

FLASHCARDS

Association between Gender, Social Determinants and Risk Factors of Tuberculosis (TB)

Association between Gender, Social Determinants & Risk Factors of Tuberculosis (TB)

The TB epidemic is driven by various **health**, **social** and **economic** determinants which impact men and women differently.

This set of flashcards aim to highlight those determinants and their link to the Sustainable Development Goals (SDGs), while underscoring the critical role of “**gender**” as a **key underlying factor influencing TB pathway and outcomes**. For instance, in many high TB prevalence countries, **gender (male)** emerges as a **leading risk factor**.

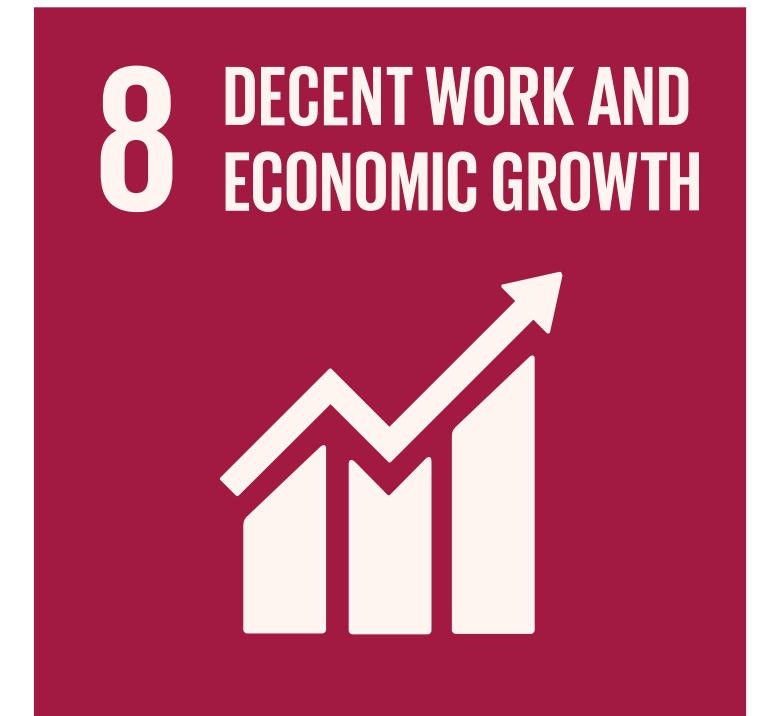


Poverty

Higher TB rates are strongly associated with **poverty** and **lower socio-economic status (SES)** which adversely impact **housing, living conditions, social protection, nutrition, education, healthcare access, employment security and working conditions.**



These conditions often reflect wider social inequalities, disproportionately impacting women and children in many parts of the world, who are more likely to live in poverty.



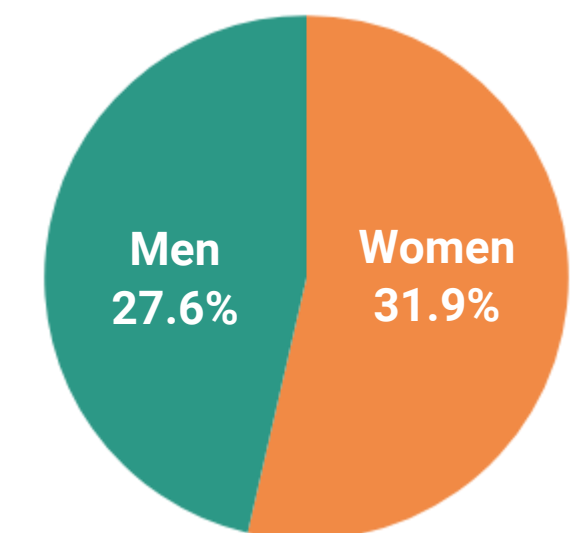
Globally, and across various regions, the **gender gap in poverty is greater among women in the prime reproductive years (25-34 years)**- where 123 women are living in poverty for every 100 men. This poverty gender gap **evens out between the ages of 40 and 65**, but re-emerges in the elderly years in a reverse trend- where **men over the age of 65 living in poor households is higher than that of women** (7.3% of men living in poverty compared to 6.7% of women).

