



Three kinds of psychological determinants for hand-washing behaviour in Kenya

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ABSTRACT

Washing hands with soap at the right times – primarily after contact with faeces, but also before handling food or feeding an infant – can significantly reduce the incidence of childhood infectious disease. Here, we present empirical results which substantiate a recent claim that washing hands can be the consequence of different kinds of psychological causes. Such causes can be divided into three kinds of control over behaviour: automatic or habitual responses, motivated or goal-driven behaviour to satisfy needs, and cognitive causes which reflect conscious concerns. Empirical results are based on 3-h-long structured observations of hand-washing behaviour in 802 nationally representative Kenyan households with children under five, and structured interviews with the primary female caretaker in these households, collected in March 2007. Factor analysis of questionnaire responses identified three psychological factors which are also significant predictors of observed hand-washing behaviour: having the habit of hand-washing at particular junctures during the day, the motivated need for personal or household cleanliness, and a lack of cognitive concern about the cost of soap use. These factors each represent a different kind of psychological cause. A perceived link between clean hands and sexual attractiveness also appeared in the factor analysis, but was not a determinant of actual behaviour. We also report evidence that those who express concern about the cost of soap use are those with relatively few economic resources. We suggest that those developing hygiene promotion programmes should consider the possible existence of multiple types of strategies for increasing hand-washing behaviour.

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Introduction

Washing hands with soap at times of public health significance – primarily after contact with faeces, but also before handling food or feeding an infant – has been shown to be effective in reducing the occurrence of diarrhoea, trachoma and skin infections in poor settings, (Curtis & Cairncross, 2003; Ejemot, Ehiri, Meremikwu, & Critchley, 2008) and also plays a role in reducing acute respiratory infections. (Luby, Agboatwalla, Feikin, Painter, Billhimer, Altaf, et al., 2005; Rabie & Curtis, 2006) Getting people to wash their hands with soap is therefore a promising strategy for promoting health. It is also one of the most cost-effective means of reducing the burden of infectious disease and child deaths in the developing world. (Jamison, 2006)

Hand-washing has been studied in a variety of contexts: food service (Green et al., 2006), hospitals (Kuzu, Ozer, Aydenir, Yalcin, &

Zencir, 2005; O'Boyle, Henly, & Larson, 2001; Snow, White, Alder, & Stanford, 2006; Whitby, McLaws, & Ross, 2006), schools (Drankiewicz & Dundes, 2003; Guinan, McGuckin-Guinan, & Severeid, 1997), in public restrooms (Johnson, Sholcosky, Gabello, Ragni, & Ogonosky, 2003; Judah, Aunger, Curtis, Schmidt, & Michie, 2009). However, all of these studies occur in specialised organisational situations in developed countries – not the context in which the major public health impact is felt. Several studies have sought, with some success, to increase hand-washing practice in developing countries (Curtis, Cousens, Mertens, Traoré, Kanki, et al., 1993; Luby et al., 2005; Luby, Angboatwalla, Painter, Altaf, Billhimer, & Hoekstra, 2004; Luby, Agboatwalla, Painter, Altaf, Billhimer, Keswick et al., 2006; Peterson, Roberts, Toole, & Peterson, 1998; Scott, Lawson, & Curtis, 2007; Shahid, Greenough, Samadi, Huq, & Rahman, 1996). However, it remains difficult to know how best to induce this important behaviour at scale. This may be due, at least in part, to the fact that we still do not know what kinds of psychological mechanisms produce this behaviour, and therefore need to be manipulated.

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Prior research suggests that behaviour can be determined by three different kinds of psychological processes: reactive, motivated or cognitive. (Dennett, 1983; Ortony, Norman, & Revelle, 2004; Rolls, 1999; Sloman, 2001) Reactive behaviours are those which are triggered automatically by particular kinds of stimuli. In humans, most reactive behaviours are acquired (i.e., learned habits). Habitual behaviours are automatic responses to the presence of a specific cue, such as an object, a person, a message or a time of day. (Verplanken, 2006; Wood, Quinn, & Kashy, 2002) Habitual behaviours are typically enacted quite regularly in similar circumstances. (Verplanken & Wood, 2006; Wood, Tam, & Guerrero Witt, 2005) Because hand-washing is a daily behaviour, it can occur frequently enough to become habitual.

Motivated behaviour, on the other hand, occurs in response to a need, or perceived discrepancy between an aspect of a person's current state and an ideal state. (Deci & Ryan, 2000; Franken, 2001; Hull, 1943) Motivated behaviour is thus different from reactive behaviour in being directed at the goal of satisfying a need (i.e., it is 'forward-looking', whereas habitual behaviour is 'backward-looking', being driven by a trigger). A variety of motivations can spur behaviour. In particular, a number of motivations for hand-washing have been suggested by previous studies, such as a desire to nurture one's family, to increase social status, or reduce the disgust of dirty hands, while concerns with overt disease avoidance are less strong. (Curtis, 2007).

