



Hygiene: How Myths, Monsters, and Mothers-in-Law can Promote Behaviour Change

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Edited transcript of an oral presentation

I used to think of hygiene as something akin to a Pandora's box, with all sorts of strange, peculiar and wonderful things inside. Hygiene has myth, it has monsters, Pasteur's invisible monsters, sacred monsters like mothers-in-law, but also science, and much confusion. At least that is how I felt when I started to work in hygiene. I do not think we yet have a complete understanding of what hygiene is or what motivates it. But if we are to make a difference, we need to understand what hygiene is in people's minds.

We need to look at hygiene in two ways. Anthropologists suggest that we can look from two perspectives, from the outside, the *etic* view and from the inside, the *emic* view. We are used, as scientists, to looking at hygiene from the outside, the scientific observers' point of view. What practice relates to which microbe, and what is the risk of infection? We are much less used to trying to see hygiene from the point of view of the people who practice it. To them hygiene is not simply a matter of avoiding germs, it is far more complex. This paper takes a journey into emic understandings of hygiene and tries to understand it from the inside. I take clues from history, anthropology, marketing and consumer science, psychology and biology and try to build a model of what motivates hygiene. My reason is that I contend that we cannot hope to encourage safer hygiene behaviour in the home if we do not understand what motivates it.

History shows that people have always been hygienic. The earliest artefacts we have of human civilization include grooming implements. Evidence of latrines and water supplies were found in excavations in the Indus Valley dating from circa 4000 BC. Roman forts on Hadrian's Wall 2000 years ago had shared latrine facilities whose remains are still visible today.

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Historically, many religions have made a connection between cleanliness and godliness, for example in the Bible:

"Wash me clean of my guilt, purify me from my sin"
Psalms 51:2

And in the Koran:

"God loves those that turn to him in repentance and strive to keep themselves clean"
The Koran 2:223

The four Vedas, the ancient sacred scriptures of Hinduism, require the avoidance of impure and polluting substances:

"135. Oily exudations, semen, blood, urine, faeces, the mucous of the nose, ear wax, phlegm, tears, the rheum of the eyes and sweat are the twelve impurities of the body."

The Laws of Manu c. 200 BC

A fundamental tenet of the Hindu caste system is the separation of the pure from the impure.

Mary Douglas, regarded as the 'mother' of social anthropology, is famous for having said that dirt is matter out of place. She said that dirt avoidance is a process of tidying up, 'ensuring that the order in external physical events conforms to the structure of ideas.' She suggested that human societies need organizing principles to function effectively. Substances or practices that challenge that order become 'matter out of place' and are classified as dirt and thrown out (viz rubbish and the 'dirty' old man).

Marketing science also offers important lessons about promoting hygiene. Most important is the consumer focus. I learnt an important lesson when I visited Hindustan Lever in Bombay. I assumed that what they did was to develop technically efficient hygiene products and then go out and sell them. But I was wrong; it works the other way round. They go to consumers in the field and ask what they want from a cleaning fluid, for example. If consumers say they want a product that is brownish-yellow, thick, smells of phenyl and foams in a bucket then the laboratory designs a product that is brownish-yellow, thick, smells of phenyl and foams in a bucket. A hygiene

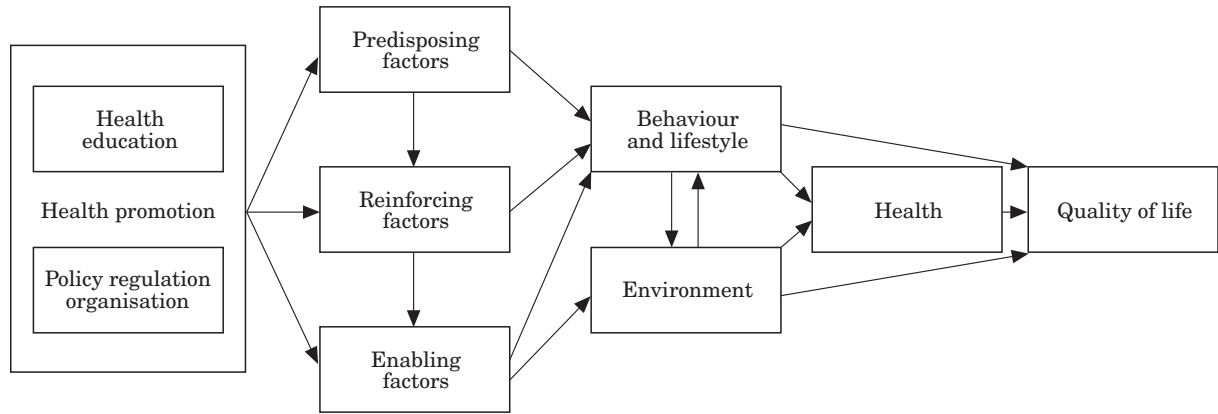


Figure 1. Green and Procter model for health promotion and planning.

behaviour, like a hygiene product, has to be sold on the basis of emic knowledge about what motivates the consumer, or it will fail.

