

## Sudan's tuberculosis response needs global support amid conflict

As Sudan enters its third year of war, tuberculosis continues to pose a serious threat to public health amid systemic health-care collapse.<sup>1</sup> In 2024 alone, the Federal Ministry of Health in Sudan officially reported 14 310 new tuberculosis cases, reflecting the persistence of the disease despite widespread insecurity and disruption of services.<sup>2</sup> Actual case numbers could be even higher, given the under-reporting in conflict and inaccessible areas. Currently, tuberculosis services are operational in 148 diagnostic and treatment centres across areas not directly affected by violence. Additionally, eight centres for drug-resistant tuberculosis and 32 molecular testing laboratories remain functional, largely due to the resilience of national health workers and support from local and international partners, and ongoing efforts are underway to finalise the establishment of two zonal laboratories.<sup>3</sup> These numbers, although encouraging, represent only a partial picture of the true disease burden, as vast regions remain inaccessible and under-reported.

The humanitarian crisis has exacerbated risk factors for tuberculosis transmission, including overcrowding, malnutrition, and displacement, with more than 8·6 million people internally displaced since the conflict began.<sup>3</sup> Moreover, the collapse of routine health services has resulted in over 70% of hospitals being non-functional, and 701 000 children missing basic vaccinations in 2023 alone.<sup>4,5</sup> Drug-resistant tuberculosis remains a major concern, with previous studies showing 22·8% of tuberculosis cases in Sudan being multidrug resistant and nearly 47·0% resistant to at least one anti-tuberculosis drug.<sup>6</sup> According to data from the Sudanese

Federal Ministry of Health's National Tuberculosis Program (before 2023), 22·3% of newly diagnosed tuberculosis cases were classified as multidrug resistant (unpublished). Among patients previously treated for tuberculosis, 30·0% were found to have multidrug-resistant tuberculosis (unpublished). No updated figures have been released since then. Without robust surveillance and sustained treatment access, these numbers might be even higher now.

Despite these challenges, collaborative efforts are underway. The Global Fund to Fight AIDS, Tuberculosis and Malaria and the UN Development Programme, in coordination with Sudan's health authorities, resumed medical supply deliveries to Darfur and other conflict-affected regions in late 2024, including medicines for approximately 13 000 patients with tuberculosis.<sup>7</sup> Furthermore, the Sudanese Federal Ministry of Health is actively rehabilitating tuberculosis centres and expanding diagnostic capacity across several states.<sup>2</sup> Nevertheless, tuberculosis remains a neglected crisis in the broader humanitarian response. There is an urgent need for targeted funding, mobile diagnostics, treatment continuity in displacement settings, and integration of tuberculosis services into emergency health operations. The long-term risks of an uncontrolled tuberculosis epidemic—particularly multidrug-resistant tuberculosis—are far reaching and demand immediate global health attention.

We declare no competing interests.

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## Human reproduction in crisis: causes unknown

Fertility rates have plummeted, making human reproduction below replacement level across all industrialised regions (Organization for Economic Cooperation and Development fertility trends are illustrated in appendix p 2).<sup>1</sup>

In line with the tradition of demographic research, the decline in fertility rates has been assumed to reflect a cultural transition due to social and economic changes of modern times.<sup>2</sup> However, this theory has not provided concrete evidence linking specific socioeconomic factors to the decline in fertility rates. Other hypotheses suggesting that lower fecundity (the biological ability to reproduce) could contribute to lower fertility rates have typically been overlooked in demographic research.<sup>2,3</sup>



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Governments have often responded to the proposals of demographic studies to lift fertility rates by providing special so-called baby bonuses. However, such programmes have not resulted in higher birth rates.<sup>4</sup>

The rapidly diminishing number of children and young people is already reshaping societies (predicted population trends are depicted in appendix p 3).<sup>5</sup>

We should not restrict our search for causes of low birth rates by studying only socioeconomic hypotheses. Important biological questions remain to be answered. Why is the demand for medically assisted reproduction (MAR) increasing all over the world, independent of geography, social status, workplace, religion, and political systems?<sup>6</sup> Why has the comprehensive unassisted pregnancy rate (including the rate of induced legal abortions) been decreasing? What is the role of declining semen quality that has been reported from all regions of the world?<sup>7</sup> Do the chemicals we detect in our organs<sup>8</sup> from exposure to contamination from food, indoor environment, and air pollution<sup>9</sup> play a role? Although these questions might appear straightforward, the answers remain elusive, and the reason for this is simple: the necessary large field studies of representative samples of people from the general population have never been done.

Despite sharing a common research focus, demographers and reproductive biologists have rarely collaborated. Their differing perspectives are evident even in their understanding of the term fertility: for demographers, it refers to the number of births, whereas in medical fields it denotes the ability to reproduce (ie, fecundity). As a result, couples experiencing infertility conceiving through MAR would, in a demographic context, likely be classified as fertile, even though they—after treatment—remain infertile in a medical and biological sense. It has been documented that more than 10% of all children in Denmark are now born as a result of MAR.<sup>10</sup> And yet,

MAR remains absent from the annual statistics on birth rates.

Scientists in reproductive medicine and socioeconomic scientists working in demography should collaborate to bridge the gaps between their research fields and design necessary large-scale, multidisciplinary field studies to identify the socioeconomic and biological causes behind the present crisis in human reproduction. In Scandinavian countries, electronic communication with respect to data safety and privacy can facilitate this study design.

If low birth rates ultimately stem from voluntary childlessness, socioeconomic conditions, current uncertainties about the future, or any combination of these, we should perhaps not worry, as such trends might change with time. However, if the declining fertility rates signal a lasting crisis—driven by an increasing number of young people with failing reproductive systems due to environmental problems—then urgent action is needed. It is time for our health authorities and governments to respond. Future generations depend on it.

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## Bridging the gap in radiotherapy access in Kenya

Cancer is the third leading cause of death in Kenya, after infectious and cardiovascular diseases.<sup>1</sup> According to the National Institutes of Health, 50% of all cancer patients receive radiotherapy as part of their treatment with 40% being for curative purposes.<sup>2</sup> In Kenya, a country with an estimated population of over 52 million, the demand for radiotherapy is rising annually, yet access remains restricted due to centralised services, insufficient facilities, low government funding,