Background: Maternal mortality remains poorly researched in Africa, and is likely to worsen dramatically as a consequence of HIV/AIDS.

Methods: The 2001 census of South Africa included a question on deaths in the previous 12 months, and two questions on external causes and maternal mortality, defined as "pregnancy related deaths". A microdata sample from the census permits researchers to assess levels and differentials in maternal mortality, in a country severely affected by high death rates from HIV/AIDS and from external causes.

Results: After correcting for several minor biases, our estimate of the Maternal Mortality Ratio (MMR) in 2001 was 542 per 100,000 live births. This level is much higher than previous estimates dating from pre-HIV/AIDS times. This high level occurred despite a relatively low proportion of maternal deaths (6.4%) among deaths of women aged 15–49 years, and was due to the astonishingly high level of adult mortality, some 4.7 times higher than expected from mortality below age 15 or above age 50. The main reasons for these excessive levels were HIV/AIDS and external causes of deaths. Our regional estimates of MMR were found to be consistent with other findings in the Cape Town area, and with the Agincourt DSS. The differentials in MMR were considerable: 1 to 9.2 for population groups (race), 1 to 3.2 for provinces, and 1 to 2.4 for levels of education. Relationship with income and wealth were complex, with highest values for middle income and middle wealth index. The effect of urbanization was small, and reversed in a multivariate analysis. Higher risks in provinces were not necessarily associated with lower income, lower education or higher proportions of home delivery, but correlated primarily with the prevalence of HIV/AIDS.

Conclusion: Demographic census microdata offer the opportunity to conduct an epidemiologic analysis of maternal mortality. In the case of South Africa, the level of MMR increased dramatically over the past 10 years, most likely because of HIV/AIDS. Indirect causes of maternal deaths appear much more important than direct obstetric causes. The MMR appears no longer to be a reliable measure of the quality of obstetric care or a measure of safe motherhood.

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