

REVIEW ARTICLE

Burden of tuberculosis in Europe due to migrant crisis: Urgent integration of global health perspectives into national TB control program

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Summary

In recent decades, global migration has increased due to war and other conflicts, persecution, and natural disasters, as well as greater opportunities for work and study. Risk of tuberculosis (TB) in migrants depends on the type of migration, their socioeconomic situation, mode of traveling and transit risks, as well as on the incidence of TB and healthcare in their country of origin. The narrative review briefly presents up-to-date evidence on the diagnosis of active TB in migrants coming to the European Union/European Economic Area and the UK, including clinical presentation and delay in diagnostics, outcomes of both TB susceptible to drugs and multidrug-resistant/rifampicin-resistant TB, prevalence, as well as co-infections with TB and human immunodeficiency virus (HIV). We concluded that migrants were more vulnerable to TB, including extrapulmonary TB, multidrug-resistant/rifampicin-resistant TB, TB/HIV co-infection, and also had worse TB treatment outcomes than host populations. Consensus recommendations are as follows: screening migrants for TB and latent TB in accordance with country data, providing a minimal TB care package for drug-susceptible and multidrug-resistant/rifampicin-resistant TB, implementing migrant-sensitive strategies, and securing free-of-charge healthcare and preventive treatments for migrants with TB/HIV co-infection. It is crucial to provide dedicated care for treatment and prevention of TB in migrants within the European Union, the European Economic Area, and the UK.

Keywords: tuberculosis, migrants, multi-drug resistance, HIV



INTRODUCTION

TB presents a significant public health issue, and every year, approximately 10.8 million people develop active TB, while around 1.4 million people die (1). Migrations are a global phenomenon today, since around 281 million people (i.e., 3.6% of the global population) live outside their countries of origin, and we define them as international migrants (2). Migrations are caused by wars and conflicts, natural disasters, persecutions, opportunities for work and studying, and TB mainly affects countries with low and middle-income economies. A total of 108.4 million people in the world were forcibly displaced due to conflicts, violence, persecution, and violations of human rights (at the end of 2022). More than one in 74 people worldwide were forced to leave their homes in 2022 (3). Estimation for 2023 was that more than 50 percent of all refugees came from only 3 countries – from Syria (6.7 million), Afghanistan (6.1 million), and Ukraine (5.9 million). In 2020, over 9000 foreign-born people developed TB in the EU/EEA. For instance, from 2020 to 2022, the number of Ukrainians with TB in the EU/EEA increased from 167 to 780 (of whom 27 and 194 had multidrug-resistant (MDR)/rifampicin-resistant (RR) TB, respectively). (4). Migrants, displaced persons, and refugees coming from TB-endemic areas are more prone to latent TB (LTBI), meaning they might develop active TB (5, 6). Most of them live under poor conditions and have limited access to healthcare in general, including TB care. A significant share of TB cases in Europe are among migrants and refugees. Recent data from the World Health Organization and the European Center for Disease Prevention and Control (WHO and ECDC) show that over half of active cases of TB in European countries like Germany, the UK, and Sweden are found in persons born abroad (7). The proportion of latent TB among them varies from 15 to 45%, depending on the countries they came from and how long ago they entered Europe. In countries with high-incomes averagely 52% of TB cases are diagnosed in foreign-born people. The highest risk for them to develop TB is within the first 5 years after entering Europe (8, 9). Most of these cases are a result of reactivation of latent TB. TB incidence for migrants in the UK is 14-fold higher in comparison to UK-born persons. Therefore, TB programs for migrants need to be a top priority in host countries of the EU/EEA and the UK (10, 11). Just as the native populations of host countries, migrants need to be able to easily access prevention, diagnostics, and TB treatment, which should be well integrated with other services within the healthcare system (12).

METHODS

The aim of the narrative review was to synthesize evidence and recommendations regarding tuberculosis among migrant populations entering the EU, EEA, and UK.

Narrative review includes:

- Reported data on TB diagnosis, treatment, or outcomes among migrants in the
- EU, EEA, or UK.
- Included information on clinical presentation, diagnostic delays, drug-sensitive TB,
- MDRTB, or TB/HIV co-infection.
- Provided recommendations for screening, treatment, or preventive measures.

Extracted data were synthesized narratively and, where possible, tabulated to allow comparison across migrant groups. Consensus recommendations were identified, including TB/LTBI screening, minimal treatment packages for drug-susceptible and multidrug-resistant TB, and provision of free health and preventive care for migrants with HIV/TB co-infection. Special attention was given to differences in risk profiles, such as risks of extrapulmonary or drug-resistant TB, as well as of TB/HIV co-infection.

The definition of a migrant is in accordance with the ECDC recommendation. It applies to any person living in another country that is not their usual country of residence, either temporarily or permanently, for at least 1 year. (5).

RESULTS

TB diagnosis

We included 11 studies comparing the clinical presentation of TB in migrants and non-migrants (13-23).

