

Introduction

Diarrhea is the second leading cause of death in children under the age of five, causing approximately 1.7 billion cases and 525,000 deaths annually. There is extensive literature examining water, sanitation and hygiene (WASH) risk factors and interventions to address the global burden of childhood diarrheal illness. However, many community-based studies that measure childhood diarrheal illness rely on caregiver reported diarrhea with a recall period of two weeks. A two-week recall period may be problematic due to reporting bias. Recent literature indicates that the optimal recall period for caregiver reported diarrheal illness is one week.

Objectives

- 1) Examine differences in diarrhea prevalence between surveys utilizing a one-week diarrhea recall and a two-week recall.
- 2) Identify household level WASH risk factors associated with diarrheal illness in children under five years old using a one week recall for caregiver reported diarrhea.

Methods

PMA2020

Performance Monitoring and Accountability 2020
WASH Program (www.pma2020.org)

One-week diarrhea recall

14,689 children
10,754 unique households

DHS

USAID-led Demographic and Health Surveys
Program (<http://dhsprogram.com/>)

Two-week diarrhea recall

60,263 children
39,875 unique households

Outcome of interest: Diarrhea in children under age 5

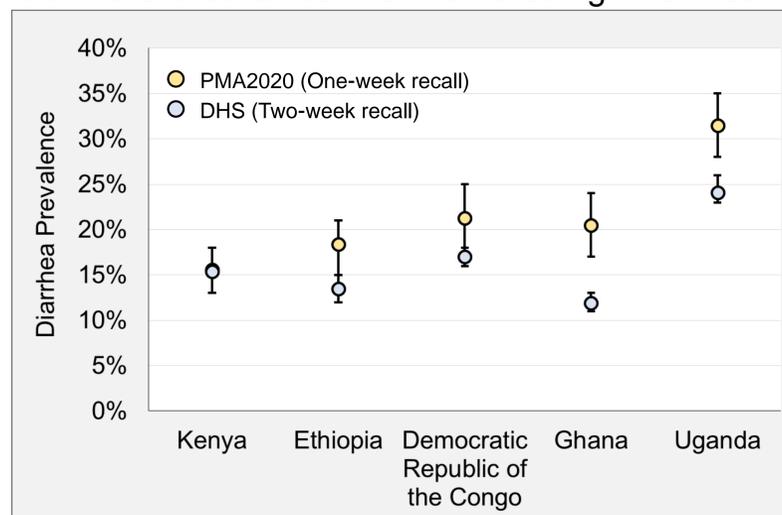
Potential risk factors:

- Demographic: country, urban/ rural, household members, children ≤5 in household, wealth quintile, caregiver's education, child's age
- Household WASH Characteristics:

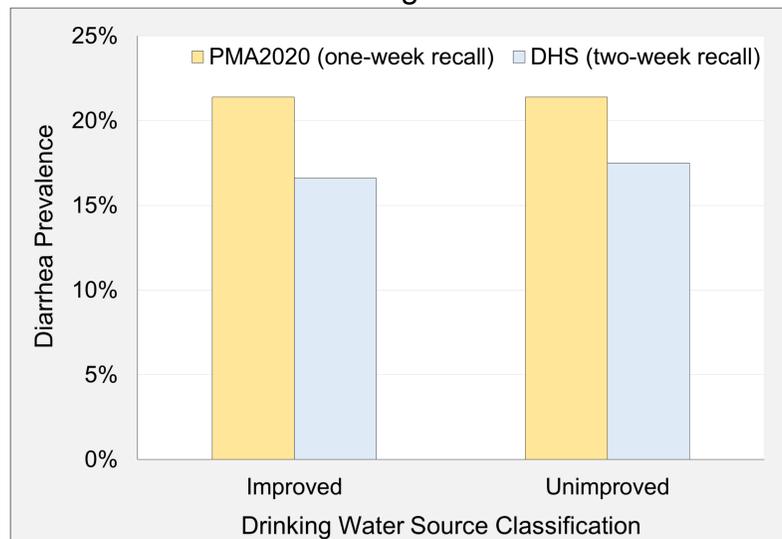
Variable	Categories
Main drinking water source	Improved, Unimproved
Drinking water reliability	Always, Intermittent Predictable, Intermittent Unpredictable
Main sanitation facility	Improved not shared, Improved shared, Unimproved, Open defecation
Child feces disposal	Burn, Bury, Child uses latrine, Disposed of in latrine, Garbage, Leave, Manure, Waste Water
Handwashing location	None, Designated Place, Movable Container

