

Vulnerability and Reproductive Health Outcomes Among Women in Sub-Saharan Africa

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Abstract

Natural hazards and conflicts have a debilitating effect on a range of demographic outcomes which may have implications on the economic development and human capital of countries. Drawing on the scarce literature linking climate conditions to reproductive health outcomes, we use Demographic and Health Survey data with detailed data on precipitation, temperature, and vegetation to explore changes in childbearing intentions, family planning use, and births following community-level climate shocks in 8 selected sub-Saharan African countries. This study argues exposure to hot temperatures above a particular threshold during pregnancy may lead to negative birth outcomes such as miscarriage or low birth weight. This effect may differ by socio-economic status and country. Results contribute to the environmental fertility literature by showing that longer duration environmental shocks can have impacts on fertility behaviors and outcomes albeit with contextual differences.

Extended Abstract

Background

Disasters are threats to population well-being that derail socioeconomic progress, strain social safety nets, and require complex assistance and recovery interventions. Over the last decade alone, several countries in sub-Saharan Africa (SSA) have all experienced natural disasters with death tolls in the tens of thousands. The high mortality disasters in recent years, combined with predictions that these events will increase in frequency as a result of global warming and rising population densities in coastal areas, have increased interest in more fully understanding the factors that underlie trajectories of disaster recovery over the longer term. However, only few studies (Eissler, Thiede, & Strube, 2019) have documented the effects of climate change on reproductive health outcomes in SSA – a key development issue in the region. Particularly, the effect of education on these associations have not been studied.

Empowerment through education is also key as girls who are educated are likely to have fewer (and healthier) children later in life, and are better equipped at handling environmental shocks such as cyclones, floods and droughts when they strike. Building resilience for these situations by fulfilling the sexual and reproductive rights of women and girls plays an important role in a country's ability to mitigate climate-related challenges.

It is important to note that, in general, the better educated tend to earn more, have greater wealth, and live longer and healthier lives (Lutz and Samir 2011). They also tend to live in areas that are less prone to natural disasters and to be better protected against shocks either through some form of formal or informal insurance or through greater diversification of their livelihoods as well as

their financial assets and social support (Strauss and Thomas 2008). As a result of these choices, it is difficult to disentangle whether the better educated are better able to recover over the longer term from a disaster that has equal immediate impacts regardless of education level, or whether the better educated suffer fewer immediate impacts at the outset because of prior investments in risk mitigation and insurance.

Based on this background; this paper examines the effect of climate change of ideal fertility intentions and family planning. It also examines the moderating effect of education on these associations.

Data and Methods

In order to examine the association between climate change and reproductive health outcomes, data on climate variables are required. Spatial data is a good source of data for weather variability. Demographic and Health Survey (DHS) data is spatially referenced and provide extremely detailed data on health outcomes. The DHS contains detailed information on child/infant health and mortality and also contains (in most cases) retrospective monthly contraceptive/pregnancy calendars for the five years preceding the survey date. DHS cover a larger geographic region and the data are easily accessible online. These data are almost always spatially referenced at the “cluster” level enabling spatio-temporal analysis using climate data (Grace, 2017).

The countries included are the following: Gabon 2012 and Congo DRC 2013-14, representing Central Africa; Rwanda 2014 and Tanzania 2014-15, representing East Africa; Zambia 2013-14 and Zimbabwe 2015, representing Southern Africa; and Liberia 2013, and Nigeria 2013, representing West Africa. The full details of analytic sample have been presented in the Appendix.

Variables of Interest

Outcome Variable

Our first dependent variable is ideal family size (IFS), which measures the “total number of children the woman would have liked to have in her whole life, regardless of her actual childbearing”. Family planning was measured by use of contraception.

Independent Variables

The key independent variables are precipitation and temperature anomalies. These measures represent the deviations of precipitation and temperature in residential cluster c during interval t , of length n months prior to the DHS survey, from the respective long-term average of all n -length intervals.

Based on the literature, we control for women’s age (in years), educational attainment, marital status (currently in union/previously in union), employment in activities paid in cash or in-kind

(yes/no) and sector of employment (agriculture/non-agriculture), number of children ever born, and residence in a rural or urban cluster. We also include province and region-decade fixed effects.

Methods

Linear regression model was used to test our hypothesis. Data are weighted using the person-level sample weights constructed by the DHS and standard errors are clustered at the 0.5°-by-0.5° cells for which we measure climate variability

References

- Eissler, S., Thiede, B. C., & Strube, J. (2019). Climatic variability and changing reproductive goals in Sub-Saharan Africa. *Global Environmental Change, 57*, 101912.
- Grace, K. (2017). Considering climate in studies of fertility and reproductive health in poor countries. *Nature climate change, 7*(7), 479.