



Tuberculosis in Pakistan

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Tuberculosis (TB) continues its ravages against humankind despite the fact that its causative organism *Mycobacterium tuberculosis* was identified way back in 1882 and cost-effective drugs to treat the vast majority of people have been available since more than half a century, although more effective and newer therapeutic agents continue to be introduced. In 2019, an estimated 10 million people developed TB worldwide, with an estimated 1.408 million (~ 3,900/day) TB deaths, making it the leading killer among infectious diseases and one of the top ten causes of death worldwide (1). Furthermore, people with TB have to cope with the social and economic impacts of the disease including falling further into poverty, stigma and discrimination. Meanwhile, drug resistant TB emerging due to gaps in TB detection and treatment complicates the TB responses. In 2019, around 500,000 people developed drug-resistant tuberculosis globally (1) with almost half of them dying.

In 2018, the first United Nations General Assembly high-level meeting on TB, attended by several Heads of State / Government and Pakistan's Foreign Minister, concluded with an action-oriented political declaration, building on previous commitments to strengthen action and investments towards to end TB. The declaration highlighted the need for ending the epidemic in all countries and also to work in collaboration to accelerate the national and the global collective actions, financing and revolutions required to combat this preventable and treatable disease (2).

Pakistan has the fifth greatest burden of both drug sensitive and drug-resistant TB globally, with an incidence of 263/100,000 translating into 580,000 persons who develop TB annually, around 220,000 (38%) go 'missing' and are not notified in the national database. Among people with DR-TB, the proportion missed is far worse (75%). Not surprisingly, TB remains one of Pakistan's priority health problems limited access to TB services, rapid molecular diagnostic testing, preventative services and reaching vulnerable populations. There is a need for better collaboration between the public sector and private providers, while making efforts for overall health system strengthening. Although the TB program started with unique governmental commitment across the country in 2000-2001, it is now mostly donor driven, and despite treating hundreds of thousands of people over the years, the impact on the disease incidence has been minimal

mostly owing to the large proportion of 'missing' cases. All TB care services, including diagnosis, treatment, psycho-social support where necessary and follow-up are free in Pakistan including those for drug-resistant TB, entailing the high medical cost largely made possible mainly by generous grants from The Global Fund, with only a small proportion of the costs coming through domestic spending.

An enormous challenge in Pakistan, which has a low literacy rate particularly in rural females, is the lack of adequate awareness concerning TB not just in communities but even in healthcare workers, which leads to the stigmatization of the disease that could be addressed through health education and enhanced TB-related education among communities. There is a need for increasing TB awareness related to mode of transmission, prevention, diagnosis, treatment and reducing stigmatization of the disease through health education (3). The National TB control program has put in substantial efforts towards designing an adequate communication strategy.

Pediatric TB is another matter of grave concern in the context of Pakistan, as a significant proportion of childhood TB cases are either not diagnosed or diagnosed but not reported to the national surveillance system in Pakistan, with underreporting being very high both in the public and private sectors, signaling the need to strengthen TB surveillance, while encouraging private general practitioners and pediatricians to notify all TB patients reporting to them.

As public health experts and managers at national, provincial and district level grapple with outlining the optimal strategies to cast the net more broadly to harness persons with TB using a people-centered approach, a few things are striking clear. Firstly, political commitment in the country will need to be translated into concrete budgetary allocations, secondly TB elimination will require innovative and multidisciplinary approaches and reaching the most marginalized population segments, and thirdly the pace of effort will need to be increased manifold.

In this otherwise grim scenario, it is heartening to note the growing interest in operational research in the TB response in Pakistan. This has led to hundreds of papers being published in scientific journals on the issue during the past decade, greatly exceeding those in the preceding decade. Currently, however, efforts to end TB in Pakistan face their gravest challenge in the midst of the COVID-19 pandemic, which has brought about a decline in TB case notification and possibly challenges in case-holding as well. As the current



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environment affects mobility and access to care, the World Health Organization has drawn attention towards the importance of maintaining the continuity of essential TB services, with the supply chain in place for TB medication and diagnostics. Digital-health technologies such as electronic medication monitors and video-supported therapy could help in providing patient-centered care and support. Interest and need for artificial intelligence and other digital health solutions is growing and Pakistan has lead efforts globally to evaluate and showcase a number of them. It is absolutely crucial to compare the similarities of COVID-19 and the tuberculosis pandemics to avoid an undue focus on the first while neglecting the second. At this critical juncture, we have embarked on this venture of a supplement of the Pakistan Journal of Public Health dedicated to

painstaking reviews and original research on tuberculosis conducted in our national context. The effort has been made possible through a grant of the Stop TB Partnership and a meaningful collaboration between the Health Services Academy and the Dopasi Foundation. We declare no competing interests.

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