The TB symptoms include persistent cough, fever, chest pain, fatigue, night sweats, and loss of appetite (Deutsch-Feldman et al., 2021; WHO, 2018). The disease is one of the most common infections in the world (Prevention, 2013); "What Is Tuberculosis (TB)?,"

2017) and remains endemic globally (Jain et al., 2020). TB has remained a major cause of morbidity and mortality from a single infectious bacteria (Chakaya et al., 2021). During the year 2019, the World Health Organization estimated that 10 million people fell ill with TB, with about 1.2 million deaths reported (World Health Organization, 2020). However, the global fact sheet by the Centre for Disease Control (CDC) indicates that globally, about 3.6 million people with TB are not detected *("missed")* annually by health systems, and therefore, they do not get the tuberculosis care they need and deserve (Centers for Disease Control and Prevention, 2015). The End TB Strategy emphasizes that the government's commitment and investment are essential for joint strategic policy development, planning, and implementation. Tuberculosis is a bacterial infection disease that primarily affects the lungs and is caused by bacteria called Mycobacterium Tuberculosis. In Tuberculosis control, strategic management considers setting clear goals and objectives based on a comprehensive assessment of the situation, considering the place of TB screening and TB detection, selection and response to high-risk groups, identification of appropriate screening and diagnostic algorithms, and pursuing differentiated patient-centred strategies (Creswell et al., 2013).

The 2016 WHO TB report ranks Kenya among the 30 high-TB burden countries globally (Magu et al., 2016) with the highest burden of TB, multidrug-resistant TB, and TB/human immunodeficiency virus (HIV) co-infection (Ogwang et al., 2021) that contribute to over 80% of the global burden (Amisi et al., 2021; Cilloni et al., 2020; Marangu et al., 2017). The Kenya TB prevalence report (2016) indicates that TB in the country is higher than had been estimated, with about half of those who fall ill with TB annually missed (Enos et al., 2018). In the year 2019, over 140,000 TB (TB Incidence) cases occurred in Kenya, with an estimated 86,504 people with drug-susceptible tuberculosis (DSTB) notified and reported to the national surveillance system and a national prevalence of 348 per 100,000 (Ciccacci et al., 2021)(NTLD-P Ministry of Health Kenya, 2019b). In the year 2020, Kenya reported a case notification rate and a detection gap of 48% for drug-sensitive Tuberculosis (DSTB). The Kenya TB prevalence survey discloses that the highest TB disease burden was reported among populations who dwell in urban settings (Enos et al., 2018). Nairobi is an urban city and one of the 47 counties of Kenya. It is also the capital city of Kenya, with an estimated population of 4.3 million people (Kenya National Bureau of Statistics, 2019). The county has been contributing to over 10% of all TB cases notified in the country (Maore et al., 2017)(NTLD-P Ministry of Health Kenya, 2019b). In the year 2015, 10 counties accounted for 48% of the total notified TB cases, with Nairobi leading at 12,425 cases, followed by Mombasa (4,225), Kiambu (3,702), Nakuru (3,636), Meru (3,420), Kisumu (2,933), Turkana (2,250), Machakos (2,223), Kakamega (2,184), and Homabay (2,143) (*Source TIBU May 2016*).

1.1.1. Challenges Experienced in Active TB Case Finding

Active TB case finding faces several challenges, among them diagnosis of Extra pulmonary TB, challenges in executing intended plans connected to healthcare systems, delivering healthcare, and the obstacles faced by patients (Arega et al., 2020; Kunciw & de la Cruz, 2021; Nagaraja et al., 2021). Further challenges within healthcare facilities encompass delayed care-seeking by the community, insufficient awareness among healthcare professionals, negative attitudes and apprehensions toward screening, as well as financial obstacles (Isangula et al., 2023) alongside insufficient training of healthcare personnel, staffing shortages, and community indifference stemming from stigma, there are additional challenges such as a lack of awareness about TB, high levels of illiteracy, difficulties in persuading patients to undergo sputum tests, and delays in obtaining test results (Shamanewadi et al., 2020).

1.1.2. Study Objective

Therefore, the main objective of this study was to assess the capacity of health facility staff to implement strategic management practices for active TB case finding.

