

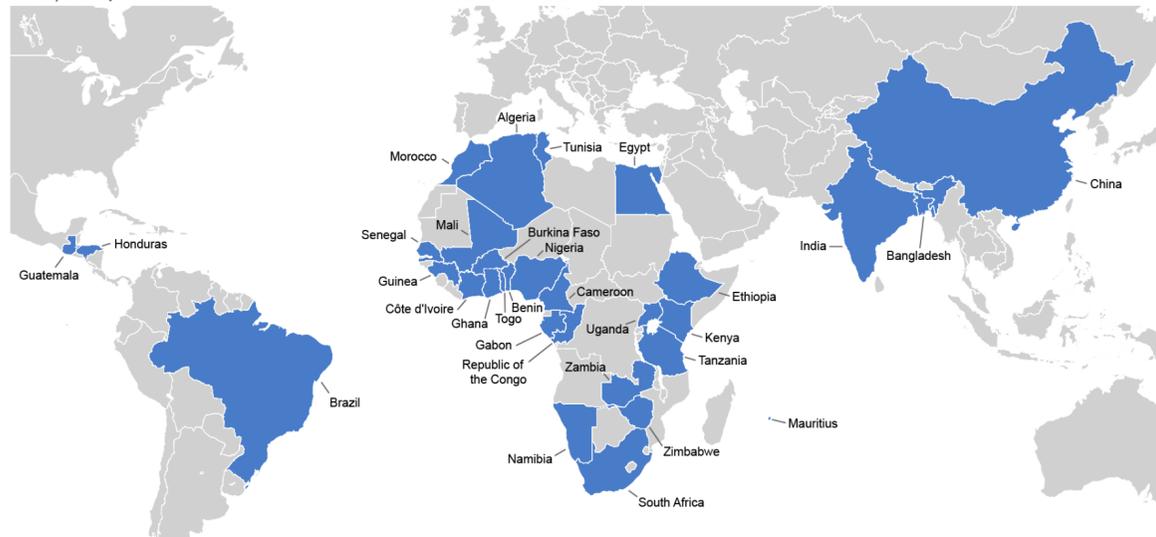
Objectives

- Global health, nutrition, and food security are closely tied to **water security**, defined as reliable and sufficient water access and use.
- Interventions aiming to address food insecurity need to be informed of which segments of their target populations are also water insecure.
- Using nationally representative data, we investigated the **1) prevalence and 2) demographic and socioeconomic predictors of water insecurity in low- and middle-income countries.**

Methods

Data collection

- In 2020 and 2021, Gallup World Poll collected data on water insecurity from adults aged ≥ 15 y (n=45,555) in **31 low- and middle-income countries.**



Water insecurity as measured by the Individual Water Insecurity Experiences (IWISE) scale

- The IWISE scale comprises **12 items** on the frequency that individuals experienced water problems in the **prior 12 months.**
- Responses to each item were scored as:
 0 = "never"
 1 = "1-2 months,"
 2 = "some, not all months"
 3 = "almost every month"



- Summed IWISE scores range from 0-36. **Water insecurity was defined as scores ≥ 12 .**

Identifying which segments of the population are water insecure

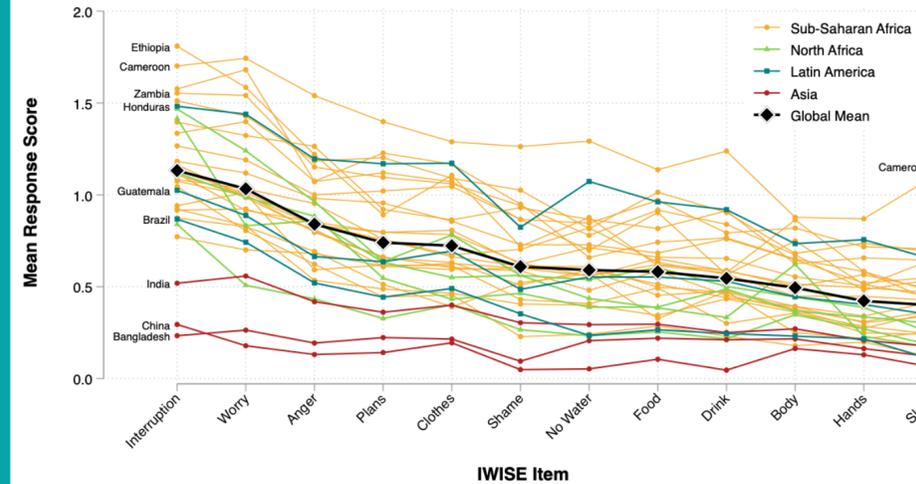
- Multiple logistic regression models controlling for country fixed effects and specifying normalized sampling weights **examined the odds of water insecurity in relation to demographic and socioeconomic characteristics.**

