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Title:
The Impact of Heart Disease on Maternal and Fetal Outcomes in Uganda

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Objectives:
Indirect causes of maternal deaths, which include non-obstetrical pre-existing conditions such as cardiovascular disease, account for over one quarter of global maternal mortality. In this study, we aimed to determine both the prevalence of pre-existing maternal heart disease and the percent population attributable risk of cardiovascular disease to adverse maternal and fetal outcomes.

Method:
In this 24-month, prospective longitudinal study Children’s National and the Uganda Heart institute partnered with a non-governmental organization, (Imaging the World ) to add a focused echocardiogram screening to an established obstetrical imaging service for women presenting to 3 Ugandan healthcare centers for antenatal care. All women with an abnormal screening were referred to a local cardiologist for a final diagnosis and linked to care. Maternal and fetal outcomes were recorded for all participants at least 6 weeks post-partum though a combination of clinical visits, village health teams, and phone follow-up.

Results:
Of the 3561 women screened, 58 (1.7%, 95% CI 1.3-2.1%) were diagnosed with heart disease, the majority of which was rheumatic heart disease (1.5%, 95% CI 1.1-1.9%). The relative risk of neonatal death was 5.3 times higher among babies born to women with heart disease, occurring in 53.6 babies per 1000 (95% CI 11.2-
148.7) compared to 10.2 per 1000 (95% CI 7.1-14.1) of babies born to women without heart disease (p=0.013). The percent attributable risk of heart disease on maternal, fetal and neonatal mortality was 11%, 1.3% and 6.4% respectively in the overall population and 89%, 46% and 81% in women with heart disease.

Conclusions:
This study adds some of the first epidemiological data on RHD in adults in sub-Saharan Africa, revealing a large prevalence of undiagnosed heart disease in pregnant women presenting for antenatal care. Although successful linkage to care in our cohort likely decreased morbidity and mortality, pregnancy outcomes were still poor compared to women without heart disease. Primary prevention and early diagnosis and treatment of maternal cardiovascular disease is critical to improving maternal health and reducing infant mortality.

Keyword 1: developing countries Keyword 2: fetal outcomes Keyword 3: heart disease