

Review Article

Do Refugees Put Egypt at Higher Risk of Tuberculosis Resurgence? A Narrative Review

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Abstract

Introduction: Tuberculosis (TB) remains a major global public health problem despite being preventable and curable. Refugees and migrants may face increased vulnerability to TB because of overcrowding, malnutrition, disrupted healthcare, and barriers to diagnosis and treatment. Egypt hosts large numbers of refugees and migrants from countries with varying TB burdens, raising concerns about the implications for national TB control. This narrative review examined whether refugee and migrant mobility may contribute to the risk of TB resurgence in Egypt.

Methods: A narrative review was conducted using PubMed, Scopus, and Google Scholar, supplemented by relevant reports and grey literature. Searches were performed on May 25, 2024, using combinations of terms related to tuberculosis, resurgence, refugees, migrants, and Egypt. English-language peer-reviewed articles, public health reports, and policy documents relevant to TB resurgence, migration-related TB risk, and the Egyptian context were reviewed and synthesized narratively.

Results: The reviewed evidence indicates that TB resurgence is driven by interacting biomedical, social, and health-system factors, including HIV infection, diabetes mellitus, latent TB infection reactivation, multidrug-resistant TB, malnutrition, poverty, overcrowding, and limited access to healthcare. Refugees and migrants may be particularly vulnerable because of displacement-related exposures and interrupted care. Egypt hosts refugees and migrants from several countries with higher TB incidence than Egypt; however, direct Egypt-specific data on active TB and latent TB infection among these populations remain limited.

Conclusion: Egypt's risk of TB resurgence should be understood within a broader framework of migration, social vulnerability, chronic disease burden, drug resistance, and health-system capacity.

Keywords: Tuberculosis, Refugees, Migrants, Egypt, Resurgence, Narrative review

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Introduction

Tuberculosis (TB) remains a major public health problem worldwide despite being a preventable and treatable disease. It is still one of the leading causes of death from infectious diseases, particularly in low- and middle-income countries, where most of the global burden is concentrated.^{1,2} Although major progress has been made in diagnosis, treatment, and control, TB has continued to re-emerge as a global health concern rather than moving steadily toward elimination.³

The persistence of TB cannot be explained by biomedical factors alone. The disease is closely linked to a wide range of social and structural conditions that influence exposure, transmission, access to care, and treatment outcomes. In recent years, TB has increasingly been discussed within a syndemic framework, where it interacts with other health problems such as HIV infection, COVID-19, malnutrition,

mental illness, and substance use disorders, as well as with difficult social circumstances including migration, displacement, homelessness, overcrowding, stigma, and poor access to healthcare.⁴ These overlapping conditions can increase vulnerability to infection, delay diagnosis, interrupt treatment, and make TB control more difficult at both individual and population levels.

Egypt has particular relevance in this context. It is one of the major refugee-hosting countries in the region and also serves as a country of transit and destination for migrants and refugees from several Middle Eastern and African countries.⁵ Unlike some settings where refugees are mainly accommodated in camps, many refugees in Egypt live within urban communities and households and move freely within the wider population. This pattern of settlement has important implications for health service access, continuity of care, and public health



follow-up.⁶ Tuberculosis is strongly associated with poverty, overcrowding, undernutrition, and restricted access to healthcare, all of which may affect displaced populations and other socially vulnerable groups.⁷ At the same time, ongoing conflicts and humanitarian crises in countries such as Sudan, Libya, Syria, Yemen, Somalia, Iraq, Lebanon, and Gaza have contributed to large-scale displacement across the region and may complicate TB prevention and control efforts in host countries, including Egypt.⁶

Given this background, it is important to examine whether refugee and migrant mobility may contribute to the risk of TB resurgence in Egypt, while also considering the broader social and health-system factors that shape TB transmission and control. This narrative review therefore aims to discuss the major drivers of TB resurgence, summarize the evidence on TB risk among refugees and migrants, and explore the Egyptian context with particular attention to surveillance, screening, and continuity of care in high-risk populations.

