

Hand-washing, subclinical infections, and growth: a longitudinal evaluation of an intervention in Nepali slums.

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Abstract

OBJECTIVE:

We conducted a longitudinal study to assess the impact of a hand-washing intervention on growth and biomarkers of child health in Nepali slums. This is the first study to evaluate the impact of hand-washing on markers of subclinical, asymptomatic infections associated with childhood growth faltering.

METHODS:

We recruited a total sample of infants in the target age-range (3-12 months) living in the eight largest Kathmandu slums, allocating them to intervention (n = 45) and control (n = 43) groups. In intervention areas, a small-scale community-based hand-washing program was implemented for six months; in control areas, mothers continued their normal practices. Time series linear regression was used to assess the impact of the intervention on levels of morbidity, mucosal damage, immune stimulation and growth.

RESULTS:

As expected, children with higher levels of mucosal damage exhibited worse growth over the period of the intervention (P = 0.01, <0.001 and 0.03 for height-for-age, weight-for-age, and weight-for-height z-scores, respectively). We observed a 41% reduction in diarrheal morbidity (P = 0.023) for the intervention group relative to control. However, the hand-washing intervention did not lower levels of mucosal damage or immune stimulation, nor slow growth faltering.

CONCLUSIONS:

Reducing exposure to pathogens is an important global health priority. This study confirms the importance of hand-washing campaigns for reducing childhood morbidity. Yet our data suggest that promoting hand-washing is necessary but not sufficient to address chronic, subclinical infections. From a human biology standpoint, tackling the root causes of childhood infections is needed to address growth faltering in the context of highly contaminated slum environments.

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