

Recent developments in hygiene behaviour research: an emphasis on methods and meaning

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Summary

This paper discusses some of the recent developments in hygiene behaviour research, focusing on operational research. A series of 'rapid' assessments of hygiene behaviour were carried out in Kenya, Tanzania and Ethiopia with a view to preparing a field handbook entitled *Hygiene Evaluation Procedures* (HEP). The HEP handbook is intended primarily for field personnel in water supply, sanitation and health/hygiene education projects who want to design and conduct their own systematic assessments of hygiene behaviour in their localities. The short studies provided useful practical insights into the concerns and needs of project staff for whom research allowances (human, material and time resources) are often very limited. In this paper emphasis is placed on both methodological and heuristic developments as the two are inseparable. It is suggested that in the domestic sphere, hygiene behaviour with respect to the disposal of children's faeces and domestic water use are two of the key areas that remain of universal relevance to water/sanitation related interventions. These can be assessed rapidly and effectively by using two indicators: means of disposal of children's faeces and handwashing at 'critical' times—after defaecation, after handling and/or disposing of children's faeces, before handling food and before feeding young children and eating. Appropriate combinations of anthropological methods and participatory tools for measuring these indicators are described. The practical relevance of the resulting data for project design and implementation is highlighted.

keywords anthropological methods, Ethiopia, hygiene behaviour, Kenya, participatory tools, hygiene indicators, rapid assessment, sanitation, Tanzania, water supply, hygiene education

Introduction

Hygiene behaviour in the context of water supply, sanitation and hygiene education interventions has been the subject of increased inter-disciplinary investigation in recent years. In April 1991, the ODA-funded *Environmental Health Programme* (EHP) at the London School of Hygiene and Tropical Medicine organized an international workshop at which a group of researchers from a wide range of disciplines, including anthropology, epidemiology and public health engineering, explored issues related

to methods of measurement of hygiene behaviour. The first step was to classify water/sanitation related hygiene behaviour into clusters or domains. Table 1 provides a guide to the five clusters of hygiene behaviour and associated features. Anthropological and related research methods appropriate for assessing specific clusters of hygiene behaviour were identified. Their relevance in promoting a greater understanding of the context, purpose and meaning behind certain hygiene practices was also discussed (Cairncross & Kochar 1994, Boot & Cairncross 1993). One of the most important points of

Table 1 A guide to the five clusters of hygiene behaviour

Cluster of hygiene behaviour	Relevant features and activities
Sanitation Excreta disposal (Cluster A)	location of defaecation sites latrine maintenance (structure and cleanliness) disposal of children's faeces hand-washing at 'critical' times (after cleaning children's bottoms; after handling children's faeces; after defaecation) use of cleansing materials
Water Water sources (Cluster B)	protection of water source(s) siting of latrines in relation to water source(s) maintenance of water source(s) other activities at water source(s) water collection methods and utensils water treatment at the source methods of transporting water
Water Water uses (Cluster C)	water handling in the home water storage and treatment in the home water use (and re-use) in the home hand-washing at 'critical' times (before or after certain activities including religious rituals) washing children's faces bathing (children and adults) washing clothes
Food Food hygiene (Cluster D)	food handling/preparation utensils used for cooking, serving food, feeding young children and for storing left-over food hand-washing at 'critical' times (before handling food, eating, feeding young children) reheating of stored food before serving washing utensils and use of a dish-rack
Environment Domestic and environmental hygiene (Cluster E)	sweeping of floors and compounds household refuse disposal cleanliness of foot-paths, play areas and roads management of domestic animals (cattle, dogs, pigs, chicken)

agreement was that it is neither helpful nor desirable to focus on methods of measurement of hygiene behaviour unless there is a clear purpose for measuring hygiene behaviour in the first place. Therefore, research methods need to be clearly linked with the purpose of study and should ideally lead to a contextualized understanding of the behaviour studied (Zeitlyn 1994).

This became the starting point for further inter-disciplinary discussions focusing on specific clusters and sub-clusters of hygiene behaviour with the aim of improving the design and implementation

of health related interventions. For instance, in May 1992, the WHO held an informal consultation with the aim of identifying the clusters of hygiene behaviour that are most relevant to the control of diarrhoeal diseases (WHO 1993). Similarly, the EHP engaged in collaborative planning of a follow-up workshop to discuss health/hygiene related issues in peri-urban settings in Eldoret, Kenya, August 1995. The outcomes of this meeting will be communicated in the near future (Drangert *et al.*, unpublished).