1.1.3. Empirical Literature Review

Strategic agility hinges not only on analytical strategy but also on the array of management practices, behaviors, skills, values, and beliefs that drive senior management in formulating and executing strategic commitments as detailed by (Doz, 2020). Effective knowledge management has a crucial role if implemented in service institutions aiming to utilize strategic management to address the growing public demands (Alghofeli, 2022). Meaningful involvement and thoughtful reflection from program staff and collaborators are indispensable for every stage of program planning, execution, reporting, and dissemination (Volkov et al., 2019). Effective strategic management demands significant investments in time, resources, and human capital (Miller, 2018).

In a study by (Mwaura et al., 2022) to determine the effect of Strategic Human Resource Management Practices (SHRMPs) on the performance of public universities, the findings show that business entities must prioritize internal focus to harness resources, with the most critical being human resources. It is the workforce that empowers these entities to gain a competitive edge in their operations as they mobilize and extract value from other resources within the enterprise. A study (Mwombeki, 2022) to assess the influence of the dimensions of agency capacities on the performance in generating own sources demonstrated that the agency's performance is significantly and positively impacted by planning and development, human resource capacity, and infrastructure capacity.

A study examining the obstacles to effective implementation of strategic plans in healthcare organizations in Tbilisi, Georgia, found that while hospitals may develop strategic plans, their implementation is inadequately monitored and not grounded in scientifically robust methods. Physicians' strategic planning skills are deficient due to insufficient competence, lack of knowledge, and a misunderstanding of the strategic importance. Systematic training is essential to enhance these skills (Verulava, 2023).

Globally, Governments, donors, and non-governmental organizations are confronted with the task of finding solutions to address the increasing healthcare demands caused by a global shortage of health workers (Fogarty et al., 2009). The

capacity of healthcare workers is a critical component in implementing strategic management practices (Sychareun et al., 2013; Ugwuibe, 2020). Supply-side limitations stem from insufficient human resources, inadequate compensation, lacking technical guidance, minimal supervision, and restricted equipment availability. On the demand side, challenges primarily involve costs, limited transportation access, cultural norms, and language barriers. Additional hurdles pertain to overarching strategic management and cross-sectoral contextual factors, such as low educational attainment, gender disparities, and inadequate transport and communication infrastructure (Sychareun et al., 2013).

2. Study Methodology

The study employed a mixed methodology combining quantitative and qualitative methodologies to gather comprehensive insights. Quantitatively, the researcher utilized structured questionnaires. The structured questionnaire was the primary tool for respondents, ensuring systematic data collection. Qualitative data was collected through guided focus group discussions and sections of the respondent's open-ended questionnaire.

The study focused on a target population of 3,290 comprising 2,604 healthcare workers and 686 non-health technical staff in healthcare facilities located in Nairobi County (Kumar et al., 2021) for qualitative data collection. These individuals are actively engaged in the oversight and execution of tuberculosis (TB) case-finding and treatment activities. Notably, this group possesses specialized knowledge and expertise for managing and implementing TB case-finding initiatives, including uploading data to KHIS and notifying TIBU. Their role as key stakeholders can provide valuable input in shaping policies and procedures related to TB case finding. Furthermore, as frontline healthcare workers (HCWs), they exert a direct influence on the health outcomes of TB patients within Nairobi County. Among this population are 501 healthcare workers who work in TB clinics, and they include 12 Sub County TB coordinators, 11 Facility/sub county Medical Supretendants, 239 Health facility in-charges, and 239 TB clinic in-charges supporting the 239 TB treatment sites in Nairobi.

3. Study Results

During the three-month period between April and June 2024, a total of 406 respondents, representing an 81% response rate of the targeted 501 healthcare workers who work in the 239 TB treatment sites in Nairobi, were reached. Additionally, 4 Focus Group Discussions (FGDs) were conducted, involving a total of 44 respondents.

When asked about the methods/approaches used to find TB patients, a total of 336 (82.8%) indicated that they used active TB case-finding only, as shown below.

