

How many more missing women?

In his widely cited article,¹ Amartya Sen examined the high ratios of men to women in several populations and estimated that more than 100 million women were missing worldwide. Sen concluded that “These numbers tell us, quietly, a terrible story of inequality and neglect leading to the excess mortality of women”. Women are missing because of an entrenched preference for sons over daughters in some communities and gender discrimination affecting women throughout their lives.

Building on Sen’s approach, we estimated that the number of missing women has steadily risen from 61 million to 126 million between 1970 and 2010.² This increase is faster than that of the world population, with China and India accounting for most of the deficit in women.

Two forces drive this tragic increase: postnatal excess female mortality and prenatal sex selection. Excess mortality in girls and adult women has existed throughout human history. We estimate that about 1.8 million excess deaths have occurred each year since 1970 (figure).² By contrast, prenatal sex selection is a new practice, which grew rapidly after the 1980s when access to inexpensive and reliable

ultrasound to establish the sex of a fetus allowed some couples to resort to sex-selective abortions. By 2010, the annual number of girls missing at birth reached 1.7 million worldwide. Nowadays, prenatal sex selection contributes as much as excess mortality to the number of newly missing women.

Our projections from 2010 to 2050 expect the worldwide number of missing women to rise for two more decades before peaking at 150 million in 2035.² The main driver is a future rise in excess deaths, in part owing to population ageing. Overall, and particularly in India and China, prenatal sex selection is expected to decline, but it could well rise elsewhere as sex-selective technology and low fertility spread in other populations with a staunch preference for sons.

Policy makers are searching for means to reduce gender discrimination and raise the value parents place on female children. Although research to identify interventions is underway, effective solutions are elusive.

We declare no competing interests.

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Prevention of violence against women and girls at the community level

In their Series paper on lessons from practice (April 25, p 1672),¹ Lori Michau and colleagues emphasised the importance of social, cultural, and political interactions to prevent violence against women and girls. This approach is especially important for developing countries where many women are in abusive relationships. Although laws have the potential to prevent violence, such violent relationships can continue owing to absence of support after a separation, social stigma, and economic hardships, and put women in greater danger.^{2,3}

To make a breakthrough in overcoming this problem, the Sri Lankan Ministry of Health introduced a violence prevention initiative at the community level in 2009.⁴ In this initiative, public health midwives were trained to identify intimate partner violence, and assist victims of intimate partner violence on the basis of individual needs. During home visits and field clinics, midwives identified intimate partner violence, had discussions with the women, and suggested possible interventions. Midwives acted as educated mediators to help the couples to solve their problems, and followed up to ensure the women’s safety. Midwives referred the women to psychological care, social services, and legal support as needed, with the assistance of senior health officers. Referring to legal services was not the first line of management, unless the sufferers experienced severe intimate partner violence. Instead, the women’s relatives and friends had roles

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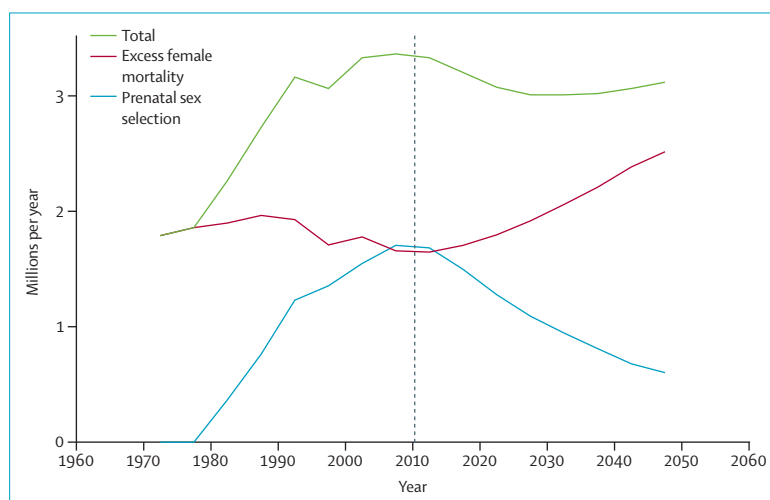


Figure: Annual number of newly missing girls and adult women

in support groups to prevent violence. The programme attempted to change the behaviour of abusers through midwives' involvement in counselling the couple.

Michau and colleagues¹ suggested that health providers have the ability to send a strong message that emphasises the dangerous, unhealthy, and harmful nature of violence. Sri Lanka's experience might be one such example.

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Cancer survival rates: the CONCORD-2 study

We were surprised to read the findings of the CONCORD-2 study published in *The Lancet* (March 14, p 977),¹ specifically with respect to the 5-year cancer survival rate presented for the city of Goiânia, Brazil.¹ The net survival rate presented for patients diagnosed with breast cancer between 1995 and 1999 was 79.4%, 63.9% between 2000 and 2004, and 59.2% between 2005 and 2009.¹ We believe that these data might not be reliable since they do not accord

	Period of time	Overall survival (%)	Net survival* (%)
Abreu et al (2012) ²	1988–90	57.0%	..
Coleman et al (2008) ³	1990–94	65.4%	..
Freitas-Junior et al (unpublished)	1995–2003	72.1%	..
Allemani et al (2015) ¹	1995–99	..	79.4%
Allemani et al (2015) ¹	2000–04	..	63.9%
Allemani et al (2015) ¹	2005–09	..	59.2%

Data for all studies were sourced from the Goiânia Population-Based Cancer Registry. *Net survival represents the cumulative probability that the patients with cancer would have survived at 5 years after diagnosis, in the hypothetical situation that the cancer was the only possible cause of death. It was interpreted as the proportion of patients with cancer who survive up to that time, after the elimination of other causes of death (background mortality).¹

Table: Temporal trends in breast cancer 5-year survival in women living in the city of Goiânia, Brazil

with previous studies done with the Goiânia population-based cancer registry.^{2,3}

The temporal trends in 5-year overall survival rates from breast cancer for women living in the city of Goiânia have been evaluated in different studies using data from the Goiânia cancer registry (table). These studies included women diagnosed between 1988 and 1990 (57% survival rate),² between 1990 and 1994 (65.4% survival rate),³ and between 1995 and 2003 (72.1% survival rate; unpublished). This increase in overall survival rate between studies could have been related to improvements in local screening and early diagnosis of breast cancer, resulting in a reduction in the proportion of advanced cases in parallel with an increase in the proportion of early cases.^{4,5} The inclusion of new drugs and targeted therapies might also have contributed to the improvement in this outcome.

The CONCORD-2 study¹ evaluated cancer-specific survival, in which the endpoint for the analysis of survival consisted exclusively of breast cancer-related death, with deaths related to other causes being censored at the time of the patient's death. Whereas, previous studies done with the Goiânia cancer registry^{2–4} evaluated overall survival, in which all patient deaths were regarded as endpoints. Therefore, the CONCORD-2 study¹ would be expected to report higher overall survival rates than those actually presented.

The survival rates reported for the city of Goiânia also differed in relation to those from other Brazilian registries included in the CONCORD-2 study,¹ which showed an increase in net survival during the period analysed. For example, the São Paulo registry, where survival rates increased from 77.0% to 90.9%, and the Curitiba registry, where rates increased from 82.8% to 88.6%.¹

In view of the importance of studies on survival from a public health view-point insofar as the assessment of care and the distribution of resources in a given population are concerned, it is essential to read the results presented in the CONCORD-2 study for the city of Goiânia with a critical eye and to carefully discuss these findings. The data on survival in the city of Goiânia should be reviewed to verify the consistency of the results presented in the CONCORD-2 study.

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