Methods

Review Design

This study was conducted as a narrative review to examine the potential contribution of refugee and migrant mobility to the risk of tuberculosis (TB) resurgence in Egypt and to place this issue within the broader epidemiological and public health context of TB control. A narrative review approach was chosen because the topic extends beyond a single clinical or epidemiological question and requires integration of evidence from different types of sources, including epidemiological studies, review articles, public health reports, and policy documents.

Search Strategy

A literature search was performed on May 25, 2024, using PubMed, Scopus, and Google Scholar. The search focused on English-language full-text publications and was supplemented by grey literature, including reports from international health organizations, government publications, monographs, and standard reference texts. Search terms were used in different combinations and included “tuberculosis”, “TB”, “pulmonary tuberculosis”, “resurgence”, “reemergence”, “high-risk groups”, “causes”, “refugees”, “migrants”, “challenges”, and “Egypt”. Boolean operators such as AND, and OR were used to combine search terms and refine the search strategy.

Eligibility and Source Selection

The retrieved literature was screened for relevance to the objectives of the review. Sources were considered eligible if they addressed one or more of the following areas: the global epidemiology and resurgence of TB, major biomedical and social drivers of TB transmission and reactivation, TB among refugees and migrants, and the epidemiological or health-system context of TB in Egypt. Priority was given to peer-reviewed articles, reports from

the World Health Organization and other international agencies, and publications directly relevant to refugee health, migration, or TB control. Sources that were clearly unrelated to the topic, duplicated across databases, or lacked sufficient relevance to the review question were excluded.

A total of 153 records were identified through database and supplementary searches. After screening for relevance and reviewing the available full texts, 40 sources were included in the final narrative synthesis.

Data Synthesis

The included literature was reviewed and synthesized narratively rather than quantitatively pooled. Information extracted from the selected sources was organized into thematic domains to support interpretation of the evidence in relation to the review objective. The narrative synthesis focused on four main areas: the global burden and resurgence of TB, the major factors contributing to TB resurgence, the vulnerability of refugees and migrants to TB, and the Egyptian context in relation to TB control and population mobility. This thematic approach was used to summarize the current evidence, identify recurring patterns across the literature, and highlight gaps relevant to TB prevention and control among refugees and migrants in Egypt.

Results

Global Tuberculosis Burden and the Concept of Resurgence

Tuberculosis remains one of the leading infectious causes of morbidity and mortality worldwide. In 2021, an estimated 10.6 million new TB cases occurred globally, with approximately 1.6 million deaths and nearly 450,000 new cases of multidrug-resistant tuberculosis (MDR-TB). In addition, latent TB infection continues to represent a major global reservoir, with around one quarter of the world's population estimated to be infected, although only 5% to 15% are expected to progress to active disease during their lifetime.¹ Delayed diagnosis, under-detection, and underreporting remain major barriers to TB control, and nearly one third of TB cases are estimated to be missed or not diagnosed in a timely manner.¹ TB is also the leading cause of death among people living with HIV and remains an important contributor to deaths associated with antimicrobial resistance.¹

The COVID-19 pandemic further disrupted access to essential TB services and negatively affected case detection, diagnosis, and continuity of treatment. Although migration-related TB is often highlighted in low-incidence, high-income settings, the greatest burden of disease remains concentrated in low- and middle-income countries.⁸ Most TB infections are latent, with *Mycobacterium tuberculosis* persisting without clinical manifestations. Reactivation of latent infection is therefore a key mechanism in the ongoing burden and recurrence of active disease.⁹

In this review, TB resurgence refers to the re-emergence or increase in TB after a period of relative decline, despite

previous control efforts. This resurgence is not driven by a single factor, but rather by a combination of biological, clinical, social, and health-system determinants.¹⁰