Element	Frequency	Percent
Active TB Case finding	336	83%
Passive TB Case finding	26	6%
Intensified TB case finding	33	8%
Community TB Sensitization	11	3%
Total	406	

Table 1: Active TB Case Finding

The respondents were interviewed to assess the capacity of health facility staff to implement strategic management practices for active TB case finding. While responding to whether they have undergone specialized training on TB case finding, 86% indicated yes, while 14% indicated no. Among those who indicated no were 2 clinicians and 3 nurses. The reasons given for not being trained were that they had not started any training and there was a staff shortage for them to be released to attend training.

Among those who had attended a training, an enquiry on which training they attended for TB case finding revealed that the training conducted was 74% CMEs, 71% on-the-job training, 54% virtual training and 34% didactic training on TB case finding, as shown below.
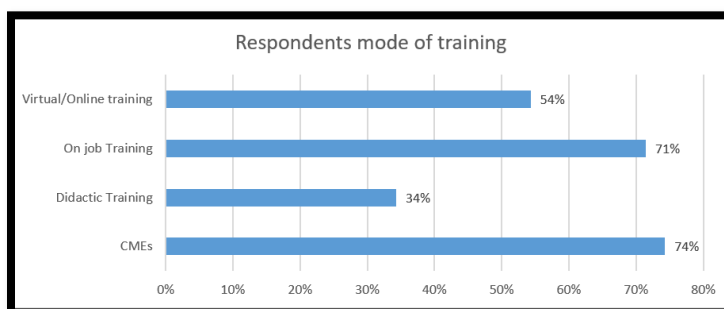

Figure 1: Mode of Training Undertaken by Respondents

When asked to rate the effectiveness of the training for TB case finding where 1 was weak, and 5 was rated best, the training mode with the highest training, where 5 is the best way On the Job training at 4.5, CMEs at 4.4, Virtual training at 3.7 and Didactic training at 3.5, as shown below.

Figure 2: Respondents' Ratings on Effectiveness of Mode of Training

When asked how they address Skill gaps and challenges to ensure the delivery of high-quality care and efficient service provision, 94% indicated through on-the-job training, 74% through Specialized capacity-building training, and 69% through mentorship strategies, as shown below.
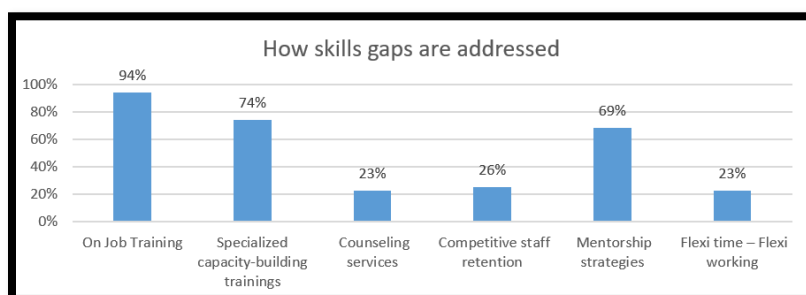

Figure 3: Responses to How Skill Gaps Are Addressed

When asked how frequently they undergo training, 44% indicated quarterly, followed by 21% who indicated it is unknown and 12% who indicated annually.

Among the strategic management trainings conducted includes PQE ACF, Treatment of MDRTB Leadership, Management and governance, Supervisory training, Health management training, DRTB sensitization, Pediatrics TB Training, TPT, IPC and Project management training. When asked about the duration of training, 65% of the respondents indicated less than one month. When asked if the county has the required resources to support strategic management training for TB, 68% of the participants indicated yes. Whether the leadership in the facility actively supports TB case-finding initiatives, 82% of the respondents said yes, compared to 18% who indicated no. When asked if the county management team evaluate your TB case finding work, 97% of the respondents indicated yes.

