Over-reporting in handwashing self-reports: Potential explanatory factors and an alternative measure*

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Abstract

- Measuring handwashing is challenging because self-reports tend to be over-reported.
- We investigated factors potentially explaining over-reported handwashing and tested an alternative self-report measure expected to mitigate the bias.
- Over-reported handwashing was associated with factors involved in socially desirable responding, encoding and recall of information and dissonance processes.
- The latter factor groups explained over-reported handwashing beyond socially desirable responding.
- The alternative self-report measure reduced over-reported handwashing when compared to conventional self-reports.

Background

- Handwashing with soap at key events (e.g. before eating) effectively prevents from several communicable diseases.
- Handwashing interventions are a program priority in development and emergency aid organizations.
- Interventions' evaluations are essential to identify effective programs.
- Measuring handwashing behaviour is a challenge:
  - Household observations are considered valid but they are time-consuming and thus very inefficient.[1]
  - Self-reports are very efficient but considered invalid (i.e. biased) with desirable practices being over-reported.[1]
- Socially desirable responding is claimed to be the main cause of the inflated self-reports.[1]
- However, the underlying factors and mechanism are understudied.

Objectives & research questions

Objectives

- To investigate factors potentially explaining over-reported handwashing to identify indications for measures mitigating the bias.
- To test an alternative self-report measure, script-based covert recall, intended to mitigate recall errors and socially desirable responding.

Research questions

Q1: Are socially desirable responding and additional factors associated with over-reported handwashing?

Q2: Do additional factors explain over-reported handwashing beyond socially desirable responding?

Q3: Does an alternative self-report measure mitigate over-reported handwashing?

Methods

Research design, participants and procedure

- Cross-sectional design
- Rural villages in southern Ethiopia
- *N* = 554 primary caregivers
- 1-hour face-to-face interviews and 2-hour household observations

Behaviour measures

- Standard self-reports: "In general, how often do you wash your hands with soap before eating?"
- Script-based covert recall: "Imagine you have just finished feeding the goats. Now your child is hungry and you have to feed it. Please describe exactly what you do from the moment you leave the goats' house until you feed the child."
- Observed behaviour: For each type of key time the percentage of times a participant washed both hands with soap at a key time out of all the times the key time occurred was calculated.

Investigated handwashing key times

- Stool-related handwashing: After defecation, wiping a child's bottom and other contacts with stool
- Food-related handwashing: Before preparing food, eating and feeding or breastfeeding a child

Dependent variable: over-reported handwashing

- Difference between self-reported and observed handwashing
- Difference between script-based covert recall and observed handwashing