Results

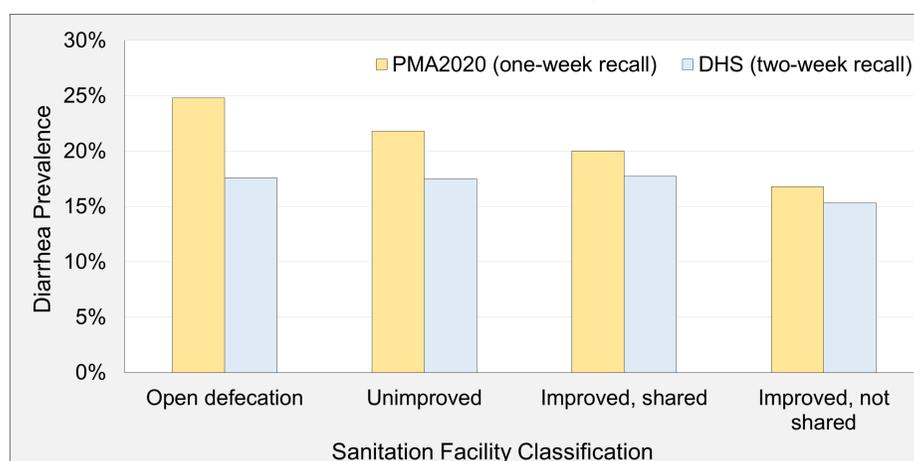
Diarrhea Prevalence Under-Estimated Using Two-Week Recall



Diarrhea Prevalence Does Not Vary In Households with Different Drinking Water Sources



One-Week Recall Data Shows Decrease in Diarrhea Prevalence in Households with Improved Sanitation



Results

Relative Odds of Diarrhea for Household WASH Characteristics from Final PMA2020 Regression Model

	Adjusted Odds Ratio ^A (95% CI)	P-Value
Water reliability		
Always	REF	
Intermittent predictable	1.15 (0.95,1.40)	0.16
Intermittent unpredictable	1.15 (0.93,1.43)	0.20
Main sanitation classification		
Improved, not shared	REF	
Shared	1.24 (0.99,1.57)	0.07
Non-improved	1.23 (0.99,1.53)	0.07
Open defecation	1.47 (1.06,2.04)	0.02
Child feces disposal^B		
Child uses latrine	0.82 (0.68,0.99)	0.04
Garbage	0.89 (0.72,1.09)	0.25
Waste water	0.93 (0.76,1.15)	0.50
Handwashing		
None	REF	
Designated place	0.80 (0.63,1.02)	0.08
Container	0.91 (0.76,1.09)	0.29

^ABased on weighted logistic regression model controlling for complex sampling design. Controlled for country of residence, number of household members, household wealth quintile, caregiver's highest education, child's age with splines at 6, 12, 18 and 24 months, and all variables shown here.
^BReference group was households that did not use feces disposal practice

Conclusions

- A two-week recall period underestimates the prevalence of childhood diarrhea when compared to data using a one-week recall.
- Trends observed in PMA2020 data compared to DHS data:
 - In both datasets, drinking water source was not associated with diarrhea outcomes.
 - PMA2020 data showed a stronger association between improved sanitation and decreased diarrhea prevalence than in DHS data.
- This study confirms the need to prioritize adequate sanitation to reduce diarrheal disease in children under five.
- The PMA2020 WASH program could serve as a robust monitoring tool to measure progress toward achieving targets set for water and sanitation under Sustainable Development Goal 6.

Funding

This research was supported by the Bill and Melinda Gates Foundation, the Osprey Foundation and NIH training grant 5T32ES007141-34