The respondents were asked to rate their skills in TB case finding, with 1 being weak and 5 being best. Clinical assessment skills were scored highest at 4.6, followed by effective communication with patients and teamwork at 4.5, as shown below.
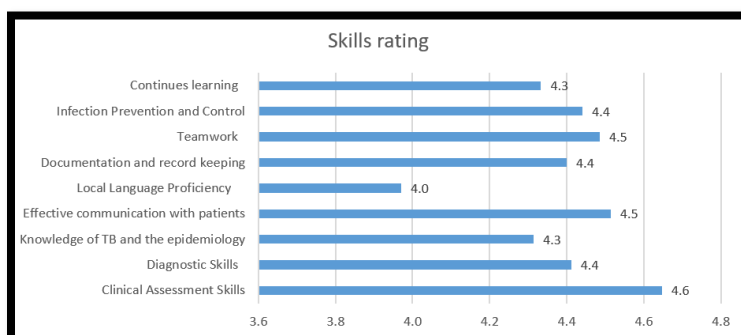

Figure 4: Respondents' Rating of Thei Skills in TB Case Finding

4. Discussion

The study shows that 86% of respondents reported having undergone specialized training on TB case finding, highlighting a proactive approach to skill development within the healthcare workforce. However, 14% indicated they had not received such training, citing reasons like not having started training yet or facing staff shortages that hindered their release for training.

Among those trained, the most common training modalities included Continuing Medical Education (CMEs), on-the-job training, virtual training, and didactic training, with varying effectiveness ratings reported. On-the-job training received the highest effectiveness rating of 4.5 out of 5, followed closely by CMEs at 4.4, indicating these modes were well-

received and perceived as highly beneficial. Virtual training and didactic training also received positive ratings, albeit slightly lower at 3.7 and 3.5, respectively, suggesting room for improvement in these formats. Addressing skill gap challenges emerged as a priority, with 94% of respondents indicating reliance on on-the-job training to enhance skills, followed by specialized capacity-building training (74%) and mentorship strategies (69%). This underscores a comprehensive approach to continuous professional development within the healthcare setting. Regarding the frequency of training, a majority of 44% reported undergoing training quarterly, highlighting a commitment to ongoing learning and skill refinement.

The variety of strategic management training offered, ranging from TB case-finding protocols to leadership and project management, reflects a holistic approach to workforce development tailored to meet diverse organizational needs. Finally, high self-rated skills in clinical assessment (4.6), effective communication with patients, and teamwork (both at 4.5) further validate the efficacy of training efforts and the dedication of healthcare professionals to delivering quality TB care in Nairobi County.

4.1. Comparison with Other Studies

The studies from Mwaura et al. (2022), Mwombeki (2022), and Verulava (2023), alongside the survey conducted in Nairobi County, highlight differences in strategic management and organizational performance within diverse contexts. Mwaura et al. (2022) focus on Strategic Human Resource Management Practices (SHRMPs) and their impact on public university performance. Their findings emphasize the critical role of human resources in gaining a competitive edge. By prioritizing internal focus and effectively mobilizing workforce capabilities, universities enhance their operational efficiency and overall performance. This aligns with the proactive approach seen in Nairobi County's healthcare setting, where specialized training and skill development are key components in improving TB case finding and healthcare delivery.

In contrast, Mwombeki (2022) examines agency capacities and their influence on performance, particularly in generating resources independently. The study underscores the importance of planning, human resource capacity, and infrastructure in bolstering agency performance. This broader perspective on organizational capacity resonates with the need for comprehensive strategic management practices observed in Nairobi County, where training modalities like CMEs, on-the-job training, and mentorship strategies play pivotal roles in addressing skill gaps and enhancing professional development among healthcare staff.

Verulava's study (2023) delves into the challenges of strategic plan implementation in healthcare organizations, particularly in Tbilisi, Georgia. It highlights deficiencies in strategic planning skills among physicians and emphasizes the necessity for systematic training to improve these competencies. This parallels the findings in Nairobi County, where effective training modalities like on-the-job training receive high effectiveness ratings, indicating their crucial role in bridging skill gaps and ensuring the quality of TB case-finding practices.

The study provides specific insights into how strategic management practices are applied in the context of TB case finding within healthcare facilities. It reveals a supportive organizational environment, with strong management evaluation of TB initiatives and high levels of leadership support. This contrasts with Verulava's findings, where healthcare organizations struggle with inadequate monitoring and scientific grounding in strategic planning methods, highlighting a gap in effective implementation despite strategic intentions.