Nutrition and Food Security

Malnutrition is significantly associated with the progression of TB disease due to the increased inflammation and weakened immune system. It also influences the recovery process during treatment.

Globally in 2022, an estimated 2.2 million new cases of TB were attributable to undernourishment. Among the 30 countries with the highest TB burden, **undernourishment is the leading contributor to TB-related illness** in most countries.

Malnutrition disproportionately affects women and children in impoverished communities, particularly among boys under 5 years old. In 2021, **31.9% of women & 27.6% of men were moderately or severely food insecure**, increasing their risk to TB.



- VanValkenburg, A., Kaipilyawar, V., Sarkar, S., Lakshminarayanan, S., Cintron, C., Prakash Babu, S., Knudsen, S., Joseph, N.M., Horsburgh, C.R., Sinha, P. and Ellner, J.J., 2022. Malnutrition leads to increased inflammation and expression of tuberculosis risk signatures in recently exposed household contacts of pulmonary tuberculosis. *Frontiers in immunology*, 13, p.1011166.
- Thurstans, S., Opondo, C., Seal, A., Wells, J., Khara, T., Dolan, C., Briend, A., Myatt, M., Garenne, M., Sear, R. and Kerac, M., 2020. Boys are more likely to be undernourished than girls: a systematic review and meta-analysis of sex differences in undernutrition. *BMJ global health*, 5(12), p.e004030.
- Thurstans, S., Opondo, C., Seal, A., Wells, J.C., Khara, T., Dolan, C., Briend, A., Myatt, M., Garenne, M., Mertens, A. and Sear, R., 2022. Understanding sex differences in childhood undernutrition: a narrative review. *Nutrients*, 14(5), p.948.
- FAO, IFAD, UNICEF, WFP and WHO. 2022. The State of Food Security and Nutrition in the World 2022. Repurposing food and agricultural policies to make healthy diets more affordable. Rome, FAO. <https://doi.org/10.4060/cc0639en>

Education and Health Literacy

Low literacy rate is one the most profound risk factors for tuberculosis across all countries and regions.

Poverty is often associated with lower levels of education and health literacy, including lack of knowledge and awareness on **TB symptoms, modes of transmission, preventive measures, and availability of diagnostic and treatment facilities.**

Women, particularly in developing countries, **often have less access to education and lower literacy**, affecting their knowledge and awareness of TB.



Living and Working Conditions

Overcrowded and poorly ventilated living conditions increase the risk of TB transmission.

Men are predominantly employed in poorly ventilated working environments (e.g. underground mines) and are exposed to occupational hazards that increase their risk of contracting and transmitting TB.

In sub-Saharan Africa, exposure to mining is significantly associated with higher population TB incidence where 10% increase in mining is associated with a 0.9% higher rate of TB incidence.



11 SUSTAINABLE CITIES AND COMMUNITIES



Harsh working conditions including job insecurity, absence of leave or unpaid sick leave, long working hours and the fear of losing income result in health care disruptions including access to health services.

Young men in low- and middle-income countries often lack the legal protections and workplace regulations to ensure protective measures are taken.

- Stuckler, D., Basu, S., McKee, M. and Lurie, M., 2011. Mining and risk of tuberculosis in sub-Saharan Africa. *American journal of public health*, 101(3), pp.524-530.
- Krishnan, L., Akande, T., Shankar, A.V., McIntire, K.N., Gounder, C.R., Gupta, A. and Yang, W.T., 2014. Gender-related barriers and delays in accessing tuberculosis diagnostic and treatment services: a systematic review of qualitative studies. *Tuberculosis research and treatment*, 2014.
- Dheda, K., Gumbo, T., Maartens, G., Dooley, K.E., Murray, M., Furin, J., Nardell, E.A., Warren, R.M., Esmail, A., Nardell, E. and London, L., 2019. The Lancet Respiratory Medicine Commission: 2019 update: epidemiology, pathogenesis, transmission, diagnosis, and management of multidrug-resistant and incurable tuberculosis. *The Lancet Respiratory Medicine*, 7(9), pp.820-826.

Association between Gender, Social Determinants & Risk Factors of Tuberculosis (TB)

In the preceding flashcards we highlighted key social determinants of TB that are directly linked to poverty.

