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Gender and TB: pointers from routine records and reports

THE EXPERIENCE of the World Health Organization (WHO) since 1997 in assisting high TB burden countries to set up standardised TB surveillance systems shows that globally, men account for a higher proportion of notified TB cases (63% or 64%). Data on sex differentials in TB from some Western European countries during the period from 1930 to 1950, when the disease burden was still high, present a different picture: no significant difference in TB between sexes in childhood and pre-adolescence, a higher incidence in female than in male adolescents and young adults, and a higher incidence in men than in women after 40 years of age. Studies in various countries have also shown that progression from TB infection to disease is likely to be faster for women compared with men in their reproductive years, and faster for men after 40 years of age. Whether, and the extent to which, identifying fewer women with TB globally is due to sex (as a biological determinant) or gender (as a socio-cultural determinant influencing access to TB care) have been issues for discussion and debate. While some attribute it to barriers women may face in accessing TB care, others ascribe it to the natural epidemiology of the disease. The following paragraphs show how simple analysis of data collected routinely and transmitted regularly to sub-national, national and global programme levels identify interesting questions and suggest ways to answer them through additional interdisciplinary investigation.

A regional analysis of sex differentials on the data reported to the WHO by countries from 1997 to 2005 shows consistent and reproducible patterns like those seen in the Figure, which presents the latest available data for 2005. Summary observations on data from 1997 to 2005 are notable: 1) in the age group 0–14 years, the sex ratio (male:female) is always below 1 in all six WHO regions, indicating a higher proportion of TB among female children and adolescents; 2) the ratio increases with age in all regions except the European Region; 3) the lowest ratio is observed in the Eastern Mediterranean Region, where the highest ratio is a little more than about 1.5 for patients aged ≥65 years; 4) the ratio in the European Region increases sharply with age, reaching 6 for the 45–54 years age group in 2001, and decreases to ≤2.5 for older age groups; 5) in the Americas, Africa, South-East Asia and Western Pacific, the ratio increases constantly with age; and 6) in patients aged ≥65 years, the highest ratio is observed in South-East Asia (3–4 for every year in the period 1997–2005) and the Western Pacific (approximately 3).

This region-wise reproducibility of the sex ratio, which is relatively constant throughout this period, suggests that the sex distribution of notified TB cases may be determined partly by region-specific factors. Intriguingly, however, in the European Region, where the disparities between sexes in accessing health services are likely to be lesser than in other regions, reports show the highest sex ratio. In contrast, the African and the Eastern Mediterranean regions, where such disparities in accessing care are likely to be greater, the reported sex ratios are lowest. An explanation based solely on access appears not to account for disparities in the notification of male and female TB cases in the WHO regions.

A country-specific analysis of data from the Eastern Mediterranean region indicates additional relevant issues for further consideration and investigation. In Morocco, although the incidence rate of notified smear-positive TB is higher for men than women, the incidence rate of notified extra-pulmonary TB is similar for both sexes or higher for women in some years. How can we explain the relationship between sex differentials in extra-pulmonary TB and smear-positive TB?

Notable exceptions to the global pattern of male preponderance in some country data also raise challenging questions. The notified incidence rate of sputum smear-positive TB in Iran is higher for women than men, and the male:female rate ratio is 0.8–0.9 in every year for which data are available (Mahshid Nasehi, personal communication). Strikingly, women in Afghanistan account for more than two thirds of notified TB cases. The notified incidence rate is lower for men than women, not only for smear-positive TB (male:female ratio approximately 1.2:3 each year), but also for extra-pulmonary TB (male:female ratio 1:1.5–1.7 each year) (Salim Rasooli, personal communication). What can explain this much higher notification of female TB cases in Iran and Afghanistan?

An examination of sub-national data in Pakistan further highlights the importance of careful analysis of local features of the relationship between gender and the epidemiology of TB. In Punjab and Sindh Provinces, as in the rest of Asia, women account for less than half of notified smear-positive TB cases. However, the situation is exactly the opposite in the North-West Frontier and Baluchistan Provinces, where the proportion of women is about 60% of notified smear-positive TB cases (Hassan Sadiq, personal communication). Does this difference have anything to do with the fact that these provinces border Eastern Afghanistan and harbour populations of similar ethnicity?

These examples highlight the value and the need to study routine records and reports that sharpen the focus on gender issues for TB control. The data show that the sex distribution of notified TB cases varies not
only across regions and countries but also within coun-
tries, provinces and perhaps even within districts. The
reasons for these differences need to be explained, and
they are likely to result from various factors, including
access to care, ethnicity, particular forms of TB, the
HIV co-epidemic especially in Africa and similar high
prevalence settings, as well as other diverse biological,
social and cultural variables. National TB Programmes
routinely collect sex-disaggregated data. As a first step
to explain them, routine analysis should carefully track
gender disparities along the lines indicated above. That
approach will help programme managers recognise
what is the problem of gender in TB, and where it ex-
ists. However, to understand why the problem exists
and how it can be addressed, interdisciplinary studies
that consider the interplay of biological, socio-cultural
and health system determinants of sex- and gender-

based differences are needed. The articles presented in
this special section of the Journal indicate a way to
proceed with such studies based on research carried
out in programmes of diverse country settings.

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References
1 World Health Organization. Global tuberculosis control annual
2 Holmes C B, Hausler H, Nunn P A review of sex differences in
the epidemiology of tuberculosis. Int J Tuberc Lung Dis 1998; 2:
96–104.
3 Hudelson P. Gender differentials in tuberculosis: the role of so-
cio-economic and cultural factors. Tubercle Lung Dis 1996; 77:
391–400.
4 Cassels A, Heineman E, LeClerq S. Tuberculosis case finding in
5 Crampin A C, Glynn J R, Floyd S, et al. Tuberculosis and gender:
exploring the patterns in a case control study in Malawi. Int J
in tuberculosis: report from a rural DOTS programme in South
7 Borgdorff M W, Nagelkerke N J D, Dye C, Nunn P. Gender and
tuberculosis: a comparison of prevalence surveys with notifica-
tion data to explore sex differences in case detection. Int J Tuberc
8 Otmani S, Lasari L, Chaulet P, et al. La tuberculose et la lutte
antituberculeuse au Maroc de 1980 à 1998. Direction de l’epi-
démiologie et de la lutte contre les maladies. Bull Epidémiol
1998; 35: 2–12. [French]