Major Drivers of Tuberculosis Resurgence

HIV Infection

HIV infection remains one of the most important drivers of TB resurgence globally. HIV weakens host immunity and substantially increases the risk of progression from latent TB infection to active disease.¹¹ Individuals living with HIV have an estimated 30- to 37-fold higher risk of developing active TB than those without HIV infection, and TB accounts for a large proportion of HIV-related mortality.^{1,12} HIV-TB co-infection also contributes to treatment failure, increased transmission, and a higher frequency of extrapulmonary and disseminated disease.^{11,12}

Diabetes Mellitus

Diabetes mellitus is increasingly recognized as an important contributor to TB risk and poor TB outcomes. Diabetes has been associated with increased susceptibility to TB infection, reactivation of latent infection, cavitary disease, hemoptysis, relapse, treatment failure, multidrug resistance, and mortality.¹³ As the burden of diabetes rises in many low- and middle-income countries, its contribution to TB epidemiology is becoming more important.

Latent TB Infection and Reactivation

Latent TB infection is central to understanding TB persistence and resurgence. The majority of TB infections remain latent, with bacilli persisting in a dormant state without overt clinical disease. Reactivation of latent infection, particularly in the presence of immunosuppression, malnutrition, diabetes, or other comorbid conditions, contributes substantially to the burden of active TB.⁹

Multidrug-Resistant Tuberculosis

The emergence and spread of MDR-TB pose a major threat to TB control. Drug resistance is linked to several factors, including interrupted drug supply, inadequate treatment regimens, poor adherence, monotherapy, and the presence of heteroresistant strains.¹⁴ MDR-TB complicates treatment, increases costs, prolongs infectiousness, and threatens progress toward TB elimination.

Malnutrition and Social Vulnerability

TB and malnutrition have a bidirectional relationship. Undernutrition impairs immune function and increases the risk of developing active TB, while active TB can worsen nutritional status through reduced appetite, gastrointestinal symptoms, nutrient losses, and the metabolic effects of chronic infection. Malnutrition has also been associated with severe disease, poor adherence, drug toxicity, relapse, and mortality.^{1,15} More broadly,

poverty, food insecurity, overcrowding, and restricted access to healthcare continue to shape the epidemiology of TB in many settings.⁷

Refugees and Migrants

Refugees and migrants represent populations that may face increased vulnerability to TB because of the conditions associated with displacement and migration. Refugees are individuals forced to flee persecution, conflict, or violence and who cannot safely return to their country of origin, whereas migrants generally move in search of improved social, educational, or economic opportunities.^{1,16} The Middle East has experienced large-scale displacement in recent years, with countries such as Palestine, Iraq, Syria, Libya, and Yemen contributing substantially to the regional refugee burden.¹⁷

Several studies have shown that refugees and migrants often experience higher rates of TB incidence, prevalence, and mortality than host populations, particularly when they originate from countries with high TB burden.^{1,18,19} In some high-income settings, the prevalence of active TB among migrants from high-burden countries has been reported to reach 3.3 per 1,000 population.²⁰ This increased vulnerability is likely to be multifactorial. Limited access to healthcare, language and cultural barriers, stigma, financial constraints, overcrowded living conditions, poor nutrition, interrupted treatment, and difficulties in follow-up after migration all contribute to increased TB risk and may also promote the development and spread of MDR-TB.^{1,18}

International Students and Other Vulnerable Groups

Cross-border mobility is not limited to refugees and labor migrants. International students may also represent a population with elevated TB risk, particularly when they originate from high-burden countries. Studies from different settings suggest that foreign-born students may have higher rates of latent and active TB than native-born students, and that targeted risk-based screening may be useful in this group.^{21–25} Additional factors that may contribute to TB recurrence or persistence include smoking, exposure to silica and industrial dusts, alcohol use, malignancy, renal failure, liver disease, immunosuppressive therapy, and the broader effects of poverty and inadequate housing.^{1,11,26,27} Weak surveillance systems, under-diagnosis, fragmented services, and limited governmental support further undermine TB control efforts.^{1,11,27}

