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The Association between Latrine Use and Trachoma: A Secondary Cohort Analysis from a Randomized Clinical Trial

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Abstract.

Latrine use has been promoted as a component of an integrated strategy for trachoma control. As part of a randomized trial in Ethiopia, 12 communities received a mass azithromycin distribution followed by a latrine promotion intervention. A random sample of children ages 0–9 years in each community was monitored longitudinally for ocular chlamydia. After latrine construction ended, those communities with a higher proportion of households using latrines were more likely to experience a reduction in the prevalence of ocular chlamydia. Specifically, for each 10% increase in latrine use, there was a 2.0% decrease (95% confidence interval = 0.2–3.9% decrease) in the community prevalence of ocular chlamydia over the subsequent year (

prompted us to perform a non–pre-specified secondary analysis to determine whether the prevalence of ocular chlamydia was related to the proportion of households using latrines.

METHODS

The study was conducted in the Amhara region of Ethiopia from May of 2006 to July of 2008;

coefficient. We performed similar analyses for the secondary outcome of change in TF/TI from month 12 to 24. We used Stata 10 (Statacorp, College Station, TX) for all analyses.

The study was approved by the University of California, San Francisco Committee on Human Research, the Ethiopian Science and Technology Commission, and Emory University. Informed consent in Amharic was obtained for all participants.

RESULTS

As reported previously, the median baseline prevalence of ocular chlamydia in children ages 0–9 years in 12 sentinel communities was 39.6% (interquartile range [IQR] = 31.9–57.1%).8 A mass azithromycin distribution of all community members was conducted several weeks later, with a median antibiotic coverage of 82.9% (IQR = 77.1–87.7%). Latrine promotion activities took place successfully in all 12 subkebeles over the subsequent year. At the 12-month study visit, the median prevalence of ocular chlamydia had decreased to 13.1% (IQR = 7.7–14.8%). At this time, the proportion of households with recent latrine use on inspection ranged from 20% (95% CI = 2.5–55.6%) to 90% (95% CI = 55.5–99.7%) (Figure 1). Over the next 12 months, the prevalence of ocular chlamydia infection increased by a median of 2.0% (IQR = 2.7% reduction to 6.6% increase).

Figure 1.

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Scatter plot of the proportion of households using a latrine versus the change in the prevalence of (**A**) ocular *Chlamydia* and (**B**) clinically active trachoma in 12 months after assessment of latrine use. Clinically active trachoma was defined as TF and/or TI according to the simplified WHO grading system. The dark grey line represents the regression line, and the light grey bars are the 95% CIs.

In univariate analyses, we found a correlation between the proportion of households with evidence of recent latrine use at 12 months and the change in prevalence of ocular chlamydia over the subsequent year (2.0% decrease [95% CI = 0.2–3.9% decrease] in the community prevalence of ocular chlamydia for each 10% increase in community latrine use, $P = 0.04$). The inclusion of several potential confounders did not change the magnitude of the association (Table 1). In contrast, we found no association between the proportion of households using a latrine and the change in the prevalence of TF/TI over the subsequent year (Figure 1 and Table 1).

Table 1

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Multivariate sensitivity analyses assessing the influence of various confounders on the association between latrine use and trachoma

DISCUSSION

In this secondary analysis of a randomized clinical trial, we found that the higher the proportion

measured only a small number of potential confounding variables, which limited the multivariate analyses.

This study provides some evidence that the degree to which latrines are adopted by a community may be important for trachoma control, although this finding should be interpreted with caution given the negative clinical trial result using the same data. Additional research will be important to better characterize the role of the combined SAFE package for trachoma control.

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Footnotes:

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