5. Conclusion

The assessment of health facility staff capacity in implementing strategic management practices for active TB case finding in Nairobi County reveals both strengths and areas needing improvement. While a significant proportion of staff have received specialized training, particularly through on-the-job and continuous medical education, gaps remain due to logistical challenges and staffing shortages. Effective training programs have positively impacted clinical skills, communication, and teamwork, yet the overall capacity to manage TB cases still shows room for enhancement. Ensuring sustainable and effective TB case-finding initiatives necessitates addressing these gaps through increased resource allocation, robust community engagement, and comprehensive stakeholder collaboration. Moreover, the establishment of sustainability mechanisms and investment in health information systems are crucial for maintaining the momentum of TB management efforts. This multifaceted approach is essential to overcoming persistent challenges and improving the overall effectiveness of TB case-finding and management in the region.

6. Recommendation

To enhance staff capacity, the study recommends developing and implementing a structured mentorship and continuous professional development program that leverages both in-person and remote training methods, ensuring all health facility staff have ongoing access to specialized TB case management education, thereby addressing logistical challenges and staffing shortages while enhancing overall clinical capacity and effectiveness.

7. References

i. Alghofeli, M. (2022). The impact of knowledge management on strategic management practices. *International Journal of Informatics and Information Systems, 5*(1). https://doi.org/10.47738/ijiis.v5i1.125

ii. Amisi, J. A., Carter, E. J., Masini, E., & Szkwarko, D. (2021). Closing the loop in child TB contact management: Completion of TB preventive therapy outcomes in western Kenya. *BMJ Open, 11*(2). https://doi.org/10.1136/bmjopen-2020-040993

iii.   Arega, B., Mersha, A., Minda, A., Getachew, Y., Sitotaw, A., Gebeyehu, T., & Agunie, A. (2020). Epidemiology and the diagnostic challenge of extra-pulmonary tuberculosis in a teaching hospital in Ethiopia. *PLoS ONE, 15*(12). https://doi.org/10.1371/journal.pone.0243945

iv.   Centers for Disease Control and Prevention. (2015). *Finding the missing 4 million: The role of enhanced diagnostics and case-finding in reaching all people with TB*. CDC.

v.   Chakaya, J., Khan, M., Ntoumi, F., Aklillu, E., Fatima, R., Mwaba, P., Kapata, N., Mfinanga, S., Hasnain, S. E., Katoto, P. D. M. C., Bulabula, A. N. H., Sam-Agudu, N. A., Nachega, J. B., Tiberi, S., McHugh, T. D., Abubakar, I., & Zumla, A. (2021). Global Tuberculosis Report (2020). – Reflections on the global TB burden, treatment, and prevention efforts. *International Journal of Infectious Diseases*. https://doi.org/10.1016/j.ijid.2021.02.107

vi.   Ciccacci, F., Welu, B., Ndoi, H., Karea, I., Orlando, S., Brambilla, D., Munene, K., Giglio, P., Opanga, B., Ronoh, A., Mukwanjagi, S., Mwiraria, R., Guidotti, G., & Marazzi, M. C. (2021). High-sensitivity C-reactive protein in HIV care: Tuberculosis diagnosis and short-term mortality in a cohort of Kenyan HIV patients in the DREAM programme. *International Journal of Infectious Diseases, 104*. https://doi.org/10.1016/j.ijid.2021.01.008

vii.   Cilloni, L., Fu, H., Vesga, J. F., Dowdy, D., Pretorius, C., Ahmedov, S., Nair, S. A., Mosneaga, A., Masini, E., Sahu, S., & Arinaminpathy, N. (2020). The potential impact of the COVID-19 pandemic on the tuberculosis epidemic: A modelling analysis. *EClinicalMedicine, 28*. https://doi.org/10.1016/j.eclinm.2020.100603

viii.   Creswell, J., Ottmani, S. E., Wei, D., Sahu, S., Lönnroth, K., & Uplekar, M. W. (2013). Programmatic approaches to screening for active tuberculosis. *International Journal of Tuberculosis and Lung Disease, 17*(10). https://doi.org/10.5588/ijtld.13.0199

ix.   Deutsch-Feldman, M., Pratt, R. H., Price, S. F., Tsang, C. A., & Self, J. L. (2021). Tuberculosis – United States, (2020). *MMWR Surveillance Summaries, 70*(12). https://doi.org/10.15585/mmwr.mm7012a1