Data analysis

- Correlations & regression analyses
- *t*-tests

Results Q1 & Q2: Factors related to over-reported handwashing

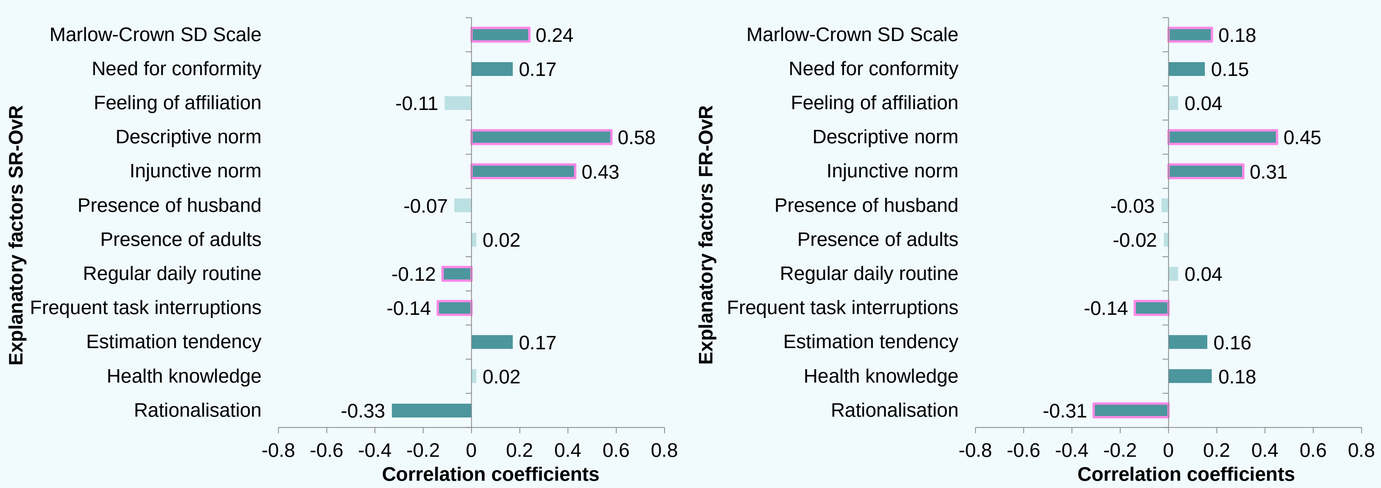

Figure 1. Association between explanatory factors and over-reported handwashing. Left side: Stool-related handwashing. Right side: Food-related handwashing. Correlation coefficients are displayed. Dark bars represent significant correlation coefficients with $p < .05$. Bars with pink outline represent factors significantly explaining over-reporting in multiple linear regression analyses.

- Associated with over-reported handwashing were factors involved in:
  - Socially desirable responding: Marlow-Crown Social Desirability Scale, need for conformity, and descriptive and injunctive norms.[2,3]
  - Encoding and recall errors: regular daily routine, frequent task interruptions and the general estimation tendency.[4]
  - Dissonance reduction: health knowledge and rationalization.[5]
- Encoding and recall, and dissonance factors explained over-reported handwashing beyond socially desirable responding.

Results Q3: Script-based covert recall

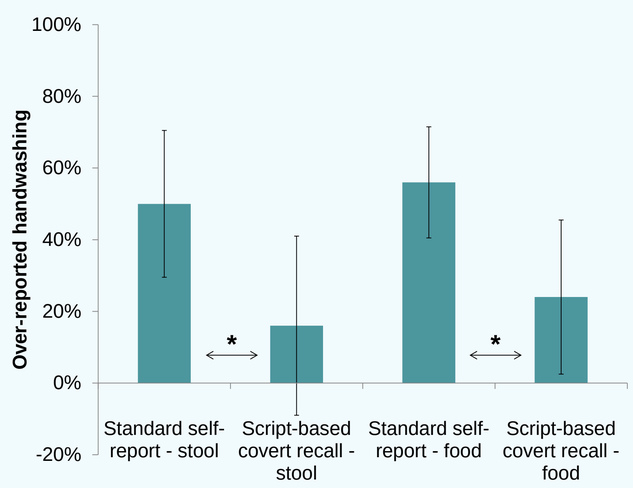

Figure 3. Differences in OvRH depending on the applied self-report measure: Standard self-report and script-based covert recall. * $p < .001$

- Script-based covert recall, expected to mitigate recall errors and socially desirable responding, significantly reduced over-reported handwashing compared to standard self-reports.
- However, the standard deviations of over-reported handwashing were larger for script-based covert recall than for standard self-reports.

→ The measure increased response accuracy only on the aggregated level but not on the individual level.

Conclusions

- Over-reported handwashing was explained by socially desirable responding, encoding and recall errors, and dissonance processes.
- Script-based covert recall increased response accuracy only on the aggregated level but not on the individual level. Thus, alternative measures to reduce over-reported handwashing are difficult to find.
- Alternative measures should mitigate social desirability, encoding and recall errors in chorus.
- While the study delivers only initial results on a complex phenomenon, it contributes to a limited evidence base on a highly important subject: i.e. how to evaluate handwashing interventions efficiently and accurately.

References

1. Ram, P. (2013). Practical guidance for measuring handwashing behavior: 2013 update. Water and Sanitation Program: Working Paper. Washington, DC.
2. Crowne, D. P., & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology, 24*(4), 349-354.
3. Tourangeau, R., & Smith, T. W. (1996). Asking sensitive questions: The impact of data collection mode, question format, and question context. *Public Opinion Quarterly, 60*(2), 275-304.
4. Menon, G., & Yorkston, E. A. (2000). The use of memory and contextual cues in the formation of behavioral frequency judgments. In A. A. Stone, J. S. Turkkan, C. A. Bachrach, J. B. Jobe, H. S. Kurtzman & V. S. Cain (Eds.), The science of self-report. Implications for research and practice (pp. 63-79). Mahwah, NJ: Lawrence Erlbaum Associates.
5. Festinger, L. (1962). A theory of cognitive dissonance. Stanford, CA: Stanford university press.

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