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Tuberculosis and gender in the Asia-Pacific region

Paul H. Mason,^{1,2,3} Kathryn Snow,^{4,5} Rowena Asugeni,⁶ Peter D. Massey,⁷ Kerri Viney⁸

1. Centre for Values, Ethics and the Law in Medicine, University of Sydney, New South Wales

2. Woolcock Institute of Medical Research, University of Sydney, New South Wales

3. Department of Anthropology, Macquarie University, New South Wales

4. Centre for International Child Health, Department of Paediatrics, University of Melbourne, Victoria

5. Melbourne School of Population and Global Health, University of Melbourne, Victoria

6. Atoifi Adventist Hospital, Malaita Province, Solomon Islands

7. Hunter New England Population Health, New South Wales

8. National Centre for Epidemiology and Population Health and Department of Global Health, Research School of Population Health, Australian National University, Australian Capital Territory

Tuberculosis (TB) continues to be an important global health problem with more than 10 million cases and about 1.8 million deaths estimated to occur annually.¹ The Asia-Pacific region carries 58% of the global TB burden, including the majority of all estimated multidrug-resistant (MDR)-TB cases.² Age and gender have a marked effect on TB epidemiology across the life course, as men and women have different combinations of risk factors for TB, and follow different pathways to seek diagnosis and treatment.³ Worldwide, TB cases among men exceed those found in women, with a male to female ratio of 1.7:1.¹ This average conceals substantial heterogeneity across countries (see Figure 1), yet despite this marked variation, gender has received inadequate attention in TB research and disease control programs.^{4,5}

Theoretically, an airborne infectious pathogen should pose an equal biological risk to everyone. However, even historical data from the United Kingdom reveal a marked difference in the epidemiology of TB for men and women.⁶ TB mortality in women peaked between the ages of 20 and 30 for each generation born between 1820 and 1900, while among men in the same generations the greatest risk of death due to TB was between the ages of 30 and 40. Pregnancy is suspected to play a role in the early peak of female TB mortality in late adolescence and early adulthood,⁷ while smoking and occupational exposures may put men at highest risk slightly later in life.⁸ One-dimensional biomedical models of TB disease are clearly inadequate without factoring in social, gender, and life-course factors.

The interaction of gender with TB risk has particularly pronounced impacts on various key populations in different settings. Young

men from migrant and refugee backgrounds are known to face various barriers to accessing primary care in Australia and New Zealand, while young women in the Asia-Pacific region, particularly on the Indian subcontinent, frequently face financial and social barriers to accessing primary health care services, including TB services. Prisons are widely recognised as significant 'hot spots' for TB epidemics in many lower and middle-income countries, and as prison populations are overwhelmingly male, incarcerated men are a vulnerable and frequently neglected key population for TB.⁹ Conversely, pregnant women and young mothers may constitute a neglected key population in other settings—particularly those with both a low male-to-female ratio among TB patients, and known high burdens of maternal morbidity and mortality. People living with HIV are a key high-risk population for TB in any setting, and the gender-specific epidemiology of HIV likewise varies markedly by region and country.

Surveillance data provided to the World Health Organization (WHO) by national TB programs provides information on TB patients who are diagnosed and begin treatment. The WHO also facilitates TB prevalence surveys in key high burden countries, whereby a probability based sample of the population are screened for TB to estimate the prevalence of disease, uncomplicated by the problem of under-reporting. When TB notification data are compared to TB prevalence survey data, the male to female ratio of TB becomes even more intriguing. In Vietnam, for example, notification data indicates a male-to-female ratio of 3:1, while the national prevalence survey data from 2006–2007 indicated a ratio of 5:1.¹⁰ Are two of every five Vietnamese men with TB not detected by national tuberculosis programs and therefore not receiving appropriate treatment? Does male health-seeking behaviour in Vietnam contribute to diagnostic delay and shortfalls in TB care and prevention? The gender and social aspects of TB have been highlighted as a key area where TB services could be improved.^{11,12} However, current TB control strategies are neglecting gender and related factors as key determinants of TB.

For men in a range of contemporary settings, the social construction of gender disproportionately increases the risk of developing TB disease,^{13,14} potentially leading to diagnostic delays and ongoing transmission of TB.¹² In diverse social contexts, male TB patients are at higher risk of treatment interruption,¹⁵ treatment discontinuation,¹⁶ and death.^{17–19} For women, gender roles can also negatively affect health-seeking behaviour, treatment adherence and experiences of stigma.^{20,21} Interventions

Figure 1: TB sex ratio (male-to-female) map, 2014.



to reduce diagnostic delay and improve engagement with care for men are likely to look quite different to those suitable for women.