x.   Doz, Y. (2020). Fostering strategic agility: How individual executives and human resource practices contribute. *Human Resource Management Review, 30*(1). https://doi.org/10.1016/j.hrmr.2019.100693

xi.   Enos, M., Sitienei, J., Ong'ang'o, J., Mungai, B., Kamene, M., Wambugu, J., Kipruto, H., Manduku, V., Mburu, J., Nyaboke, D., Ngari, F., Omesa, E., Omale, N., Mwirigi, N., Okallo, G., Njoroge, 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*. https://doi.org/10.1371/journal.pone.0209098

xii.   Fogarty, L., Adano, J., & Adano, U. (2009). The Kenya emergency hiring plan: Results from a rapid workforce expansion strategy. *Population (English Edition)*, September.

xiii.   Isangula, K., Philbert, D., Ngari, F., Ajeme, T., Kimaro, G., Yimer, G., Mnyambwa, N. P., Muttamba, W., Najjingo, I., Wilfred, A., Mshiu, J., Kirenga, B., Wandiga, S., Mmbaga, B. T., Donard, F., Okelloh, D., Mtesha, B., Mohammed, H., Semvua, H., … Ngadaya, E. (2023). Implementation of evidence-based multiple focus integrated intensified TB screening to end TB (EXIT-TB) package in East Africa: A qualitative study. *BMC Infectious Diseases, 23*(1). https://doi.org/10.1186/s12879-023-08069-3

xiv.   Jain, V. K., Iyengar, K. P., Samy, D. A., & Vaishya, R. (2020). Tuberculosis in the era of COVID-19 in India. *Diabetes and Metabolic Syndrome: Clinical Research and Reviews, 14*(5). https://doi.org/10.1016/j.dsx.2020.07.034

xv.   Kenya National Bureau of Statistics. (2019). *Kenya population and housing census volume 1: Population by county and sub-county*. Kenya National Bureau of Statistics: Vol. I (Issue November).

xvi.   Kumar, M., Nyongesa, V., Kagoya, M., Mutamba, B. B., Amugune, B., Krishnam, N. S., Wambua, G. N., Petersen, I., Gachuno, O., & Saxena, S. (2021). Mapping services at two Nairobi County primary health facilities: Identifying challenges and opportunities in integrated mental health care as a Universal Health Coverage (UHC) priority. *Annals of General Psychiatry, 20*(1). https://doi.org/10.1186/s12991-021-00359-x

xvii.   Kunciw, S. E., & de la Cruz, E. C. (2021). Incidental finding of tuberculosis during evaluation for delayed wound healing. *Military Medicine, 186*(3–4). https://doi.org/10.1093/milmed/usaa366

xviii.   Magu, D., Wambui, E., Ngure, K., & Karanja, S. (2016). Treatment outcome among newly diagnosed tuberculosis patients in Kenya. *Annals of Global Health, 82*(3). https://doi.org/10.1016/j.aogh.2016.04.657

xix.   Maore, N. K., Kirui, N. K., Kireki, O., Ogutu, O., Owino, M., Ogaro, T., Mueni, E., Mulonzi, M., Louis, J. C., Japhet, C., Kimenye, K., Omesa, E., Masini, E., Wekunda, P. W., & Ng'ang'a, M. (2017). Spatial and temporal distribution of notified tuberculosis cases in Nairobi County, Kenya, between 2012 and 2016. *East African Medical Journal, 94*(10 Supplement).

xx.   Marangu, D., Mwaniki, H., Nduku, S., Maleche-Obimbo, E., Jaoko, W., Babigumira, J., John-Stewart, G., & Rao, D. (2017). Adapting a stigma scale for assessment of tuberculosis-related stigma among English/Swahili-speaking patients in an African setting. *Stigma and Health, 2*(4). https://doi.org/10.1037/sah0000056

xxi.   Miller, E. W. (2018). Nonprofit strategic management revisited. *Canadian Journal of Nonprofit and Social Economy Research, 9*(2). https://doi.org/10.22230/cjnser.2018v9n2a270