Tuberculosis in Egypt

Burden of Disease

Egypt has traditionally been considered a country with a relatively low to moderate TB burden compared with many other countries in the region. In 2014, the World Health Organization estimated a TB prevalence of 26 per 100,000 population and an incidence of 15 per 100,000 population in Egypt.^{1,28} By 2016, the estimated annual incidence had declined to 11 per 100,000 population.²⁹

Nevertheless, TB remains an important public health concern in the country. Pulmonary TB appears to be more common in Lower Egypt, whereas extrapulmonary TB is more frequently reported in Upper Egypt.²⁹

TB Control Services and Health-System Challenges

Egypt launched its National Tuberculosis Control Program in 1989 and adopted the directly observed treatment, short-course (DOTS) strategy, with treatment success reportedly improving from 60% in 1991 to 85% approximately a decade later.¹ One of the main objectives of the national program has been to improve case detection and strengthen diagnosis, notification, and registration across the country.^{1,28} Despite these efforts, several challenges remain. Case detection may be affected by patients' preference for private-sector care, limited access to dedicated TB services, and fragmentation between public and non-governmental healthcare providers. Financial, cultural, and geographic barriers may also reduce healthcare utilization, especially among socially vulnerable groups, including refugees and migrants.¹ By the end of the twentieth century, additional challenges included poor follow-up, refusal of hospitalization for treatment, rising MDR-TB, and inadequate TB-related health education among both the public and healthcare professionals.

Multidrug-Resistant Tuberculosis in Egypt

MDR-TB remains a significant concern for TB control in Egypt. Earlier reports documented MDR-TB in 11.4% of TB cases in 2002. Among previously treated cases, the proportion increased to 32.4% during 2010 to 2012, while newly diagnosed cases had a lower rate of 3.4%.²⁹ In a more recent Egyptian survey, rifampicin resistance was identified in 5% of 710 presumptive TB patients tested using GeneXpert.³⁰ These findings highlight the need for continued surveillance, appropriate treatment monitoring, and sustained investment in TB control strategies.

Refugees, Migrants, and Mobile Populations in Egypt

Egypt functions as a country of origin, transit, and destination for migrants and refugees.³¹ By mid-2022, it was estimated to host nearly 9 million refugees and migrants from 59 countries, with large groups originating from Yemen, Sudan, Libya, Syria, and Palestine.¹ Refugees in Egypt are generally integrated into local communities rather than accommodated in camps, and registered refugees have access to primary healthcare services and, in many settings, to secondary and tertiary care on terms similar to those of Egyptian nationals.^{29,32} This model of integration may support social inclusion, but it also places considerable importance on equitable access to diagnosis, treatment, follow-up, and surveillance within routine health services.

International students may also become increasingly relevant in this context. During the 2021 to 2022 academic year, international students represented about

2% of higher education enrolment in Egypt. Although this remains a relatively small proportion, further growth in student mobility from high-burden regions could have implications for TB screening and follow-up within the education and health sectors.

Factors That May Increase the Risk of TB Resurgence in Egypt

The risk of TB resurgence in Egypt is likely to be shaped by multiple interacting factors rather than by migration alone. These include multidrug-resistant tuberculosis (MDR-TB), diabetes, HIV infection, malnutrition, economic pressures on the health system, social vulnerability, and the presence of mobile populations from countries with higher TB burden. The major factors that may contribute to TB resurgence in Egypt, together with their potential implications for refugees and migrants, are summarized in Table 1.