Health scientists have a multiplicity of models that they use in deciding how to promote healthy behaviour. Much used nowadays is the Green and Procter model (Fig. 1), which includes health promotion, health education and policy regulation, and also how behaviour and lifestyle interact with the environment for health goals.² It also reminds us that health is not the only motivation for healthy behaviour; other goals may be far more important. Hygienic practices may be a way for people to improve the quality of their life, not just their health.

Biology also teaches us lessons about hygiene motivation. There are non-human examples of hygiene behaviour. Ants are one of the most successful organisms on this planet, and like most organisms they are faced with a problem. How do they prevent their bodies being invaded by microbes, fungi, viruses, nematodes and other parasitic organisms? In other words, how do they stay alive? They have a multiplicity of chemical and physical defences, but they also have defensive behaviours. *Formica polyctena*, for example, grooms itself to remove fungal and bacterial infection from its skin. Many ant species have a division of labour within the nest, and certain ants form a caste of hygiene ants. While the other ants are out working, the hygiene ants clean up the nest, remove dead and sick ants, clear away waste products, placing the waste in dumps. These ants never come into contact with the worker ants – they are outcasts.

Another example, from the U.K., is the common starling, which has all sorts of hygiene behaviours. It builds its nest in a new place every year, preventing parasites surviving from year to year. When it has a brood, it brings lime leaves to the nest. According to a recent article in the

New Scientist, these apparently fumigate the nest, and keep at bay the blood-sucking insects that would take blood from the chicks. The common starling also has grooming behaviours, removing ectoparasites and feather-eating fungi by bathing in sand or water.

If animals have instinctive hygiene behaviours, then we might expect humans to have evolved them too. Nit-picking is carried out around the world by children's mothers. Mothers do it to remove lice, not from any fear of infection, since lice are not known to transmit disease. Mothers just feel that it is 'yucky' when their children have lice. The behaviour is not necessarily rational, but it is driven, nevertheless. A primary finding from our studies of hygiene motivation around the world is that hygiene behaviour appears to be universal in human beings, and driven by factors other than wanting to avoid disease. As African mothers told us 'Everybody wants to be clean'. Nobody likes dirt as it is unattractive, disgusting and stigmatizing.

So if people everywhere value hygiene and cleanliness, and this is not primarily for reasons of good health, why are they hygienic? What drives people to behave hygienically? Samples of people from countries, including the Netherlands, the U.K., Africa and India and in an international airport were asked to describe the things that disgusted them. The list from the Netherlands included: faeces, hair, vermin, vomit, dust, sweat, stickiness, offal, fish, fishmongers' hands, cats, dogs, dog hairs, dog saliva, rotten waste, bad smelling food, food leftovers, worms, flies, aphids in lettuce, pollution, drug users, drunkenness. A similar list was obtained from the U.K.: faeces, dog and cat faeces, dog diarrhoea, vomit, wounds, wounding an old lady, maggots, a sweaty person, body parts in jars, stained toilets, a stained kitchen, a dead sparrow, rotten food, mouldy food, a rank smell of old grease, foul language, dirty nails, drunks, drunken louts, rude

people and eating with the mouth open. Also, being in a dirty hotel where they did not dare put their feet on the carpet, a dirty cafeteria, a dirty play area, a man beating a woman and cruelty to a horse, were all seen as disgusting. A very similar list was obtained from India: faeces, urine, toilets, sweat, menstrual blood, spilt blood, cut hair, the impurities of childbirth, vomit, the smell of urine, open wounds, saliva, dirty feet, eating with dirty hands, food cooked while menstruating, bad breath, a smelly person, yellow teeth, nose picking, dirty nails, clothes that have been worn, flies, insects, maggots, lice, mice, a mountain of curry, lizards, flies on faeces and liquid animal dung.

Why are these things seen as disgusting worldwide? Back in 1872, Darwin suggested that humans had six core emotions: sadness, happiness, anger, surprise, fear and disgust. He explained the purposes of our emotions as being behavioural drives that make us do things that are good for us. Being disgusted was good for our ancestors because it helped them avoid disease. Being disgusted by bodily secretions, body parts, certain animals and insects, signs of decay or waste and certain other people, leads to their avoidance and rejection. Those of our ancestors who were most disgusted by such things probably had most descendants and thus passed on the 'genes for' disgust to ourselves. Almost all of the items listed as disgusting, with perhaps the exception of immorality and immoral behaviours, and dirty people, relate to the avoidance of disease.

