

The Intersectional Impact of Drought on Women's Reproductive Health in the Ethiopian Highlands: A Review of Evidence and Policy Gaps

Corresponding author

Menberu Teshome, Department of Geography and Environmental Studies, Debre Tabor University, P.O. Box 272, Debre Tabor, Ethiopia.
ORCID: <https://orcid.org/0000-0002-2110-1789>

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ABSTRACT

Climate change, particularly prolonged drought, represents a critical, yet often neglected, threat to Sexual and Reproductive Health and Rights (SRHR) in agrarian Low-and Middle-Income Countries (LMICs). This review synthesizes the evidence on the intersectional pathways through which drought impacts women's reproductive health in the Ethiopian Highlands. We delineate three principal interconnected causal routes: (1) Biological Stress and Morbidity (malnutrition, infectious disease), (2) Socio-economic Disruption (reduced healthcare access, financial barriers), and (3) Protection Risks (Gender-Based Violence (GBV) and harmful coping mechanisms). Findings demonstrate drought exacerbates adverse pregnancy outcomes (e.g., stillbirth, preterm birth), increases the unmet need for family planning (FP), and escalates GBV and child marriage. Crucially, while the Somali and Afar regions have some documentation, there is a distinct geographical evidence gap for the densely populated, food-insecure Amhara Highlands. We conclude that current Ethiopian climate and health policies lack explicit, integrated SRHR interventions in disaster response. Urgent, localized research and the adoption of gender-responsive, climate-resilient health programming are recommended to safeguard the progress made in maternal and reproductive health in the region.

Keywords: Drought, Climate Change, Reproductive Health, Maternal Health, Ethiopia, Amhara, Gender-Based Violence, Family Planning, SRHR

Introduction

Climate variability and change, characterized by increasing frequency and intensity of droughts and rainfall shocks, pose an existential threat to Ethiopia's primarily rain-fed agricultural economy [1]. The Ethiopian Highlands, home to the majority of the population and areas of high population density, such as the Amhara Regional State, are recurrently exposed to severe climate hazards. While the immediate consequences of drought on nutrition and communicable diseases (e.g., diarrheal illness) are well-documented, the cascading and gender-specific effects on women's reproductive health (RH) remain insufficiently addressed in both research and policy [2].

Reproductive health is defined by the World Health Organization (WHO) as a state of complete physical, mental, and social well-being in all matters relating to the reproductive system, its functions, and processes. In humanitarian and climate crisis settings, women and girls face disproportionate vulnerability due to pre-existing gender inequities that restrict access to resources, autonomy, and essential healthcare. Drought, therefore, acts as an inequality multiplier, intensifying barriers to SRHR.

This review addresses a critical gap by synthesizing existing knowledge on the multifaceted impact of drought on RH, with a particular focus on its relevance to the Ethiopian context, given the high vulnerability of regions like the Amhara Highlands [2]. It aims to inform evidence-based, gender-responsive public health programming and policy for climate adaptation.

Review Methods

Study Design

This paper employs a narrative scoping review approach to systematically map and synthesize the available scientific and grey literature concerning the interlinkages between drought and women's reproductive health outcomes in the context of Sub-Saharan Africa, with a primary focus on Ethiopia. This design is appropriate given the multidisciplinary nature of the topic and the need to identify knowledge gaps.

Search Strategy and Data Sources

A comprehensive search was conducted across multiple platforms, including academic databases (PubMed, Scopus, Google Scholar) and grey literature repositories (World Health Organization, United Nations Population Fund (UNFPA), Oxfam International, and Ethiopian Ministry of Health / Ethiopian Public Health Institute (EPHI) reports. Search terms were combined using Boolean operators to capture the relevant

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themes: (Drought OR “Climate Shock” OR “Climate Change”) AND (“Reproductive Health” OR “Maternal Health” OR “Family Planning” OR “SRHR”) AND (Ethiopia OR Amhara OR “African Highlands” OR “East Africa”).

Selection Criteria

Inclusion criteria for studies were: (1) published between 2005 and 2025; (2) focused on the impact of drought or climate extremes; (3) reported on women’s reproductive health, maternal health, or SRHR outcomes; and (4) relevant to the context of LMICs, with a preference for Ethiopian or comparable Sub-Saharan African data [1,4]. Exclusion criteria included articles not available in English and studies solely focused on non-climatic causes of RH problems.

Data Synthesis and Analysis

The identified literature was qualitatively synthesized and structured around the major causal pathways linking drought to adverse reproductive health outcomes. Key themes and specific morbidities relevant to the Ethiopian context were prioritized for discussion.

Results and Discussion: Causal Pathways and Reproductive Morbidities

Drought does not impact SRHR through a single mechanism but via an intersection of biological stress, socio-economic collapse, and heightened protection risks [4,5].

Biological Stress Pathway: Malnutrition and Infectious Disease

Drought is directly linked to food and water insecurity, which critically undermines maternal health [3,6].

Adverse Pregnancy Outcomes: Crop failure and livestock loss lead to chronic and acute malnutrition in pregnant and lactating women [3]. Maternal undernutrition increases the risk of anemia, intrauterine growth restriction (IUGR), low birth weight (LBW), preterm birth, and stillbirth [7]. In Ethiopia, where chronic energy malnutrition is a known risk factor, drought acts as a severe acute shock.

