

Maternal mortality by age: who is most at risk?



The estimated number of women who die each year from causes related to pregnancy or childbirth has dropped substantially—from 543 000 deaths in 1990 to about 287 000 in 2010.^{1,2} Nevertheless, maternal mortality ratios remain among the least equitable of all health indicators, ranging from less than five maternal deaths per 100 000 livebirths in high-income countries to more than 500 per 100 000 livebirths in several countries in sub-Saharan Africa.² Sadly, most countries are expected not to achieve the maternal mortality target set for the Millennium Development Goals.¹

Identifying high-risk groups is important for the design of intervention programmes. For example, the risk of death is often stated to be twice as high for adolescent mothers as for those in their 20s.^{3,4} This statistic fits well with the agenda of reducing adolescent childbearing, which is being championed as a priority by international and bilateral agencies.^{4,5}

Nevertheless, advocacy must be backed up by solid data. In *The Lancet Global Health*, Andrea Nove and colleagues⁶ report the results of an analysis of data from 144 countries, which together account for 93% of the world's annual births.⁶ The large and diverse amount of data allowed for analysis of national age-specific estimates of maternal mortality at a scale that was not previously possible.

Some important findings emerge from this work. First, the risk of mortality associated with adolescent pregnancy is only about a third higher than that of women aged 20–24 years (260 [uncertainty 100–410] vs 190 [120–260] maternal deaths per 100 000 livebirths), and therefore not as high as previously believed. Second, women older than 35 years had the highest maternal mortality ratios, and although this pattern has been described before, no previous study has reported such convincing data from such a wide range of countries. Third, age-specific maternal mortality varied substantially between countries and regions; some showed the classic J-shaped curve for maternal mortality ratio by age, whereas in others adolescents had the lowest maternal mortality ratio of any age group. This group included several countries in sub-Saharan Africa with very high maternal mortality ratios (eg, Central African Republic, Democratic Republic of the Congo, and Zambia). Fourth, the data source—vital registration or censuses and surveys—does not seem to

affect the overall conclusions. Finally, most uncertainty estimates for the 15–19 years age group overlap with those for mothers aged 20–24 years.

The reasons behind these age patterns warrant further investigation. Previous studies have shown that confounding by socioeconomic status is important in the association between maternal age and several adverse perinatal outcomes, and a descriptive study such as Nove and colleagues' analysis cannot take this issue into account. For young mothers, who tend to be poorer and less educated than older mothers in all types of settings, confounding will lead to increased risks; for older mothers, confounding might mask even stronger associations in many countries where older mothers tend to be better off.⁷ Parity also plays a part, since both nulliparous and high-parity women are generally at increased risk of adverse maternal outcomes.⁸

Nove and colleagues' findings also raise the issue of whether all adolescents have a similar mortality risk. Analyses of maternal mortality ratios have traditionally treated adolescents as a single age group (15–19 years), but this approach could mask important differences related to biological maturity and social conditions. Such a broad age group includes both very young mothers, for whom childbearing has a high social and biological risk, and those aged 18–19 years, who are possibly in their prime biological—albeit not social—reproductive status.⁸ Therefore, the risk for the 15–19 years age group is affected by the proportions of younger or older adolescents within this group. Further analyses could bring new insights into the age-gradient risk pattern for maternal mortality.

These results have to be interpreted with respect to present trends in age at childbearing. Worldwide, adolescent fertility rates fell from 71 to 52 per thousand women aged 15–19 years between the 1970s and the 2000s.⁹ This reduction was seen in all regions, with the possible exception of Latin America. For birth rates in women aged 35 years and older, substantial reductions were seen in Africa, Asia, and Latin America, but slight increases were noted in high-income countries.⁹ These patterns, taken together with Nove and colleagues' findings,⁶ suggest that existing trends in age-specific fertility will contribute to a reduction in maternal mortality in the near future.

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Irrespective of the size of the increased risk of maternal mortality for adolescents, many overwhelming reasons exist for adolescent women to avoid early childbearing, including the widespread adverse social, educational, and economic consequences for young mothers.⁵ However, the most striking finding from Nove and colleagues' study⁶ is the very high risk for women older than 35 years. On the basis of these data, delaying 100 000 adolescent pregnancies until ages 20–24 years would prevent 70 maternal deaths, whereas more than 1000 deaths would be prevented if 100 000 pregnancies currently in women aged 40 years or older occurred when the same women were in their early 20s. Whereas late motherhood in high-income and middle-income countries might be an unavoidable consequence of the broadly positive improvement of women's role in society, in low-income countries many maternal deaths could still be prevented by improving access to contraception to reduce unplanned, high-parity births.¹⁰

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