HIV in Egypt

Although HIV prevalence in Egypt remains low by international standards, the number of reported cases has increased over time. It was estimated that approximately 11,000 people were living with HIV in Egypt by the end of 2016, and the country experienced a 76% increase in reported cases between 2010 and 2016, making it one of the fastest-growing HIV epidemics in the Middle East and North Africa region.³³ Ongoing increases in newly diagnosed cases, combined with barriers related to stigma, legal and cultural norms, limited public awareness, and weaknesses in surveillance systems, may complicate future TB control efforts.³³

Diabetes in Egypt

Diabetes represents another important concern in Egypt. The prevalence of diabetes among Egyptian adults was estimated at 18.4% in 2021 and is projected to rise to 23.5% by 2045, with a substantial proportion of cases remaining undiagnosed.³⁴ Over the past two decades, the prevalence of type 2 diabetes has increased markedly, likely reflecting the combined effects of obesity, physical inactivity, dietary change, hepatitis C infection, and other environmental and behavioral factors.³⁵ In a recent community-based study, the prevalence of prediabetes and previously undiagnosed diabetes was 21.7% and 5%, respectively.³⁶ Given the well-established relationship between diabetes and TB, this trend may have important implications for future TB risk in Egypt.

Refugees, Migrants, and International Students

At present, there is limited published evidence and little publicly available official reporting on the burden of active TB or latent TB infection among refugees, migrants, and international students living in Egypt. This is an important evidence gap. However, available data from countries of origin suggest that many of the populations hosted by Egypt come from settings with a higher TB burden than Egypt itself. In 2021, estimated TB

Table 1. Major factors potentially contributing to tuberculosis resurgence in Egypt and their implications for refugees and migrants

Factor	Relevance to Egypt and TB resurgence	Implications for refugees and migrants
HIV infection	HIV increases the risk of progression from latent TB infection to active disease and complicates treatment outcomes. Although HIV prevalence in Egypt remains relatively low, reported cases have increased over time.	Refugees and migrants living with HIV may face delayed diagnosis, interrupted treatment, stigma, and difficulty accessing integrated HIV-TB services.
Diabetes mellitus	Diabetes is highly prevalent in Egypt and is associated with increased susceptibility to TB, reactivation of latent infection, treatment failure, and relapse.	Refugees and migrants with undiagnosed or poorly controlled diabetes may have increased risk of active TB and poorer outcomes if access to chronic disease care is limited.
Multidrug-resistant TB (MDR-TB)	MDR-TB remains a public health concern in Egypt and complicates treatment, prolongs infectiousness, and increases healthcare costs.	Individuals with previous TB treatment, treatment interruption, or poor follow-up may be at higher risk of drug resistance or delayed recognition of MDR-TB.
Malnutrition and poverty	Undernutrition, food insecurity, and financial hardship increase susceptibility to TB and are associated with poor treatment outcomes.	Refugees and migrants may be particularly vulnerable because of unstable income, food insecurity, and reduced access to social support.
Overcrowding and poor living conditions	Overcrowding and poor ventilation facilitate TB transmission, especially in socially disadvantaged settings.	Refugees and migrants living in crowded housing or shared accommodation may face increased exposure to TB and delayed care-seeking.
Barriers to healthcare access	Delayed diagnosis and fragmented care remain important obstacles to TB control in Egypt.	Legal, financial, language, and administrative barriers may further reduce timely access to screening, diagnosis, treatment, and follow-up.
Interrupted treatment and poor follow-up	Incomplete treatment contributes to relapse, continued transmission, and drug resistance.	Mobile populations may be at greater risk of treatment interruption because of relocation, insecure housing, and weak linkage to routine health services.
Population mobility from higher-burden settings	Egypt hosts refugees and migrants from several countries with higher TB incidence than Egypt, but local data remain limited.	Migration itself does not cause TB, but mobility may increase vulnerability when combined with prior exposure, disrupted care, and social disadvantage.

incidence rates in Sudan, Yemen, Syria, Libya, and Iraq ranged from 50 to 99 per 100,000 population, compared with 10 to 49 per 100,000 in Egypt.^{1,37} Some countries in the wider region and sub-Saharan Africa, such as Somalia and Nigeria, have reported substantially higher rates.¹