The following flashcards highlight **key risk factors** and **co-morbidities** that drive the TB epidemic and lead to worsened TB treatment outcomes, drawing connections to the Sustainable Development Goals (SDGs).

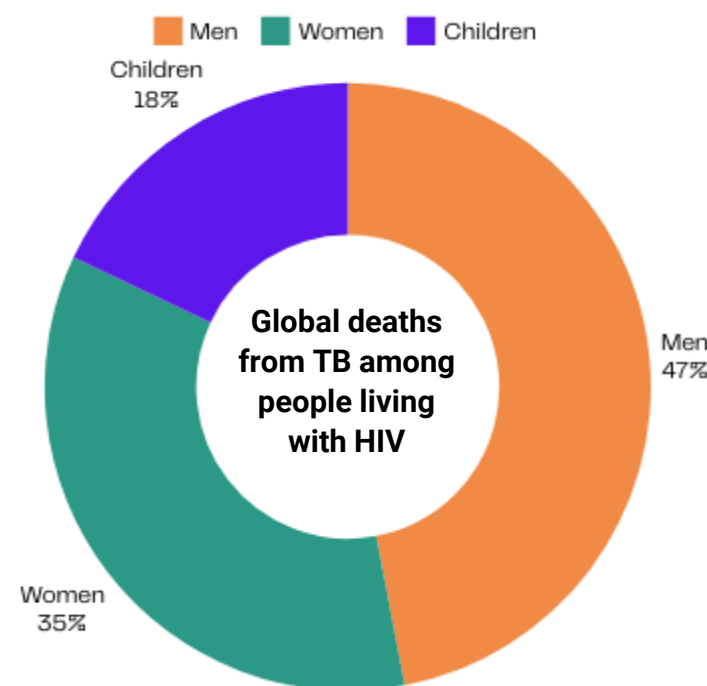
We also underscore how these risk factors impact men and women differently, placing **gender as a fundamental dimension** of the TB epidemic.



HIV Infection

People living with HIV are **16 times** more likely to fall ill with TB disease than people without HIV.

Globally in 2022, an estimated 0.89 million incident cases of TB were attributable to HIV infection and about 167,000 people died of HIV-associated TB.



Of the global deaths from TB among people living with HIV, **47% were adult men** compared to 35% of adult women and 18% of children.

Diabetes

Diabetes is associated with an increased risk of failure and death during tuberculosis treatment.

It is associated with a 2-fold to 3-fold risk of TB disease, a 2-fold risk of death during TB treatment, a 4-fold risk of TB relapse after treatment completion and a twofold risk of multidrug-resistant TB (MDR-TB).



In 2022
0.37 million
incident cases of
TB were
attributable to
diabetes

Globally in 2022, an estimated 0.37 million incident cases of TB were attributable to diabetes.

The prevalence of diabetes in men and women is similar and ranges between 5% and 10% (WHO 2020 report)

Alcohol Use Disorder



Globally in 2022, an estimated 0.73 million incident cases of TB were attributable to alcohol use disorders (i.e. over 8% global TB cases), due to its determinantal effects on the lungs.

In high-TB burden countries, the prevalence of alcohol use disorders is generally low among adult women but is **higher among men**.

The average prevalence of Alcohol Use Disorder (AUD) in **males with TB as reported by some studies is 33.6%**, which is nearly **3 times higher** than the average prevalence of AUD in females (11.67%).

3X
Higher

Smoking/ Tobacco Use

Smoking approximately **doubles the risk** of TB disease and TB mortality.

Data from 2016 revealed that in high-TB-burden countries, **smoking-attributable TB disease** was **more than 6 times higher among men** (30.3%) compared to women (4.3% is largely due to the). This disparity is largely due to the higher prevalence of smoking among men.



In 2022, approximately 700,000 new cases of TB worldwide, were attributable to smoking.



**In 2022
0.70 million
incident cases of
TB were
attributable to
smoking**

The Way Forward

We cannot end TB or meet the SDGs targets without acknowledging and addressing the **complex intersections between the health, social and economic determinants of TB**, including the **gender dimension** underlying each of these determinants and the way they impact men and women differently.

Our strategies to end TB must be **multisectoral, working across** health, social, educational, and economic sectors. We must ensure that our efforts are **people-centered, rights-based, and gender-responsive** for **equitable** access to TB prevention and care for all.

