

## Post-Tuberculosis Morbidity in children and adolescents

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*Dear Madam,* Tuberculosis is a leading health problem worldwide. Among the countries with a high burden of tuberculosis, Pakistan is ranked fifth by WHO, accounting for the disease burden of 61% in the WHO Eastern Mediterranean Region. There is considerable age-wise variation in tuberculosis presentation. Younger children are more susceptible to extrapulmonary and disseminated tuberculosis than older children.<sup>1</sup> Of the total TB cases load, children account for 11%, with a 1.1 million incidence rate.<sup>2</sup> In addition to this, there is relative underreporting of childhood tuberculosis which makes disease in this population relatively forsaken.<sup>3</sup> In 2019, 49% of the 21 million DALYs attributed to incident tuberculosis in young children were due to post-tuberculosis sequelae.<sup>4</sup>

Since extrapulmonary TB is more common in children, the prevalence and character of paediatric post-tuberculosis morbidity may differ from those of adult-type sequelae.<sup>1</sup> In 2023, a systematic review on post-tuberculosis sequelae included long-term outcomes 1 month to 36 years after tuberculosis. According to the available data, the study revealed the following sequelae post-tuberculosis:

- Among children with CNS tuberculosis and tuberculous meningitis, the outcomes included Intellectual disability, motor disorders, epileptic seizures, behavioural and emotional disorders, language difficulties, visual impairment, hearing deficiency, endocrine disturbances, hydrocephalus, and attention-deficit hyperactivity disorder.
- Sequelae following spinal tuberculosis included spinal deformity, osteoporosis, reduced physical activity, residual pain, loss of lung capacity, neurological disabilities, and paraplegia.
- Following Tuberculosis involving bone and joints, the outcomes included limb length discrepancy, limited mobility, and bone deformity.
- Following pulmonary tuberculosis, there was persistent coughing, wheezing, and radiological sequelae including fibrosis, calcification, atelectasis,

emphysema, bronchiectasis, and lymphadenopathy.

- Sequelae following urogenital, cutaneous, and abdominal tuberculosis included urogenital obstruction, skin scarring, chronic renal failure, and intestinal obstruction, respectively.
- There were long-term psychological and economic effects which included reduced quality of life, stigmatization, social dependency and maladjustment, and the need for schools to provide functional and educational assistance and financial burden.<sup>4</sup>

A key challenge in managing childhood TB in Pakistan is the absence of a systematic referral process for children suspected of having TB from primary healthcare facilities to those with childhood TB diagnostic services. Consequently, understanding how geographic distance affects the availability of childhood TB services could help inform evidence-based health policies to reduce barriers to TB care and improve outcomes for children across the country.<sup>5</sup>

Among the included studies, there is a reporting bias toward chronic and more severe tuberculosis manifestation. For future studies, the outcomes need to be classified based on time of treatment, age, tuberculosis management, level of care, and immune status for better understanding.

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