Conflict and displacement may further aggravate TB control in some of these settings. In Syria, for example, pre-conflict TB incidence was reported at 22 per 100,000 population, while the quality and completeness of data have been affected by prolonged conflict and health-system disruption.^{38–40} Libya was classified by the WHO as having a moderate TB burden in 2021, with an incidence of 59 per 100,000 population.² Yemen reported a TB incidence of 48 per 100,000 population in 2022, and the burden may have worsened after years of civil conflict.^{3,34} By contrast, Iraq and Palestine have generally been classified as lower-burden settings, although their epidemiological patterns remain influenced by political instability, service disruption, and population movement.^{2,41,42}

Taken together, these findings suggest that the potential for TB resurgence in Egypt should be understood within a broader framework of population mobility, chronic disease burden, drug resistance, social vulnerability, and health-system capacity. At the same time, the absence of robust Egypt-specific data on TB among refugees and migrants limits the ability to quantify the direct contribution of these populations to national TB burden and highlights the need for stronger surveillance and targeted research.

Discussion

This narrative review highlights that the risk of tuberculosis (TB) resurgence in Egypt should not be viewed through a single lens, nor attributed to migration alone. Rather, it

reflects the interaction of several epidemiological, clinical, social, and health-system factors, including multidrug-resistant TB (MDR-TB), diabetes, HIV infection, poverty, malnutrition, barriers to healthcare access, and population mobility. In this context, refugees, migrants, and other mobile populations may represent groups with increased vulnerability to TB because of displacement-related exposures, interrupted healthcare, crowded living conditions, and difficulties in diagnosis, treatment, and follow-up. At the same time, the available evidence does not allow firm conclusions about the direct contribution of these populations to the TB burden in Egypt because local data on active TB and latent TB infection among refugees and migrants remain limited.

The findings of this review support the view that TB control in Egypt should be approached within a broader syndemic framework, where TB is understood in relation to other chronic and infectious diseases, as well as the social conditions that sustain transmission and worsen outcomes.⁴ This is particularly relevant in Egypt, where the future burden of TB may be influenced not only by migration and displacement, but also by the growing burden of diabetes, the persistence of MDR-TB, and the social and economic pressures that affect healthcare access and continuity of care.^{1,29,30,33–36} A narrow focus on case treatment alone is therefore unlikely to be sufficient. Effective TB control requires early case detection, prompt diagnosis, treatment adherence, nutritional support, and attention to the broader barriers that prevent vulnerable populations from accessing care.

An important implication of the current evidence is the need to strengthen case finding and follow-up among populations at increased risk of TB. This includes not only refugees and migrants, but also individuals with diabetes,

HIV infection, immunosuppressive conditions, smoking exposure, and other established risk factors for TB reactivation and poor outcomes. Screening and referral pathways should therefore be integrated into primary healthcare and linked to clear mechanisms for diagnosis, treatment initiation, and treatment completion. This is particularly important in settings where patients may move between public, private, and charitable healthcare providers, which can lead to fragmented care and missed opportunities for early diagnosis.^{1,29}

The review also points to the importance of reducing the financial and structural barriers that affect TB care. Out-of-pocket costs, transport costs, income loss, and poor social support can all delay diagnosis and reduce treatment adherence.^{29,43,44} These issues may be particularly relevant for refugees and migrants, especially those with unstable legal, financial, or housing conditions. TB control strategies in Egypt would therefore benefit from stronger social protection measures, better linkage between clinical care and support services, and improved monitoring of the financial burden experienced by patients and their households. Such measures are increasingly recognized as part of effective TB elimination strategies rather than optional additions to clinical care.^{43,44}

The role of refugees, migrants, and international students deserves particular attention, not because these groups should be viewed as a threat, but because they may encounter conditions that increase vulnerability to TB and complicate access to care. At present, there appears to be no clearly defined national framework in Egypt for TB screening and follow-up in these mobile populations.^{5,32} Given the absence of robust local epidemiological data, a risk-based and non-stigmatizing approach would be more appropriate than broad assumptions about disease burden. Individuals arriving from countries with high TB prevalence, those with previous TB treatment, known contact with TB cases, symptoms suggestive of TB, or comorbid conditions that increase the risk of reactivation could be prioritized for assessment within an organized public health pathway.⁴⁵ Depending on available resources, this may include symptom-based screening, chest radiography, sputum testing for suspected active disease, and, where appropriate, testing for latent TB infection using tuberculin skin testing or interferon-gamma release assays.^{32,46}