Our gastrointestinal (GI) tracts have to be protected from invasion by microbes and parasites and we have evolved numerous means of protection. A pH of 2.0 in the stomach, for example, is efficient at killing most of the microbes that get into the GI tract but it is not a complete defence. To be disgusted by the sight of faeces, for example, is a protective emotional reaction even though it is not logical or rational. Our reaction to the smell of faeces and the desire to recoil from them is not rational, but it is something that seems to be 'hard-wired' into our psyches. We have within us a hygiene instinct and disgust is one of the prime reasons why we behave hygienically.³

We performed a large comparative study between the Netherlands and India looking at people's motivations for behaving hygienically. One of the most important concerns was the idea of nurturing a child and doing everything necessary for the child to grow up happy and healthy, fitting into its social world and reaching its full potential. This was a high motivator or driver of hygiene for women in the Netherlands and in India. Taking care of one's body, being clean mentally and physically, is healthy. It is clean to tidy things, to separate paper and garbage. Here, Mary Douglas's idea of order is very evident. To be tidy and to put things in the right places is a strong motivation for hygienic behaviour in the home.

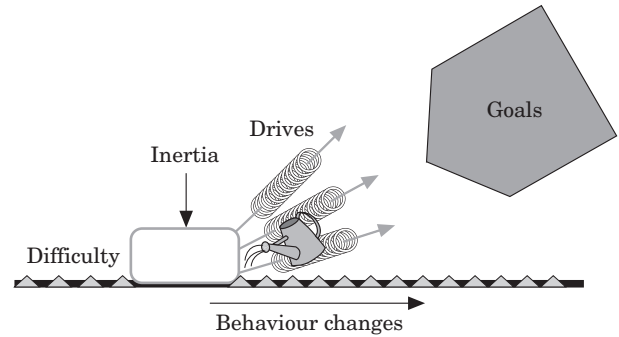


Figure 2. Model developed to show how hygiene behaviour can be changed.

The idea of aesthetics is also important in hygiene. Worldwide, people hold the view that cleaning makes a house beautiful. To have nice, clean-smelling hands that do not look dirty, as well as spotless clothes and shiny bathrooms is important. Aesthetics are another important driver for hygiene. Furthermore, humans are very concerned about their social status and to be labelled as dirty is to be humiliated and belittled. Hence people make great efforts to appear clean in public. In India and the Netherlands, houses were always cleaned before the visit of one's mother-in-law, for example. Status was thus found to be another of the key factors motivating hygienic behaviour.

So it seems that the key motivating factors in different countries for hygienic behaviour are: nurture, disgust, aesthetics, order and status. Figure 2 shows the model that we developed for changing hygiene behaviour. Behaviour can be changed if the motivating factors are engaged (the springs in the model). The frictional surface in the model represents the difficulty of changing behaviour when the physical circumstances conspire against it. In the Netherlands, for example, it is usual to have only a cold tap at the downstairs basin, but in the winter people do not want to use a cold tap, so after using the toilet they wash their hands in the kitchen sink thus directly transferring enteric pathogens to the food preparation area. By having a facilitating environment for hygiene change becomes possible. To paraphrase a famous quote, we have to find ways of making hygienic choices the easy choices.

The final factor in the model is represented as the mass of the object, giving it inertia, which has to be overcome if it is to start moving. We need to be able to overcome existing behavioural inertia. People are creatures of habit and our research suggests that there may be key points at which that force of habit can be changed: when one is very young and learning behaviours for the first time, and when there is a new baby. Many of the mothers interviewed said that they did not care about hygiene until after they had had a baby, and there is some suggestion

that there may be chemical changes in the brain when a mother has a new baby allowing new behaviours to be learnt. This may be a key point at which intervention in hygiene would be worthwhile. Another real hygiene promotion opportunity would be with children when peer pressure for them to do what their peers are doing in the class operates.

Diarrhoeal Disease and Handwashing

By employing the emic point of view, by trying to find out what is going on in the heads of the people who are practising hygiene behaviours, we can get a better idea as to how we might change them. While we have always assumed that teaching people about germs is the right way to get behaviour to change, current evidence suggests that this is ineffective, or at least insufficient. People are not wholly rational beings who act according to a rational calculation of risk, rather what people do is led by multiple considerations, which are at the same time innate, environmentally driven and learnt. It is clearly not enough to tell people to wash their hands because if they do not they will get sick.