Meanwhile work has continued in the area of basic methodological research on hygiene behaviour,

and improved design of health/hygiene education/promotion and communication programmes (see for example Hurtado 1994, Huttly *et al.* 1994, Curtis *et al.* 1993, Mertens *et al.* 1992). On the operational research front, the EHP has been particularly concerned with reducing the available anthropological and related methods for assessing hygiene behaviour to a practical level. The aim is to make these methods accessible to field-level project staff. A handbook describing a wide range of methods that are practically feasible for project staff to use has been prepared and is being field tested (Almedom *et al.* unpublished).

The first part of the preparation of the *Hygiene Evaluation Procedures* (HEP) handbook involved a reconnaissance phase in which preliminary assessments of the practical training and other needs of project staff were carried out in three countries in collaboration with three different types of water supply and sanitation projects. A series of rapid assessments were designed and conducted with the active participation of some of the staff of the projects concerned. These short studies reflected the realities of project activity at the field level where time as well as human and financial resources allocated to research are often very limited.

The aim of the studies was twofold: first, to identify the specific hygiene related activities and practices that would maximize the health benefits to be gained from improved water supply and sanitation facilities at the project sites; and secondly to strengthen project capacity by providing some of the key personnel with on-the-job training in the design and conduct of systematic assessments of hygiene behaviour.

Several different combinations of methods and tools for investigating and analysing hygiene behaviour were used and appraised (see Almedom *et al.* 1994a, b). In the process, project staff were able to learn more about the communities they worked amongst and to devise practical means of putting the study results to immediate use in their work.

This paper presents some of the main findings of the rapid assessments conducted in Ethiopia, Kenya and Tanzania during 1993-1994. The relevance of these findings to recent methodological as well as heuristic advances in hygiene behaviour research is discussed.

Study sites

The short studies, organized as field trials, were conducted in rural western Kenya, Nyanza province, Siaya district (in collaboration with CARE Kenya), in rural central Tanzania, Dodoma Region, Dodoma Rural and Kondoa districts (in collaboration with WaterAid), and in three central and southern towns of Ethiopia as part of a larger study in collaboration with Sir Alexander Gibb & Partners, a British firm of consulting engineers, and their French counterpart, SEURECA. The operational structure and remit of these collaborating projects varied as did the cultural contexts in which they operated. CARE Kenya is a non-governmental organization (NGO) which employed its own field staff; while WaterAid (UK), also an NGO, was involved in facilitating an inter-sectoral collaboration between the Tanzanian government Ministries of Water (*Maji*), Social Development (*Maendeleo*) and Health (*Afya*). Tanzanian government employees from these three ministries were seconded to the WaterAid, *Maji*, *Maendeleo*, *Afya* (WAMMA) initiative and undertook fieldwork under the coordination of an expatriate health education officer employed by WaterAid (UK).

In Ethiopia, the study was carried out as part of a consulting support to the 'Ethiopia 12 towns water supply and sanitation study' which aimed to develop appropriate design criteria for improving existing facilities, to be implemented by the 'Water Supply and Sewerage Agency' of the transitional government.

The specific study sites were selected in consultation with the respective project managers and field staff, taking into account the project's goals and objectives, time-frame of activities, and available resources. In Kenya, a 'post-intervention' site was selected, that is to say, the study was conducted in the villages of Masanga and Haudinga located in west Alego where the Siaya Health Education Water and Sanitation (SHEWAS) project activities had already been phased out. This arrangement served to avoid raising expectations among members of the study communities. In Tanzania, the villages of Asanje in the rural district of Dodoma and Kwayondu in the district of Kondoa were selected on the grounds that they represented parts of the

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region which suffered from serious water shortages, and where WaterAid-supported technical interventions and health education activities were in the early stages of fact finding and planning. In Ethiopia, the towns of Mekki (one of the medium-sized Rift Valley towns), Debre-Berhan (a large town) and Bedele (a small and remote south-western town) were selected out of the twelve towns included in the larger study.