In this regard, post-arrival follow-up may be as important as screening at points of entry. Entry screening alone is unlikely to capture all cases, particularly latent infection or active disease that develops after arrival. Strengthening the role of primary healthcare in contact tracing, referral, and longitudinal follow-up may therefore be more practical and sustainable than relying solely on border-based screening.^{47–49} Better integration between TB services, primary healthcare, and national health information systems could also improve continuity of care, support case notification, and help identify patterns of disease among high-risk mobile populations.³¹

Another important finding of this review is the need

for stronger collaboration beyond the TB program itself. The complex relationship between TB, migration, poverty, chronic disease, and access to care means that effective control cannot rely on the health sector alone. Inter-sectoral collaboration involving public health authorities, primary care services, university hospitals, non-governmental organizations, refugee support agencies, and the private sector is likely to be essential.^{2,45} Public communication and health education should also be strengthened, particularly around TB symptoms, early healthcare seeking, treatment adherence, respiratory hygiene, smoking cessation, and the links between TB and chronic conditions such as diabetes. In settings where stigma remains a barrier to care, communication strategies should be culturally sensitive and should avoid framing refugees or migrants as sources of infection.

This review also suggests that biomedical and operational research should be strengthened in Egypt. More evidence is needed on the burden of active TB and latent TB infection among refugees, migrants, and international students living in Egypt, as well as on the feasibility and cost-effectiveness of different screening approaches in these populations. Research is also needed to evaluate barriers to follow-up, the role of primary healthcare in case detection and treatment continuity, and the potential value of newer tools for surveillance, contact tracing, and case management. Although technologies such as molecular diagnostics, digital surveillance, and geospatial tools may support TB control, their usefulness depends on local feasibility, funding, infrastructure, and trained personnel.¹²

Study Limitations

This review has several limitations that should be considered when interpreting its findings. First, it was conducted as a narrative review rather than a systematic review, and therefore did not follow the formal procedures used for systematic evidence synthesis or meta-analysis. Second, the available literature was heterogeneous and included peer-reviewed studies, review articles, public health reports, and other grey literature, which limited the ability to assess the evidence using a single standardized framework. Third, there is a marked lack of official Egypt-specific data on active tuberculosis and latent tuberculosis infection among refugees, migrants, and other mobile populations. As a result, some of the concerns discussed in this review are based on indirect evidence from countries of origin, international reports, and the broader literature on TB in displaced populations rather than direct epidemiological data from Egypt itself. In addition, no clearly described national framework for TB screening and follow-up among refugees and migrants in Egypt was identified in the available literature. These evidence gaps limit the ability to estimate the true contribution of refugee and migrant populations to the TB burden in Egypt and highlight the need for more locally generated data and operational research.

Conclusion

Tuberculosis remains a major public health challenge, and its persistence in Egypt should be understood within a broader context of social vulnerability, chronic disease, drug resistance, health-system capacity, and population mobility. Refugees and migrants may face increased vulnerability to TB because of displacement-related exposures, interrupted care, overcrowding, and barriers to diagnosis and treatment. However, the current evidence does not allow firm conclusions about the direct contribution of these populations to TB burden in Egypt because local data on active TB and latent TB infection remain limited. Strengthening surveillance systems, improving access to timely diagnosis and treatment, integrating TB services within primary healthcare, and developing clear risk-based screening and follow-up strategies for high-risk populations are important steps for TB prevention and control in Egypt. Further epidemiological and operational research is needed to better define the burden of TB among refugees and migrants and to guide effective, equitable, and non-stigmatizing public health interventions.

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Competing Interests

The authors declare no conflict of interest.

Ethical Approval

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