Results

Sample characteristics (n=43,463)

- Sample was 50% female.
- Median per capita household income 781 international dollars.*
- Mean age was 34.2±14.4 years
- 57.1% reported difficulty getting by on current household income.

Mean response score for each IWISE item, by country (n=31)

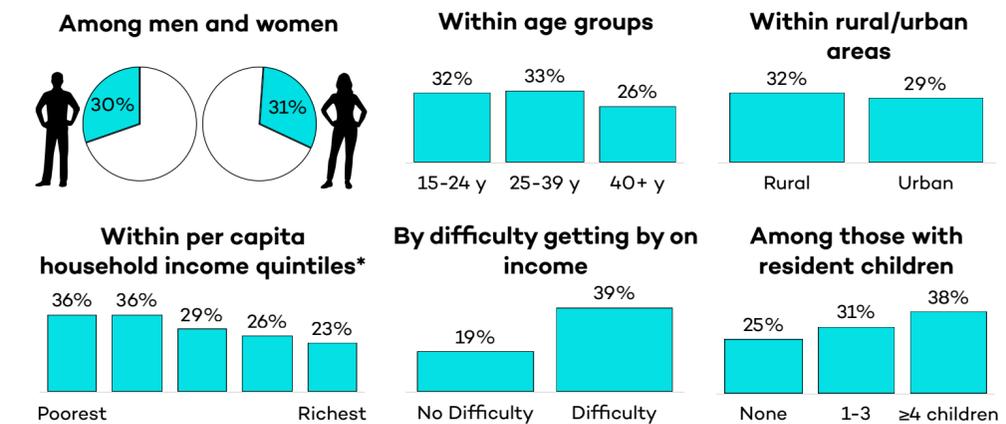


Note: All Asian and Latin American countries are labelled, as are the three African countries with the highest mean score for the most frequently affirmed item, interruption in water supply.

Range of IWISE scores and prevalence of water insecurity

- Cameroon had the highest mean IWISE score (15.4±9.6) and prevalence of water insecurity (64.6%).
- China had the lowest mean IWISE score (1.6±3.9) and prevalence of water insecurity (3.4%).

Prevalence of water insecurity by sociodemographic and socioeconomic factors in 31 low- and middle-income countries (unadjusted)



Predictors of water insecurity (results from multiple logistic regression models)*

Factors related to **higher odds** of water insecurity were:

	OR (95% CI)	P
Younger age		
40+ y (ref)		
15-24 y	1.22 (1.07, 1.39)	0.003
25-39 y	1.25 (1.12, 1.39)	<0.0001
More resident children		
Children (<15 y)	1.04 (1.02, 1.06)	<0.0001
Difficulty getting by on current income		
No difficulty (ref)		
Difficulty	2.27 (2.08, 2.48)	<0.0001

Factors related to **lower odds** of water insecurity were:

	OR (95% CI)	P
Higher per capita household income		
Ln(Income+1)	0.96 (0.94, 0.98)	<0.0001
Factors unrelated to odds of water insecurity were:		
Gender		
Marital status		
Number of resident adults		
Urban/rural residence		
Education		

* Excluding respondents from Zimbabwe (n=988) due to missing income data

Conclusions

- Water insecurity is a concern in many low- and middle income countries, though with varying degrees of prevalence across the globe.
- Those most vulnerable to water insecurity include **younger adults** (<40 y relative to 40+ y) and adults with **more resident children, lower per capital household income, and difficulty getting by on current household income.**
- Given the critical role water plays in agriculture and food systems, addressing water insecurity among these vulnerable segments of the global population will be key to improving global health and nutrition.

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