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Household water insecurity after a historic flood: Diarrhea and dehydration in the Bolivian Amazon

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1 **Household Water Insecurity After a Historic Flood: Diarrhea and Dehydration in the**
2 **Bolivian Amazon**

3

4 **Abstract**

5 While 884 million people worldwide lack access to clean water, millions live in flood-prone
6 regions. Unexpected flooding increases risk of diarrheal diseases and is expected to occur with
7 increased frequency in the 21st century. Water insecurity is linked to mental distress in water
8 scarce regions, yet this construct has not been examined closely among populations living in
9 flood-prone regions. This paper examines how differences in water sources and lifestyle among
10 Tsimane' forager-horticulturalists in lowland Bolivia are related to water insecurity after a
11 historic flood in 2014, and in turn, how water insecurity is associated with diarrhea and
12 dehydration. Pre-flood data come from qualitative interviews with 36 household heads,
13 anthropometrics, participant observation, and water quality analysis between September 2013–
14 January 2014 used to create a locally-adapted water insecurity questionnaire. Water insecurity
15 was measured after the historic flood; no pre-flood water insecurity measures are available. Post-
16 flood data were collected through surveys, water quality analysis, and health exams using near-
17 exhaustive sampling in two villages, yielding 118 adults and 115 children (≤ 12 years) in 62
18 households between March–April 2014. Overall, 89% of adults reported medium or high water
19 insecurity. Only hand-pumps tested negative for pathogenic bacteria both pre- and post-flood.
20 Tobit regressions suggest that hand-pumps (when available) and adult age were associated with
21 lower water insecurity scores. Multiple logistic regressions suggest that adults with high water
22 insecurity were more likely to report diarrhea than adults with low (Odds Ratio [OR] 9.2; 95%
23 CI: 1.27-67.1). Children from households with medium (OR: 6.8; 95% CI: 1.41-32.5) or high

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