Subjects, materials and methods

In all study sites, the selection of study samples and methods was driven by two fundamental questions:

- (i) What water/sanitation related activities are occurring in the study sites, and why?
- (ii) Which of these are most relevant to the existing health education activities intended to bring about behaviour change?

These questions formed the basis for the formulation of further project and site-specific questions addressed by each study.

In addition, the selection of samples and choice of methods was influenced by practical considerations such as the availability of field personnel and the total time and other resources designated for the study. Initial training was given to all members of the study team in order to introduce them to some of the key concepts and recent findings of hygiene behaviour research, as well as demonstrating the use of selected methods and tools prior to the start of data gathering. Once data collection had begun, on-the-job training was given as the data gathered were periodically reviewed in order to ascertain that relevant matters arising could be usefully incorporated into the process of investigation and analysis. This allowed for active learning in systematic data collection and analysis following the cyclical processes of experiential learning (Kolb 1984).

Various categories of people within the study populations were involved in these short studies. Women, men and children, inhabitants of the study villages and towns, participated consultatively in the investigative and analytical processes. Consultative participation in research is where researchers consult their study subjects about the problems under investigation, and listen to their views. They may then

modify both problems and solutions in the light of people's responses.

A selected number of participatory tools including 'three-pile sorting', mapping and 'pocket chart' were employed to facilitate group discussions. For the purposes of this paper, a brief description of each participatory tool may be helpful.

'Three-pile sorting' is one of the PROWESS (acronym for the UNDP-World Bank project entitled 'Promotion of the role of women in water and environmental sanitation services') tools which is commonly used for getting participants to analyse situations depicted in pictures by sorting them into categories of 'pros' and 'cons'; 'advantages' and 'disadvantages'; 'strengths' and 'limitations', and so on (Srinivasan 1990). A set of pictures depicting situations and/or ideas on specific topics such as water supply, sanitation and health or hygiene are discussed by a group of up to 15 people. They discuss the pictures one by one before sorting them into the categories of pros and cons or good and bad. A third category in-between is often included, for pictures that are unclear, ambiguous or contentious—hence the phrase, 'three-pile sorting'.

This tool was used for the purpose of breaking the ice with the study populations on the study team's first arrival at the study sites, using sets of pictures prepared with site-specific features. The aim was to explore the prevailing beliefs and perceptions about what makes for good and bad hygiene, and why (see Almedom 1995). The views of a wide range of categories of people were elicited (see for instance Table 2 for a sample description for this exercise when conducted in Tanzania). The pictures (a set of 16) were taken from a hygiene education booklet that had been prepared by WaterAid for use among the Gogo of the Dodoma Region (Waterkeyn, n.d.). These pictures were suitable for use in Asanje, a Gogo village, but had to be 'translated' into the Rangi culture by a local graphic artist and pre-tested before they were used in Kwayondu. Led by at least two members of the study team (a facilitator and a note-taker), each group discussed and sorted the pictures into good, bad or in-between and gave the reasons why.

Mapping is a participatory activity which is commonly used for gathering spatial information about a community by getting participants to draw their

Table 2 Three-pile sorting exercises conducted in Tanzania: sample description

Asanje		Kwayondu	
Group	Number	Group	Number
First group of village notables	13	<i>Wanaume maarufu</i> , influential men	10
Second group of village notables	9	<i>Wanawake maarufu</i> , influential women	8
School boys	11	<i>Wanawake</i> , ordinary women (mixed age)	12
School girls	10	<i>Wanafunzi wavulana</i> , school boys	18
Young men	20	<i>Wanafunzi wasichana</i> , school girls	11
		<i>Vijana</i> , young men	23

own map. It is used for both investigative and analytical purposes in a wide range of fields including water supply and sanitation, health/hygiene promotion and agricultural systems research (see Srinivasan 1990, 1992, Linney 1993, Chambers 1992, Lamb 1993). In our case, mapping was used to investigate the physical environment such as the availability and location of water and sanitation facilities (Almedom 1995). Other uses of mapping include the investigation of health related attitudes, beliefs and perceptions, for instance by getting participants to draw their own body maps showing the location of vital organs and discussing their functions and illnesses associated with them (Cornwall 1992).

The 'pocket chart' was used to investigate water sources and water uses in Kenya and Tanzania and to investigate people's choice of defaecation sites in Tanzania. An example of its use for generating quantifiable information which can be tabulated and analysed on the spot has been communicated elsewhere (Almedom & Odhiambo 1994).