The most common presentation was pulmonary TB, except in two studies (17, 18). Diagnosis of EPTB was more common among migrants than non-migrants, and was more frequent in Western and Northern Europe (35.7% and 41.8%, respectively) than in Eastern and Southern Europe (17.4% and 29%, respectively). At the highest risk of EBTB were migrants from South-East Asia and Sub-Saharan Africa (62% and 54.5% of cases, respectively). In patients from the Indian subcontinent, the predominant EBTB was lymphatic, osteoarticular, and peritoneal. Diagnostic delays were due to patient-related factors, such as access to healthcare, and health-system-related factors, including barriers to care, stigmatization, and delayed diagnosis and treatment. In the case of migrants, we see patient delay factors more often, while health-system delays were shorter for migrants than non-migrants.

TB treatment

Fourteen studies compared treatment outcomes in migrants and non-migrants (24-36). Unfavorable outcomes were higher among migrants than among non-migrants.

Studies reported that unfavorable outcomes were more frequent among migrants. Still, there was significant

heterogeneity among studies, as some accounted for treatment default as the only unfavorable outcome. In contrast, others did not include other unfavorable outcomes such as death, failure, or lack of follow-up.

MDR/RR-TB and migration

MDR/RR-TB is more common in migrants, with overall worse outcomes, than in non-migrants, as emphasized by our review. We see growing numbers of migrants from high-incidence countries entering European countries with low incidence of TB. ECDC data for 2015 reveal that, among host populations, the notification rate of MDR/RR-TB was 0.01 per 100,000, whereas in individuals of a nationality or birthplace different from the reporting country, it was 64 times higher (36-42).

TB/HIV co-infection and migration

Meta-analysis included 17 studies reporting on TB/HIV co-infection and its prevalence and treatment outcomes of cases of immigrants in comparison to non-migrants. Out of these 17 studies, 10 (23, 24, 31, 35-41) addressed TB/HIV co-infection rates in the population with TB, while the other 7 studies (42-48) focused on the population living with HIV. Of the 10 studies on populations with TB, 4 were Italian, 3 from Spain, 2 from France, and 1 from Portugal. Migrants had a lower overall risk of TB/HIV co-infections than non-migrants. Three studies dealing with TB in the population with HIV reported on TB treatment outcomes in people with TB/HIV co-infection (46, 47, 48). A study from Denmark showed a higher risk of death for non-migrants (2.3 mortality risk), similar to a Spanish study, which reported on the mortality rate of 17.2% among migrants and 45.2% among non-migrants ($p < 0.0001$) (49). However, some studies reported that migrants had three times higher risk of unfavorable treatment outcomes (50-56).

TB-net consensus recommendations (summary with quotes from: <https://publications.ersnet.org/content/erj/65/3/2401612> (57))

First and top priority is to screen both for active and latent TB all migrants coming from countries where TB prevalence is over 100 per 100,000 (based on WHO estimations).

Also, even if they were screened previously in their countries of origin, those migrants at risk for either active or LTBI must be screened again upon entering the EU, the EEA, or the UK, or within the first 2 years of their stay.

Active TB cases among migrants must receive free-of-charge TB treatment in host countries, regardless of their health insurance status – it would decrease the risk of not completing the therapy, lack of follow-up, and further transmission of tuberculosis. Generally, such free healthcare should be available for all public health concerns (not

only TB and HIV), and should cover both diagnostics and treatment. Another important recommendation is never to deport migrants before completing the treatment.

MDR/RR-TB cases among migrants should get the same comprehensive care as patients from the host population in the EU, EEA, and UK, and it should also be free of charge. They also should not be deported before completing the treatment because of the risk of treatment failure and possible contribution to further development of drug resistance. Follow-up for a relapse-free cure for 12 months is strongly recommended.

Those migrants with HIV, but without active TB, should receive short regimen preventive TB treatment, regardless of their anti-retroviral treatment status and interferon- γ /tuberculin skin test result (the risk of false negative results outweighs risks of preventive TB therapy adverse effects).

Rates of extrapulmonary TB and organ manifestations in migrants vary depending on countries of origin, and systematic screening cannot be recommended. Still, doctors must remain alert and monitor for EPTB symptoms, especially among individuals from Sub-Saharan Africa and South-East Asia.

Migrants should be informed clearly and unambiguously, in an understandable manner, that primary care is available to them so that they can get shots and screenings. Active case finding and screening, and educational campaigns aiming to reduce stigma are crucial components of the desirable healthcare strategy, while TB and HIV care must be free of charge.

Tuberculosis in Serbia due to the migrant crisis

According to official data, the number of immigrants with approved residence in the Republic of Serbia as of December 31, 2024, was 101,413. According to official statistics, as of December 31, 2024, a total of 101,413 immigrants had been approved for residence in the Republic of Serbia. More than half of this population consisted of citizens of the Russian Federation (52.4%), making them by far the largest group. The People's Republic of China accounted for the second-largest share at 12.1%, followed by India (4.5%) and Turkey (4.0%). Smaller but notable groups included citizens of North Macedonia (1.9%), Ukraine (1.5%), and Montenegro (1.4%) (58).

