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[Intervention Review]

Hand washing promotion for preventing diarrhoea

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ABSTRACT

Background

Diarrhoea accounts for 1.8 million deaths in children in low- and middle-income countries (LMICs). One of the identified strategies to prevent diarrhoea is hand washing.

Objectives

To assess the effects of hand washing promotion interventions on diarrhoeal episodes in children and adults.

Search methods

We searched the Cochrane Infectious Diseases Group Specialized Register (27 May 2015); CENTRAL (published in the Cochrane Library 2015, Issue 5); MEDLINE (1966 to 27 May 2015); EMBASE (1974 to 27 May 2015); LILACS (1982 to 27 May 2015); PsycINFO (1967 to 27 May 2015); Science Citation Index and Social Science Citation Index (1981 to 27 May 2015); ERIC (1966 to 27 May 2015); SPECTR (2000 to 27 May 2015); Bibliomap (1990 to 27 May 2015); RoRe, The Grey Literature (2002 to 27 May 2015); World Health Organization (WHO) International Clinical Trial Registry Platform (ICTRP), metaRegister of Controlled Trials (mRCT), and reference lists of articles up to 27 May 2015. We also contacted researchers and organizations in the field.

Selection criteria

Individually randomized controlled trials (RCTs) and cluster-RCTs that compared the effects of hand washing interventions on diarrhoea episodes in children and adults with no intervention.

Data collection and analysis

Three review authors independently assessed trial eligibility, extracted data, and assessed risk of bias. We stratified the analyses for child day-care centres or schools, community, and hospital-based settings. Where appropriate, incidence rate ratios (IRR) were pooled using the generic inverse variance method and random-effects model with 95% confidence intervals (CIs). We used the GRADE approach to assess the quality of evidence.

Main results

We included 22 RCTs: 12 trials from child day-care centres or schools in mainly high-income countries (54,006 participants), nine community-based trials in LMICs (15,303 participants), and one hospital-based trial among people with acquired immune deficiency syndrome (AIDS) (148 participants).

Hand washing promotion (education activities, sometimes with provision of soap) at child day-care facilities or schools prevents around one-third of diarrhoea episodes in high income countries (rate ratio 0.70; 95% CI 0.58 to 0.85; nine trials, 4664 participants, *high quality evidence*), and may prevent a similar proportion in LMICs but only two trials from urban Egypt and Kenya have evaluated this (rate ratio 0.66, 95% CI 0.43 to 0.99; two trials, 45,380 participants, *low quality evidence*). Only three trials reported measures of behaviour change and the methods of data collection were susceptible to bias. In one trial from the USA hand washing behaviour was reported to improve; and in the trial from Kenya that provided free soap, hand washing did not increase, but soap use did (data not pooled; three trials, 1845 participants, *low quality evidence*).

Hand washing promotion among communities in LMICs probably prevents around one-quarter of diarrhoea episodes (rate ratio 0.72, 95% CI 0.62 to 0.83; eight trials, 14,726 participants, *moderate quality evidence*). However, six of these eight trials were from Asian settings, with only single trials from South America and sub-Saharan Africa. In six trials, soap was provided free alongside hand washing education, and the overall average effect size was larger than in the two trials which did not provide soap (soap provided: rate ratio 0.66, 95% CI 0.56 to 0.78; six trials, 11,422 participants; education only: rate ratio: 0.84, 95% CI 0.67 to 1.05; two trials, 3304 participants). There was increased hand washing at major prompts (before eating/cooking, after visiting the toilet or cleaning the baby's bottom), and increased compliance to hand hygiene procedure (behavioural outcome) in the intervention groups than the control in community trials (data not pooled: three trials, 3490 participants, *high quality evidence*).

Hand washing promotion for the one trial conducted in a hospital among high-risk population showed significant reduction in mean episodes of diarrhoea (1.68 fewer) in the intervention group (Mean difference 1.68, 95% CI 1.93 to 1.43; one trial, 148 participants, *moderate quality evidence*). There was increase in hand washing frequency, seven times per day in the intervention group versus three times in the control in this hospital trial (one trial, 148 participants, *moderate quality evidence*).

We found no trials evaluating or reporting the effects of hand washing promotions on diarrhoea-related deaths, all-cause-under five mortality, or costs.

Authors' conclusions

Hand washing promotion probably reduces diarrhoea episodes in both child day-care centres in high-income countries and among communities living in LMICs by about 30%. However, less is known about how to help people maintain hand washing habits in the longer term.

22 March 2019

Update pending

Authors currently updating

The update is due to be published in 2019.

PLAIN LANGUAGE SUMMARY

Hand washing promotion for preventing diarrhoea

Review question

This Cochrane Review summarises trials evaluating the effects of promoting hand washing on the incidence of diarrhoea among children and adults in day-care centres, schools, communities, or hospitals. After searching for relevant trials up to 27 May 2015, we included 22 randomized controlled trials conducted in both high-income countries (HICs) and low- and middle-income countries (LMICs). These trials enrolled 69,309 children and 148 adults.

How does hand washing prevent diarrhoea and how might hand washing be promoted

Diarrhoea causes many deaths in children below five years of age, mostly in LMICs. The organisms causing diarrhoea are transmitted from person to person through food and water contaminated with faeces, or through person-to-person contact. Hand washing after defecation, or after cleaning a baby's bottom, and before preparing and eating food, can therefore reduce the risk of diarrhoea. Hand washing can be promoted through group or individual training on hygiene education, germ-health awareness, use of posters, leaflets, comic books, songs, and drama.

What this review says

Hand washing promotion at child day-care facilities or schools in HICs probably prevents around 30% of diarrhoea episodes (*high quality evidence*), and may prevent a similar proportion in schools in LMICs (*low quality evidence*). Among communities in LMICs hand washing promotion prevents around 28% of diarrhoea episodes (*moderate quality evidence*). In the only hospital-based trial included in this review, hand washing promotion also had important reduction in the mean episodes of diarrhoea (*moderate quality evidence*). This is based on only a single trial with few participants and thus there is need for more trials to confirm this. Effects of hand washing promotion on related hand hygiene behaviour changes improved more in the intervention groups than in the control in all the settings (*low to high quality evidence*). None of the included trials assessed the effect of handwashing promotion on diarrhoeal-related deaths, all-cause under-five mortality, or the cost-effectiveness of hand washing promotions.

Conclusion

Hand washing promotion in HICs and LMICs settings may reduce incidence of diarrhoea by about 30%. However, less is known about how to help people maintain hand washing habits in the longer term.