

Clean water and soap may help improve growth in young children

31 July 2013

Improving water quality and hygiene practices may improve the growth of children, according to a new report. The *Cochrane review* – authored by the London School of Hygiene & Tropical Medicine and WaterAid – found evidence of small but significant improvements in growth of children under the age of five who have access to clean water and soap.

Researchers identified 14 studies conducted in low and middle income countries (Bangladesh, Ethiopia, Nigeria, Chile, Guatemala, Pakistan, Nepal, South Africa, Kenya and Cambodia) that provided data on the effect of water, sanitation and hygiene programmes on the physical growth of 9,469 children. The authors' analysis of the data suggested that interventions to improve the quality of the water in the household and provide soap resulted in an average 0.5cm increased height growth in children under the age of five.

Report lead author Dr Alan Dangour, a public health nutritionist from the London School of Hygiene & Tropical Medicine, said: "We typically think that providing [clean water](#), sanitation and hygiene is an effective way to reduce the incidence and associated deaths from diseases such as diarrhoea – which remains the third biggest killer of under fives worldwide. For the first time our analysis suggests that better access to these services may also have a small but important impact on the growth of young children.

"While there are some important shortcomings in the available evidence base, we estimate that clean drinking water and effective hand washing could reduce the prevalence of stunting in children under the age of five by up to 15%.¹ This is potentially an extremely important finding, that identifies that improving access to water, sanitation and hygiene could be a key part of the tool kit to tackle the global burden of undernutrition."

Poor height growth, or stunting, affects 165 million

children worldwide and results in long term impacts on physical and mental development, increasing the risk of mortality and reducing productivity in adulthood.² Undernutrition is a cause of 3.1 million deaths annually – nearly half (45%) of all deaths in children under five.²

International development funding supports many nutritional interventions, such as the provision of vitamin supplements, that directly tackle poor nutrition outcomes, but this is the first study to show that interventions in water, sanitation and hygiene could also play a role in improving nutritional outcomes for children.

WaterAid chief executive Barbara Frost said: "As well as resulting in hundreds of thousands of under-five deaths every year, there is a growing consensus that unsafe water, inadequate sanitation and poor hygiene can affect the body's ability to absorb nutrients, impacting on child development and contributing to their stunting.

"Stunting continues to have serious consequences on the social and economic outcomes of developing countries. With only £1.57 (\$2.39) a year provided in aid for water and sanitation per person in sub-Saharan Africa – less than the price of a cup of coffee – we have to make access to these life critical necessities a higher priority."

The authors say that improving access to clean water and soap is likely to have led to the increase in height because of the reduction in microbiological and parasitic infestations in early childhood, which can negatively impact growth.

Professor Tim Wheeler, Deputy Chief Scientific Adviser to the Department for International Development, which funded the research, said: "Failure to get the right nutrition in childhood can cause lifelong damage that cannot be undone. This report provides further support to the idea that using clean water and soap remains one of the best

ways to prevent contracting diarrhoea and stopping young children losing the essential nutrients vital for them to grow."

Commenting on the research, Dr Francesco Branca, Director of Nutrition for Health and Development at the World Health Organization, who was not involved in the study, said: "Until now, we have not had a demonstration of the direct nutrition impact of WASH interventions on nutrition. This review shows that a multi-pronged approach is the way to go—bringing together actions to improve food quality and safety as well as feeding and care of [children](#), with others to prevent and treat infections and improve the home environment—to address the scourge of chronic malnutrition."

The authors note there are limitations in the available data for analysis as the main findings of the review are based on relatively short-term studies (9-12 months in duration) and none of these studies is of high methodological quality. There are several large ongoing studies that may help improve the quality of the evidence base. The research was funded by the Department for International Development via the SHARE Research Consortium.

More information: Dangour AD, Watson L, Cumming O, Boisson S, Che Y, Velleman Y, Cavill S, Allen E, Uauy R. Interventions to improve water quality and supply, sanitation and hygiene practices, and their effects on the nutritional status of children. *Cochrane Database of Systematic Reviews* 2013. DOI: [10.1002/14651858.CD009382.pub2](https://doi.org/10.1002/14651858.CD009382.pub2)

Provided by London School of Hygiene & Tropical Medicine

APA citation: Clean water and soap may help improve growth in young children (2013, July 31) retrieved 12 October 2022 from <https://medicalxpress.com/news/2013-07-soap-growth-young-children.html>

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