Serbia is a country with a low TB burden, with a TB notification rate of 7 per 100,000 citizens, showing a stable, decreasing epidemiologic trend (59), and good TB control even during the coronavirus disease 2019 (COVID-19) outbreak (60,61). There has been a growing proportion of individuals in recent years originating from countries, primarily in Africa and Asia, that are either endemic regions or report TB outbreaks among adults and children, compared to Serbia, with a very low number of child and adolescent TB cases (62). Countries in Africa and Asia report a high burden of multidrug-resistant TB

and TB/HIV co-infection – in contrast to Serbia, where the notification rates are significantly lower. While MDR-TB and TB/HIV remain major public health challenges in many endemic regions, Serbia has maintained comparatively better control, with lower incidence rates and more limited transmission (63,64).

Future perspectives

Both the WHO's "End TB Strategy" and the UN Sustainable Development Goals underline the importance of screening and treating latent and active TB (65). Therefore, many high-income countries with low TB incidence have decided to make screening and treatment for recent migrants their top priorities. Some countries (e.g., the UK and Norway) made TB screening mandatory when applying for a visa or upon arrival, including a chest X-ray, a follow-up interferon-gamma release assay, or a tuberculin skin test (66). Mobile clinics have proven to be effective in areas with high concentrations of migrants (like urban centers). Another option is establishing integrated multi-disease screening – combining screenings for LTBI with HIV and hepatitis B/C screenings (67). The Republic of Serbia does not have a register for LTBI patients, but it would be mandatory in the future, especially for the vulnerable population, including organ-transplant patients (68). The regimen traditionally recommended for LTBI consisted of 6-9 months of isoniazid monotherapy, but due to poor adherence and hepatotoxicity, the new regimen is shorter, consisting of 3-4 months of rifampicin/rifapentine in combination with isoniazid, which achieves higher completion rates and fewer adverse effects (69). During screening or treatment, health care providers should be aware of language barriers, fear of deportation, and cultural stigma. More than ever, developing new TB vaccines is vital. The only available vaccine is the century-old bacilli Calmette-Guerin (BCG). It is ineffective in adolescents and adults, among whom most transmission and disease occur. The BCG vaccine is effective in protecting infants and young children from severe TB disease, such as TB meningitis or miliary TB (70). New research shows that over 25 years, the new TB vaccine, which would be 50% effective in preventing

disease among adolescents and adults, would help prevent up to 76 million new TB cases and 8.5 million deaths (71). The necessity of investing in TB healthcare in Europe for migrants, refugees, and displaced persons, as well as developing a new effective TB vaccine, is greater than ever (70,71).

CONCLUSION

The difference in outcomes between migrants and non-migrants with TB is obvious. Migrants usually seek healthcare later, more often present with EPTB, and their outcomes are worse than those of non-migrants. Rates of MDR/RR-TB and TB/HIV co-infections are also mostly higher among migrants, even though these ratios varied from country to country. Consensus recommendations are to screen migrants for TB/LTBI in accordance with the country data, to offer a minimal care package for both drug-susceptible and MDR/RR TB, to implement migrant-sensitive strategies, and to introduce LTBI preventive treatment for migrants co-infected with HIV. Developing and implementing migrant-sensitive healthcare strategies, improving healthcare providers' cultural competence, and establishing strong support systems to improve TB outcomes among migrant populations are of utmost importance.

The arrival of workers and migrants from endemic TB regions to Serbia introduces potential risks that require vigilant screening, preventive strategies, and integration of global health perspectives into national TB control programs.

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PORAST OBOLJEVANJA OD TUBERKULOZE U EVROPI ZBOG MIGRANTSKE KRIZE: URGENTNA INTEGRACIJA GLOBALNOG ZDRAVLJA U NACIONALNI TB PROGRAM

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Sažetak

Poslednjih decenija u porastu su globalne migracije zbog ratova, sukoba, progona i prirodnih katastrofa. Rizik oboljevanja od tuberkuloze (TB) kod migranata razlikuje se zavisno od vrste migracija, socioekonomskog statusa, načina putovanja i tranzitnih rizika. Sačinjen je narativni pregled literature. Sumirani su podaci o dijagnostici aktivne TB kod migranata koji ulaze u Evropsku uniju/Evropski ekonomski prostor i Veliku Britaniju, uključujući podatke o kliničkoj prezentaciji i kašnjenju u dijagnostici, ishodima lečenja TB osetljive na lekove, TB rezistentne na lekove kao i ko-infekciji TB i humanog imunodeficientnog virusa (HIV).

Ključne reči: tuberkuloza, migranti, multirezistentna, HIV

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Pokazali smo da su migranti skloniji oboljevanju od tuberkuloze, uključujući i povećan rizik za vanplućnu TB, TB rezistentnu na lekove i ko-infekciju TB i HIV. Preporuke oko kojih je postignut konsenzus obuhvataju skrining migranata na TB/latentnu TB (LTBI), minimalan paket lečenja za TB osetljivu na lekove i multirezistentnu TB, besplatnu zdravstvenu i preventivnu zaštitu za migrante sa ko-infekcijom HIV-om. Neophodna je posebna posvećenost prevenciji i lečenju TB u migrantskim populacijama u Evropskoj uniji/ Evropskom ekonomskom prostoru i Velikoj Britaniji.