Finally, some behaviours are cognitive – guided by often consciously determined plans to achieve a long-term objective or culturally determined goal (for example, to be consistent with religious practices, or to protect the health of an infant by removing germs from the hands). Choice among potential objectives to pursue requires evaluation of the likely returns from action. Such evaluations can involve the psychological reward system associated with motivation, but also require sophisticated mental representations of imagined states of affairs, which typically underlie the formulation of plans and objectives. (Koechlin, Ody, & Kouneiher, 2003; Wood & Grafman, 2003) It is the ability to form these complex, symbolic representations of unexperienced states which distinguish cognitive processes from motivational ones. (Johnson-Laird, 2006; Perner, 1991; Sperber, 2000)

This three-level model fit well the results from formative research on hand-washing (Curtis, 2007) However, which of these potential causes can most effectively be stimulated with a public health programme, or even be correlated with actual behaviour, has yet to be demonstrated. Our hypothesis is that hand-washing can be caused by psychological mechanisms at each of these levels.

Prior field-based research on the psychological determinants of hand-washing has either been qualitative, or been based on reported rather than observed behaviour. Here, we seek to isolate the specific kinds of psychological mechanisms which are most important in determining actual hand-washing behaviour in the developing country context important to public health. To achieve this aim, we examine the types of reported processes which correlate with hand-washing behaviour observed in households in Kenya. The study took place in the context of the design of a national hand-washing promotion campaign. This national programme to promote hand-washing with soap is currently being designed in Kenya through a public-private partnership, the Global Hand-washing Partnership, under the supervision of a national coordinator responsible for implementing the programme. The partnership approach is described elsewhere. (Curtis, Garbrah-Aidoo, & Scott, 2007) The preparatory work for this campaign involved formative research into the explanatory factors for current hand-washing practices, and the barriers to change. This formative research was funded by the World Bank's Water and Sanitation Programme, and executed by a private research firm based in

Nairobi (Steadman International). Ethical approval was obtained from the Kenyan Ministry of Health. This paper reports on the psychological factors which contribute to hand-washing behaviour in Kenya; a companion paper focuses on the environmental correlates of this behaviour (Schmidt et al., 2009). The intervention campaign is being designed on the basis of insights generated through this process. Such interventions are necessary because, according to the Kenya Demographic Healthy Survey of 2003, under-five mortality is 115 per 1000 live births. Much of this burden is due to diseases which can be reduced by hand-washing: diarrhoea and respiratory infections. Diarrhoeal diseases, for example, caused 16% of deaths among Kenyan children under five years in 2002–2003. (WHO, 2006)

Methods

First, we outline the strategy that was used to obtain a national sample of Kenyan households, then set out the methods that were used to collect and analyse the data on those households.

All data collection was conducted by independent Kenyan researchers experienced in social scientific research who had been hired contractually by the Kenyan research consultancy Steadman International, which managed data collection in the field and prepared an initial report. All subjects provided written consent to participate in the study during an initial household visit. Fieldwork was completed in four weeks in March 2007. Data records were translated into English for computer-based analysis by Steadman International personnel. Analyses reported here were conducted by the authors, supplemented by the report written in English by Steadman International (Steadman-Group, 2006).

Sampling strategy

First, one district was randomly chosen from each of eight provinces (all provinces in Kenya, except the North Eastern province, which was left out because of logistic problems associated with the very low population density of this area). Within a district, two sub-locations (the smallest administrative unit in Kenya) were selected using the probability proportion to size (PPS) method, in which the size of individual units was considered when performing random selection. (Levy & Lemeshow, 1991) The interviews were spread across villages in the same sub-location by choosing every 4th household on the list of those families with children under five years of age until 100 households per district had been selected. Twenty households dropped out on the day of observation, after confirming their availability the previous day, so the sample was extended to replace these households by following the household selection method (i.e., every 4th household on list with children under 5). Structured observations were undertaken with all these households, as were structured interviews, with no missing data. A total sample of 802 households was achieved.

Data collection methods

A variety of methods were used to investigate hand-washing behaviour and its determinants including structured observations of behaviour, formal interviews and focus group discussions. Each will be described in turn.

Structured observations

An observer/interviewer visited the participating house one day before planned observation to seek consent from the head of household and the primary caregiver and to book an appointment for the following day. The specific objectives of the study were kept discreet to avoid biasing behaviour, although the household was

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