Estimation of maternal and perinatal mortality in the urban slums of Badia and Riverine in Lagos, Nigeria through the sisterhood method and preceding births technique

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Background
According to WHO estimates, maternal mortality in Nigeria is one of the highest in the world at 630 deaths per 100,000 live-births. MSF has provided maternal health services in Lagos since late 2010. We did a cross-sectional, household survey to estimate maternal and perinatal mortality in Riverine and Badia, two urban slums with marginalised populations, for which the maternal mortality ratio (MMR) was not known. We also conducted questionnaires and semi-structured interviews with the aim of understanding women’s perinatal health-seeking behaviour.

Methods
A systematic random sampling approach was used to select 4002 households within the study community. This sample was large enough to detect a MMR of 250-500 with an error margin of 20% and a confidence interval of 95%. We used the indirect sisterhood method to measure maternal mortality to minimize the sample size by querying respondents about the survival of all their sisters. We used the preceding birth technique to assess the outcome of previous deliveries for newborn and child mortality. In addition, female respondents were questioned about their health-seeking behaviour during the antenatal, intrapartum, and postnatal periods. Ethics approval was obtained from the MSF Ethics Review Board, Lagos State Ministry of Health, and Lagos University Teaching Hospital.

Results
3962 respondents provided data on 7018 sisters; the MMR was 1050/100,000 live-births (95% CI 894-1215) and the lifetime risk of maternal death 1:18. On the basis of 1967 deliveries reported in the past 2 years, neonatal mortality was 34/1000, infant mortality 57/1000 and under-5 mortality 103/1000. 50.2% (988) of the last pregnancies of female respondents were delivered in private health facilities. Proximity to home was a key influencing factor (39.4%, 775) for delivery at the health facility and 81.8% of the women were attended by skilled staff (doctors, nurses, midwives).

Conclusions
Our results demonstrate the importance of sub-regional, disaggregated data to identify and redress inequities that exist among poor, remote, vulnerable populations. The MMR in these populations was extremely high, almost double that estimated for Lagos state (545/100,000 live-births). The MSF programme has now been handed over to local health authorities and these results were used to advocate focusing on maternal mortality reduction. The Ministry of Health agreed to take over the MSF maternal health structure and related activities and review national, local policies and programmes related to reproductive health.