Improving completeness of birth and death registration in rural Africa

Vital registration is a key element of modern societies and necessary for functioning of the rule of law. Birth and death certificates are necessary to guarantee numerous rights and duties to individuals and families. However, with a few exceptions (such as islands), no African country has achieved a complete system of civil registration and vital statistics (CRVS).

The situation is changing rapidly in some southern African countries, particularly in South Africa. The 1992 Births and Death Registration Act made the registration of all births and deaths compulsory to South African citizens and permanent residents, and a major programme to achieve complete vital registration and to publish vital statistics was launched in the country after 1994. Unfortunately, estimates of completeness of birth and death registration remain controversial in South Africa due to uncertainty about the size of the population, the quickly changing dynamics of fertility and mortality, and the quality of the registration—in particular the issue of late declaration.[1,2]

We report on a success story of birth and death registration in Agincourt—a deprived community of rural South Africa. This study was made possible by the existence of a comprehensive Health and Demographic Surveillance System (HDSS) in place since 1992. The Agincourt HDSS is described in detail elsewhere.[3,4] In brief, it is based on a comprehensive yearly census, and a systematic registration of births, deaths, and in and out migrations. For births and deaths, families are asked whether the event was registered or not (CRVS), which allows a straightforward calculation of completeness of vital registration because both numerators and denominators are known with accuracy. The Agincourt HDSS population covered 32 villages and about 115 000 people in 2014. The population is from the Shangaan ethnic group, and hosts a sizeable community (about a third of the total population) of former refugees from nearby Mozambique who came in the 1980s to escape the civil war. In addition to the stratification by nationality (South African vs Mozambican), the population is stratified by socioeconomic status (with all levels of wealth, from very poor to wealthy), and by level of education (from people with primary school level education or less, to those with higher education).

During the 22-year study period (1992–2014), the completeness of birth and death registration improved substantially, from low levels at onset to almost full registration at endpoint (figure). Completeness of birth registration averaged only 8% in the first 3 years (1992–94) and reached 89% in 2013–14; completeness of death registration increased from 47% to 96% during the same period of time. Improvements in completeness were steady and followed the intensity of the government's efforts to improve the functioning of the registration system.

Registration being nearly complete (>90%) implies that all social strata were affected by the changes to registration practice, which can be verified by socioeconomic analysis. For the poorest group (lowest level of wealth), completeness of birth registration increased from 5% in 1992–94 to 67% in 2013–14 (vs 10% to 94% for the wealthiest group), and completeness of death registration increased from 39% to 85% (vs 75% to 100% for the wealthiest group). For the least educated group (primary school education or less), completeness of birth registration increased from 8% in 1992–94 to 81% in 2013–14 (vs 20% to 90% for the most educated group), and completeness of death registration increased from 54% to 92% (vs 57% to 91% for the most educated group). For the former Mozambican refugees, completeness of birth registration increased from 4% in 1992–94 to 77% in 2013–14 (vs 11% to 87% for South Africans), and completeness of death registration increased from 19% to 89% (vs 58% to 95% for South Africans). Completeness of birth registration did not differ by sex, and women's deaths were at least as well registered as men's
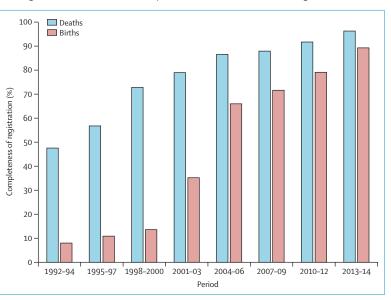

Figure: **Trends in completeness of birth and death registration in Agincourt community**
Data are from Agincourt Health and Demographic Surveillance System, South Africa, 1992–2014[4]

deaths. In 2013–14, the few remaining cases of unregistered births were among adolescent mothers, and the few remaining cases of unregistered deaths were among infants and children younger than 5 years.

The Agincourt case study shows what can be achieved in a relatively short period of time, even in a remote rural African community. This achievement was made possible by the strong political will and the commitment of the South African Government that emerged after the 1994 democratic elections. South Africa's success indicates that full registration of vital events is possible with adequate administrative support and funding systems, coupled with appropriate information provided to the population.

The routine HDSS system put in place more than two decades previously made it possible to reveal that the collection of vital registration data increased. The Agincourt study was not designed at first for this purpose, but rather to compensate for the lack of knowledge on population dynamics in this community. The Agincourt study is a valuable byproduct of the HDSS system, which can be used by policy makers to promote and improve their strategy for ensuring that all vital events are properly recorded elsewhere in the country and on the continent.

We declare no competing interests.

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1   Rao C, Bradshaw D, Matthers CD. Improving death registration and statistics in developing countries: lessons from sub-Saharan Africa. *South Afr J Demogr* 2000; **9:** 81–99.
2   Joubert J, Rao C, Bradshaw D, Dorrington RE, Vos T, Lopez AD. Characteristics, availability and uses of vital registration and other mortality data sources in post-democracy South Africa. *Glob Health Action* 2012; **5:** 19263.
3   Kahn K, Tollman SM, Collinson MA, et al. Research into health, population and social transitions in rural South Africa: data and methods of the Agincourt Health and Demographic Surveillance System. *Scand J Public Health* 2007; **35** (suppl 69)**:** 8–20.
4   Kahn K, Collinson MA, Gómez-Olivé FX, et al. Profile: The Agincourt Health and socio-Demographic Surveillance System (Agincourt HDSS). *Int J Epidemiol* 2012; **41:** 988–1001.