xxii.   Mwaura, S., Kiruja, E., & Sagwa, E. (2022). Influence of strategic human resource management practices on performance of public universities in Kenya. *Journal of Human Resource and Leadership, 7*(2). https://doi.org/10.47604/jhrl.1679

xxiii.   Mwombeki, F. A. (2022). Influence of the dimensions of agency's capacities on performance in generating own source revenues in government agencies in Tanzania. *Business Education Journal, 11*(1). https://doi.org/10.54156/bej.v11i1.322

xxiv.   Nagaraja, S. B., Thekkur, P., Satyanarayana, S., Tharyan, P., Sagili, K. D., Tonsing, J., Rao, R., & Sachdeva, K. S. (2021). Active case finding for tuberculosis in India: A synthesis of activities and outcomes reported by the National Tuberculosis Elimination Programme. *Tropical Medicine and Infectious Disease, 6*(4).

https://doi.org/10.3390/tropicalmed6040206

xxv.   National Tuberculosis, Leprosy and Lung Disease Program (NTLD-P), Ministry of Health Kenya. (2021). *Tuberculosis annual report: 2021*. December. https://www.nltp.co.ke/wp-content/uploads/2022/07/DNTLDP_AnnualReport_2021_compressed.pdf

xxvi.   NTLD-P Ministry of Health Kenya. (2016). *Annual report*. Fresenius.Com, December, 2–2.

xxvii.   NTLD-P Ministry of Health Kenya. (2019a). *Annual report 2019*.

xxviii.   NTLD-P Ministry of Health Kenya. (2019b). *Annual TB report 2019*. *NTLDP Kenya, 44*(8), 1–19. https://doi.org/10.1088/1751-8113/44/8/085201

xxix.   Ogwang, M. O., Imbuga, M., Ngugi, C., Mutharia, L., Magoma, G., & Diero, L. (2021). Distribution patterns of drug resistance Mycobacterium tuberculosis among HIV negative and positive tuberculosis patients in Western Kenya. *BMC Infectious Diseases, 21*(1). https://doi.org/10.1186/s12879-021-06887-x

xxx.   Prevention, C. for D. C. and. (2013). *Core curriculum on tuberculosis: What the clinician should know*. Centers for Disease Control and Prevention National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention Division of Tuberculosis Elimination. https://doi.org/10.1128/IAI.00057-06

xxxi.   Shamanewadi, A. N., Naik, P. R., Thekkur, P., Madhukumar, S., Nirgude, A. S., Pavithra, M. B., Poojar, B., Sharma, V., Urs, A. P., Nisarga, B. V., Shakila, N., & Nagaraja, S. B. (2020). Enablers and challenges in the implementation of active case finding in a selected district of Karnataka, South India: A qualitative study. *Tuberculosis Research and Treatment, 2020*. https://doi.org/10.1155/2020/9746329

xxxii.   Sychareun, V., Phommachanh, S., Soysouvanh, S., Lee, C., Kang, M., Oh, J., & Durham, J. (2013). Provider perspectives on constraints in providing maternal, neonatal, and child health services in the Lao People's Democratic Republic: A qualitative study. *BMC Pregnancy and Childbirth, 13*. https://doi.org/10.1186/1471-2393-13-243

xxxiii.   Ugwuibe, T. C. (2020). Health and Management 2020: The need and benefit of adoption of total quality management at primary healthcare facilities. *Journal of Health and Medical Informatics, 11*(1).

xxxiv.   Verulava, T. (2023). Strategic management and planning for health care organizations in Georgia. *Asia Pacific Journal of Health Management, 18*(3). https://doi.org/10.24083/apjhm.v18i3.2697

xxxv.   Volkov, B., Cieslak, J., Matthes, R., & Pulley, C. (2019). A high-impact, structured, collaborative approach to implementing and utilizing the Research Performance Progress Report (RPPR) for a Clinical and Translational Science Award. *Journal of Clinical and Translational Science, 3*(s1). https://doi.org/10.1017/cts.2019.311

xxxvi.   What is tuberculosis (TB)? (2017). *American Journal of Respiratory and Critical Care Medicine, 195*(4). https://doi.org/10.1164/rccm.1954P7

xxxvii.   World Health Organization. (2020). *Global Tuberculosis Report 2020*.