

**Title:** *“When you have no water, it means you have no peace”*: A mixed-methods, whole-population study of water insecurity and depression in rural Uganda

## **Background**

Lack of access to clean water has well known implications for communicable disease risks, but the broader construct of water insecurity is little studied, and its mental health impacts are even less well understood.

## **Methods and findings**

We conducted a mixed-methods, whole-population study in rural Uganda to estimate the association between water insecurity and depression symptom severity, and to identify the mechanisms underlying the observed association. The whole-population sample included 1776 adults (response rate, 91.5%). Depression symptom severity was measured using a modified 15-item Hopkins Symptom Checklist for Depression. Water insecurity was measured with a locally validated 8-item Household Water Insecurity Access Scale. We fitted multivariable linear and Poisson regression models to the data to estimate the association between water insecurity and depression symptom severity, adjusting for age, marital status, self-reported overall health, household asset wealth, and educational attainment. These models showed that water insecurity was associated with depression symptom severity ( $b = 0.009$ ; 95% confidence interval [CI], 0.004–0.15) and that the estimated association was larger among men ( $b = 0.012$ ; 95% CI, 0.008–0.015) than among women ( $b = 0.008$ ; 95% CI, 0.004–0.012). We conducted qualitative interviews with a sub-group of 30 participants, focusing on women given their traditional role in household water procurement in the Ugandan context. Qualitative analysis, following an inductive approach, showed that water insecurity led to “choice-less-ness” and undesirable social outcomes, which in turn led to emotional distress. These pathways were amplified by gender-unequal norms.

## **Conclusions**

Among men and women in rural Uganda, the association between water insecurity and depression symptom severity is statistically significant, substantive in magnitude, and robust to potential confounding. Data from the qualitative interviews provide key narratives that reveal the mechanisms through which women's lived experiences with water insecurity may lead to emotional distress.