From the etic, health scientists' point of view, diarrhoeal diseases cause 2–3 million deaths per year worldwide from more than one billion episodes per year, mostly in children from developing countries. Excrement is the source of most endemic diarrhoeas. The diarrhoeal disease microbes are excreted into the environment and must somehow be prevented from infecting new hosts. It should be noted that one gram of diarrhoea can contain 10^{12} viruses and 10 million bacteria, though not all are pathogenic.

What does this mean in terms of the home in Europe? We do not know what proportion of diarrhoeal disease infecting a new host is caused by food and food already infected with pathogens. Stools of babies, children and adults all contain millions of pathogens. Some will come from healthy carriers, bringing them into the home and others from people who are sick. What then happens to that faecal material? We found, for example, from a small study in the Wirral, in the U.K., that only 47% of nappy changes were followed by handwashing with soap. We do not know what is happening in all of these cases and how important handwashing is in the European home, but we do know that handwashing could save a million lives in the developing countries.

What does putting the emic and the etic together mean in practice? How can we use these insights to design better interventions? To design an effective hygiene promotion programme we need to be able to combine them. In our work we have developed a model approach for formative research prior to designing an intervention. The

approach is relatively straightforward. We carry out a short qualitative and quantitative study designed to answer the following four questions:

- What are the risk practices?
- Who should be the target audiences?
- What can motivate a change in practices?
- How can we communicate with target audiences?

The method is now used by Unicef and other agencies across the world.⁴

The results of one programme designed on these lines are shown in Figure 3. A full-scale communications programme to reach all the mothers and childcarers in a West African town of a third of a million people, using local positive motivation for hygiene (aesthetics and social status) and employing both traditional and modern channels of communication, succeeded in significantly improving hygiene behaviours in the target group. Handwashing with soap observed after cleaning a child's bottom rose from 13% to 31% and soap use after using a toilet went from 1% to 17% over the 3 years of the programme.⁴

I submit that using this sort of approach, which employs a multifaceted understanding of hygiene and learns from marketing, anthropology, biology as well as health science can be very effective. We can find out what the consumer wants and why and then design programmes tailored to people's needs, and at a reasonable cost. Our recent cost-effectiveness evaluation suggested that the West African programme compared favourably with other public health interventions in terms of cost per episode avoided and per life saved.

We all have predispositions to behaviours and we do not always act purely on rationality. Germs are not the only issue when wanting to change behaviour: we will

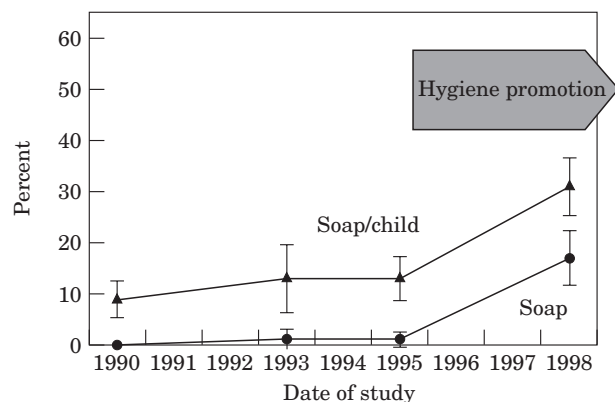


Figure 3. Behavioural change in Bobo-Dioulasso, West Africa. ▲ : Soap/Child; ● : Soap.

need to motivate and facilitate to create an environment where behavioural change is encouraged, and to find ways of changing existing habits. Effective programmes need to be based on formative research into who the consumer is, what the consumer wants and does, and what she/he can do in the household.

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Selected Question to Dr Val Curtis

Professor KJ Nath (All India Institute of Hygiene and Public Health): Ancient Indian Hindu Society tried to preach health messages by various means, such as by religious ethos. To give an example, in ancient India, 3000 or 4000 years ago, some of the large, flowing rivers were identified as holy rivers. These were identified as holy rivers because their waters were far better, far purer, compared with the static, stagnant water of the ponds. So possibly they wanted people to use the waters in those rivers, and they marked them as holy rivers for use by the people. But what has happened over the years? The concept of holy rivers has remained, but the scientific aspects of why they wanted people to use those rivers have been lost. There is a consequence of our not inculcating scientific thinking, and we should not be directing scientific thinking from hygienic behaviour. There are dangers in doing so.

Dr Curtis: I agree. Today I have been talking to an audience of scientists, and perhaps the message would be different for an audience where science is not the prime concern. We have a job to do in education and a moral obligation to do that. But we also have to know that knowledge does not necessarily change behaviour. Understanding behaviour motivation is also a science. We need to bring the understanding of human behaviour to the level of a science in the same way that the understanding of microbial behaviour is a science.