Some TB policies and programs do attempt to address the known obstacles created by gender norms.²² Evidence across countries and cultures shows that the organisation of TB treatment services is a major factor in the decisions people make about seeking and following treatment regimes, and that services have rarely been designed with users' needs in focus.²³ The social relationships between healthcare staff and people with TB have been described as authoritarian, with a lack of respect and empathy impeding engagement with care.²³

Along with other public policies, TB control policy and practices often occur within the normative masculine culture of the public sphere and are, as a result, gendered.²⁴ Healthcare services dominated by a traditionally masculine, authoritarian approach may be unable to adequately meet the needs of men, and may be even poorer at addressing the needs of women. New ways of developing policy and services that take gender into account are required—both with regard to the gender-related needs of patients, and the gendered behaviour of service providers. A framework for policy development and research where gender, class, and ethnic identity are central axes of analysis may offer a way of developing transformative approaches that offer truly patient-centred approaches to TB prevention and care.

Current epidemiological data about TB among men and women provides quantitative statistics about two biologically defined categories, but does not necessarily capture the relevance of social and cultural dimensions of gender for TB care and prevention.²⁵ Consideration of how gender is constructed, performed and challenged during experiences of TB diagnosis and treatment in various settings may help to develop ways of preventing and managing TB. In particular, the variation in the sex ratio of TB patients in different settings seems to hint strongly at gender-based, rather than sex-based, determinants of TB and of engagement with care. It seems improbable that a male to female ratio among notified TB patients of 1:1 in Thailand and more than 3:1 in Vietnam could be explained by biology – rather it must be explained by variation in gender-related risk factors and

gender-specific health seeking behaviours in each country. The sex ratio of notified TB patients in different settings is likely to result from a complex interplay of biological, social and cultural variables and risk factors,²⁶ rather than being about either biological or social factors alone. As such, an explanation of disparities based solely on gender as a sociocultural determinant influencing access to TB care may be likewise incomplete without an account of the biological determinant of sex.²⁶

We presently have a limited understanding of the sex-specific biological mechanisms that may account for differences in TB rates between men and women,²⁷ and it is unclear to what extent sex differences are artefacts of reporting bias, attributable to confounding variables such as HIV co-infection, occupational risks, or primary sex-specific immunological responses.²⁸ The marked increase in risk of TB among women of reproductive age, and the concurrent divergence of the sex ratio during adolescence hints at presently unexplained biological factors. However, cultural context obscures the data. For example, TB afflicts predominantly younger populations in Africa as opposed to predominantly older population in Asia. Across diverse cultural contexts, age-specific and cohort-specific effects can vary widely, thus highlighting the need for local research programs aimed at identifying how best to adapt medical interventions to surrounding socio-cultural conditions. Teasing out cultural influences from biological predisposition will require novel hypotheses, interdisciplinary diplomacy and collaboration, and innovative research methodologies that draw upon qualitative methods from medical anthropology and health sociology, in combination with complimentary quantitative methods from epidemiology and operational research.

With strong programs of TB research and control, as well as strategic geographic locations, Australia and New Zealand are in a unique position to support capacity building for research into TB and gender in the Asia-Pacific region. The main challenge to TB prevention and care in Australia and New Zealand, like many developed countries, is the high prevalence of TB in neighbouring low and middle-income countries.²⁹ Expanding research on TB and gender throughout Asia-Pacific countries has mutual benefits. Optimising TB care and prevention to reduce the prevalence of TB in

one country is beneficial to other countries, especially those that, like Australia and New Zealand, are net recipients of migrants from endemic settings.³⁰ Rather than placing a singular focus on place of birth,³¹ developing an understanding of the impact of gender on TB epidemiology and management may enhance TB care and prevention throughout the region.

Working in partnership, and using a culturally sensitive approach, Australian and New Zealand should do more to explore the issue of TB and gender in the Asia-Pacific region. Developing strategies to bolster TB treatment, care and prevention through addressing gender-related risk factors and barriers to care among TB patients throughout the region will allow Australia and New Zealand to contribute to, and benefit from, improved regional TB control. A regional approach to this issue recognises that the TB epidemic is fundamentally transnational in character, as the pathogen readily crosses national borders. Those strengthening TB research and control should be sensitive to the fact that historical and contemporary approaches are likely to be 'gendered'. The gender-mainstreaming agenda is mainly a political issue, not a biological or a technical issue, therefore alternative 'solutions' to gender-related problems have to be developed in the political realm.²³

TB is a gender issue. The marked variability in the sex ratios of TB patients across countries clearly indicates TB is strongly influenced by gendered cultural norms, and not by biology alone. And yet, cultural issues that have far-reaching implications for TB control including gender, class and ethnicity remain largely unexplored. The poverty of our current understanding of the sex-related epidemiology of TB around the world hints at a fundamental issue in TB care and prevention: a pronounced and calamitous lack of qualitative research into the spread and control of TB. In the absence of robust data about why male-to-female ratios of notified TB patients vary so much across countries, future research needs to take a comprehensive approach to studying TB as a serious, critical and lethal gender issue.

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Correspondence to: Dr Paul H. Mason, Department of Anthropology, Monash University, Clayton, Vic 3800; e-mail: paul.mason@monash.edu