

Shared sanitation facilities and risk of diarrhea in children

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Sharing a sanitation facility between households can be linked to increased risk of moderate-to-severe diarrhea (MSD) in children under 5 y at some sites, according to Global Enteric Multicenter Study (GEMS) study findings published this week in *PLOS Medicine*. The study, conducted by Kelly K. Baker of University of Iowa College of Public Health, Iowa City, United States, and colleagues, suggests that access to private sanitation facilities should remain a global health priority.

Diarrhea kills about three-quarters of a million [young children](#) every year. Interventions to improve sanitation and hygiene may benefit the roughly 2.5 billion people who do not use improved sanitation, including the 1 billion who defecate in the open. GEMS is a case-control study of pediatric diarrhea in [children](#) under 5 y of age at seven sites in Africa and South Asia. This study compared 8,592 children under 5 y with clinically and laboratory confirmed MSD matched to 12,390 asymptomatic children to uncover associations between household sanitation and incidence of diarrhea.

Compared to having a private household sanitation facility, sharing a facility with one or two households was found to be associated with an increased risk of diarrhea in young children at the study sites in Nyanza Province, Kenya (adjusted matched odds ratio 1.41 [95% confidence interval 1.11-1.79]), Bamako, Mali (1.23 [1.02-1.48]), and Karachi, Pakistan 1.58 [1.19-2.09]). Sharing a facility with three or more households was associated with further increased MSD risk. Sharing a sanitation facility was not found to be associated with increased MSD

risk at the sites in Basse, The Gambia (1.69 [0.96-2.97]), Mirzapur, Bangladesh (0.83 [0.70-0.99]), or Kolkata, India (1.04 [0.78-1.39]).

As the study is observational, confounding by related characteristics such as hand washing may limit interpretation of results. In a linked Perspective, Jonny Crocker and Jamie Bartram of University of North Carolina at Chapel Hill, United States, discuss study limitations but argue that "Baker and colleagues present the best dataset yet on diarrheal disease associated with sanitation and hygiene. They provide compelling evidence on [sanitation](#) and hygiene risk factors for MSD and variability in that risk."

More information: Baker KK, O'Reilly CE, Levine MM, Kotloff KL, Nataro JP, Ayers TL, et al. (2016) Sanitation and Hygiene-Specific Risk Factors for Moderate-to-Severe Diarrhea in Young Children in the Global Enteric Multicenter Study, 2007-2011: Case-Control Study. *PLoS Med* 13(5): e1002010. [DOI: 10.1371/journal.pmed.1002010](https://doi.org/10.1371/journal.pmed.1002010)

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