Infectious Diseases: Water scarcity compromises hygiene practices. Women and girls often reduce water usage for Menstrual Hygiene Management (MHM) and perineal cleanliness [8]. This, combined with the forced consumption of unsafe water, leads to increased incidence of Urinary Tract Infections (UTIs) and Reproductive Tract Infections (RTIs). UTIs, if untreated, are a known risk factor for preterm labour and maternal sepsis, further compounding the risk of adverse maternal and neonatal outcomes.

Socio-Economic Disruption Pathway: Access and Autonomy

The economic shock of drought creates barriers that compromise women’s health-seeking behavior and reproductive autonomy [9].

Reduced Access to Skilled Care: Loss of income from agriculture and migration for survival often places financial barriers on accessing healthcare [10]. Women are less able to afford transportation to distant health facilities for Antenatal Care (ANC), Skilled Birth Attendance (SBA), and emergency

obstetric care. In the Somali region, for example, studies have noted an increase in home deliveries and subsequent maternal and newborn mortality during severe drought periods [11].

Family Planning (FP) Disruption: Drought presents a complex scenario for FP. While economic stress can increase the desire for smaller families as a climate resilience strategy, it simultaneously disrupts the supply chain for contraceptives and reduces the operational capacity of health extension workers, leading to an increase in unmet need for FP [12,13]. The net result can be an increase in unintended pregnancies, which places an unbearable strain on the health and resources of already struggling households [14].

Mental Health: The chronic stress of food insecurity, caring for sick children, and managing an increased workload (e.g., walking further for water) are major drivers of maternal and perinatal depression and anxiety [15], which in turn impact maternal health adherence and infant care.

Protection Risk Pathway: GBV and Harmful Coping

Drought dramatically heightens protection risks, transforming environmental stress into gendered violence [16].

Gender-Based Violence (GBV): Resource scarcity, economic frustration, and displacement are documented triggers for Intimate Partner Violence (IPV) [17,18]. Furthermore, women and girls who travel long distances to fetch water or graze livestock are at heightened risk of sexual violence and exploitation, particularly in informal displacement settings.

Harmful Practices: Drought-related economic hardship compels families to adopt negative coping mechanisms. These include a spike in child, early, and forced marriage as parents seek to reduce household consumption or gain a dowry [19]. This practice forces young girls into high-risk pregnancies, increasing the rates of obstetric fistula and maternal death. Transactional sex is also reported to increase as a means for women and girls to secure food or cash, driving up the risk of Human Immunodeficiency Virus (HIV) and other Sexually Transmitted Infections (STIs) [20].

Geographical and Policy Gaps

While much of the existing evidence on drought and SRHR in Ethiopia comes from pastoralist regions (Afar and Somali), there is a significant knowledge vacuum in the densely populated agrarian highlands [3].

The Amhara Highlands Context: The specific mechanisms of impact in agrarian highland zones, such as the South Gondar Zone, are under-researched. However, existing work on drought vulnerability in the Amhara region confirms the high level of exposure and sensitivity to climatic shocks in these zones [21]. The interaction of drought with the dominant livelihood system (rain-fed crop farming) and existing social structures needs localized investigation to tailor interventions effectively.

Policy Integration: Ethiopian national strategies, including the Reproductive Health Strategic Plan, show strong commitments to SRHR [9]. However, their explicit integration into climate

adaptation and humanitarian response frameworks remains weak [22]. There is a lack of clear operational guidelines for maintaining FP supply chains, safe delivery services, and GBV response in the context of a prolonged climate crisis [23].

Conclusion and Recommendations

Drought profoundly and intersectionally undermines women's reproductive health in the Ethiopian Highlands, reversing hard-won gains in maternal and neonatal health. The effects are mediated through direct biological impact, compromised access to care due to socio-economic collapse, and heightened protection risks that violate SRHR [24].

The following recommendations are crucial to building climate-resilient sexual and reproductive health systems:

- 1. Prioritize Integrated Research:** Conduct urgent, localized, mixed-methods studies in agrarian highland zones, particularly the South Gondar Zone, to quantify drought's impact on key SRHR metrics (ANC attendance, FP unmet need, GBV prevalence, and adverse birth outcomes).
- 2. Mandate SRHR in Climate Policy:** Embed SRHR continuity as a core pillar within the Ethiopian Government's Climate-Resilient Green Economy (CRGE) strategy and regional humanitarian response protocols. This includes pre-positioning FP commodities and emergency obstetric supplies in drought-vulnerable woredas.
- 3. Strengthen Climate-Resilient Health Systems:** Invest in water security at rural health facilities to ensure functionality for safe delivery and hygiene, even during severe drought. Utilize mobile health teams and the Health Extension Program (HEP) to deliver SRHR services, including GBV screening and referral, to displaced and isolated populations.
- 4. Adopt Gender-Responsive Cash Transfers:** Design drought relief and social safety net programs to specifically address RH vulnerability, potentially through conditional cash transfers that incentivize women to seek ANC and SBA, thereby reducing the reliance on harmful coping mechanisms like child marriage.

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