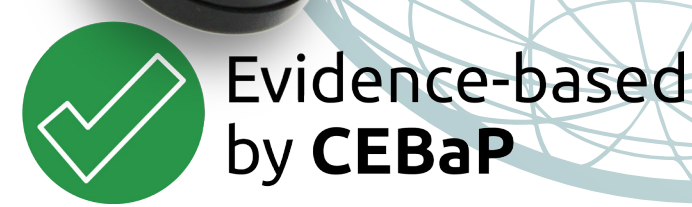


Measuring behavioural change outcomes in development aid: a call for standardization to improve the evidence synthesis

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Background

Handwashing and improved sanitation have been shown to significantly reduce the risk of diarrhea. Despite this potential benefit, the Millennium Development Goal (MDG) sanitation target in 2015 was missed with 946 million people still engaging in open defecation practices [1]. Handwashing with soap is poorly practiced in low-income countries with handwashing frequency rates varying between 5% and 25% [2].

Methods

Identification, and selection of included studies

POPULATION: people from low- and middle-income countries

INTERVENTION: programs conducted to promote handwashing and sanitation behaviour

COMPARISON: no program or program with other promotional approach

OUTCOME:

- Handwashing (at key times)
- Latrine use
- Safe faeces disposal practices
- Open defecation practices

Objectives

As part of a Campbell systematic review on the effectiveness of WASH promotion programs on behavior change in low- and middle-income countries [3], we aimed to assess the level of standardization of sanitation and handwashing outcomes.

Results

Type of data?	Binary data					Continuous data				
Timing of outcome assessment?										
Study design?	Exp	Non-exp	Exp	Non-exp	Exp	Non-exp	Exp	Non-exp	Exp	Non-exp
Handwashing (at key times)										
Handwashing (often/always)	1									
Handwashing with or without soap	1			1	2		1		1	
Handwashing occasions per household	1								1	
Stool-related handwashing					1					
Handwashing before using the toilet (often/always)	1									
Handwashing after defecation	9	5	1	4	1		3			
Food-related handwashing					1					
Handwashing before cooking	3	1	1	1	3		1			
Handwashing after cooking				1						
Handwashing before (breast)feeding the baby	2	1	2	1			1			
Handwashing before eating	4		4	2			1		1	
Handwashing after eating				2						
Handwashing before physical contact by hands	1									
Handwashing after sneezing	1									
Handwashing after coughing	1									
Handwashing after nose picking	1									
Handwashing after physical contact by hands	1									
Handwashing after entering compound from outside	1									
Handwashing with soap in all 3 key times	1									
Handwashing at all key times	1						1			
Caretaker's hands washed afterwards			1							
Handwashing after handling trash				1						
Handwashing after or while doing the laundry							1			
Handwashing with soap because hands look or feel dirty							1			

Figure 1. Overview handwashing outcomes according to our levels of standardization. The number in the black circles corresponds to the number of outcomes identified.

We identified 35 studies (28 experimental studies and 7 quasi-experimental/observational studies) assessing 87 handwashing and 39 sanitation outcomes. When stratifying the outcomes by type of data, timing of assessment and type of study design, outcomes were so diverse that the ability to synthesize outcomes via meta-analyses was rare, complicating proper interpretation of the data. Only handwashing after defecation/before cooking/before eating (figure 1) and open defecation practices (figure 2) were measured ≥ 3 times via a uniform methodology (i.e. collection of binary data during implementation in experimental study designs).

Type of data?	Binary data					Continuous data				
Timing of outcome assessment?										
Study design?	Exp	Non-exp	Exp	Non-exp	Exp	Non-exp	Exp	Non-exp	Exp	Non-exp
Latrine use										
Number of households wanting to use new toilet		1								
Latrine use		1	1		1			1		
Latrines used and clean		1								
Latrine use in children up to 24 months			1							
Latrine use in children between 25 and 60 months			1							
Latrine use by males					1					
Latrine use by females					1					
Potty use by child					1					
Safe faeces disposal practices										
No open faecal disposal		1								
No child faeces in yard		1								
No open faecal disposal (6 months after inception)		1								
No faeces observed in living area		1					1			
Child faeces disposal			1				1			
No faeces lying around unattended			1							
Safe child faeces disposal			1		1					
No child faeces on the ground			1							
No human faeces in compound					1					
Open defecation practices										
Open defecation	3		2		1		1			1

Figure 2. Overview sanitation outcomes according to our levels of standardization. The number in the black circles corresponds to the number of outcomes identified.

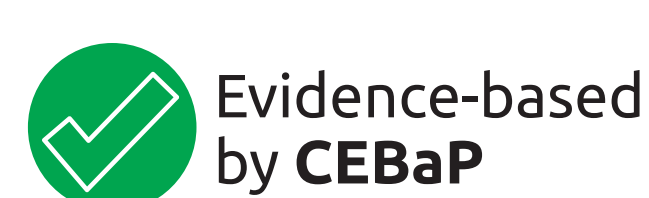
Conclusions

Systematic and uniform definitions and standardized monitoring of WASH behavior outcomes is needed to improve the conduct of evidence synthesis. This would help governments and international bodies to formulate clear and more robust recommendations.

References

- [1] Unicef 2015 Annual Results Report 2015: Water, Sanitation and Hygiene. https://www.unicef.org/wash/files/WASH_2015_Report.pdf
- [2] Freeman, M.C., Stocks, M.E., Cumming, O., Jeandron, A., Higgins, J.P., Wolf, J., Pruss-Ustun, A., Bonjour, S., Hunter, P.R., Fewtrell, L. & Curtis, V. 2014 Hygiene and health: systematic review of handwashing practices worldwide and update of health effects. *Trop Med Int Health*, 19(8), 906-916.
- [3] De Buck E, Van Remoortel H, Hannes K, Govender T, Naidoo S, Avau B, Vande veegaete A, Musekiwa A, Lutje V, Cargo M, Mosler H-J, Vandekerckhove P, Young T. Approaches to promote handwashing and sanitation behaviour change in low- and middle-income countries: a mixed method systematic review. *Campbell Systematic Reviews* 2017:7.

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