These and other participatory tools adopted from Participatory Rural Appraisal (PRA) were used in conjunction with the traditional anthropological methods of direct observation and informal interviewing. Structured observations were carried out during systematic walkabouts in the study sites as well as during home visits. Semi-structured interview schedules were prepared for the purposes of training the interviewers who used them as *aides-mémoire*. The informal interviews followed a conversational style rather than a strict question and answer format. Interviews were conducted with samples of 16-20 mothers or carers of young children who

were visited in their homes. The samples for home based interviews and spot check observations were selected on the grounds that there was more hygiene related activity to observe and to talk about in homes with young children than in those without. It was also easier to draw attention to children's defaecation habits and related issues than discussing adults' sanitation related hygiene behaviour in the context of a rapid assessment. Focus on young children made it easier to introduce and discuss otherwise sensitive and difficult topics such as latrine use and personal hygiene; in short, to try to disclose that which 'people take great trouble to conceal' (Allen 1994).

Information obtained by the different methods and tools was cross-checked for consistency and trustworthiness through the process of triangulation of sources and methods, an important aspect of the analysis of qualitative data. Multiple sources, multiple methods and multiple investigators were used in accordance with Pretty's (1994) guide of criteria for establishing trustworthiness or 'goodness' of qualitative data. As the bulk of information gathered was qualitative (although some of it was quantifiable, as shown below) criteria appropriate for qualitative data analysis were employed (Pretty 1994). The study team consisted of a medical anthropologist and a number of field-level project personnel with varying levels of experience, tasks and responsibilities. The study processes were fully documented for the benefit of the field personnel concerned who discussed the draft and commented on it before the final analyses and report writing were completed. This allowed for a thorough examination of the preliminary findings with practical

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indications of how the findings could be applied to current project activities. Further detail on the choice of study site, sample selection and methods may be found elsewhere (see Almedom 1994, Almedom *et al.* 1994a, b).

Results

In Tanzania, although the inhabitants of the two study villages were significantly different in culture, language, ethnicity and socio-economy, a number of common beliefs and practices emerged from the discussions held in each group during the three-pile sorting exercise. For example, defaecating in the open, or in the bush, was categorized as bad by all groups (see Fig. 1 a and b). The reasons included the common observation that faeces attracted flies and flies carried faeces and deposited it on the food (Fig. 1 a). The problem of diarrhoea, stomach-ache and vomiting among children was also discussed (Fig. 1 b). Interestingly, the focus of discussion ranged from the question of whether the mother was responsible for her children's illness, to why these illnesses had occurred in the first place. One group of village notables in Asanje (men and women, including village health workers) stated that flies were responsible for transmitting disease, while a group of influential men in Kwayondu stated that the woman was to blame for all the 'bad' things shown on the picture, and that the man was right in pointing the finger at her. The groups of school-girls and young men in the same village made no mention of the man in the picture, but mentioned the absence of a latrine (which was 'why the young boy was defaecating in the open') and the use of contaminated water 'especially in the rainy season', both of which were 'very common' in the village. Figure 1 (c) generated heated discussions among all groups. Some groups categorized it as in-between, some as bad, but most groups said that it was good. Defaecating in the *shamba*, field (while engaged in agricultural work) was regarded as good and common practice because it was safe and practical in the absence of alternatives such as latrines. Those who said it was bad mentioned the lack of privacy, and possible risk of contamination if people dig where someone had already defaecated, deeming it an unsafe practice, which

may also incur the social costs of embarrassment and shame.

Examples of the mapping exercises conducted in Kenya are shown in Figs 2 and 3. The participants produced a graphic representation of all the homesteads which they knew by name, and what was contained within the courtyard of each homestead in terms of project related features such as latrines, dish-racks, washing lines, rubbish pits and bathing enclosures. The maps showed very clearly that there were exactly the same number of homesteads (33) in each of the two villages under study (although this did not necessarily mean that the number of households, several of which were to be found in a homestead, were the same). There were more latrines in Masanga (26) than there were in Haudinga (21). The majority of these were located outside the courtyards— only one and four latrines in Masanga and Haudinga, respectively, were located inside the courtyard. The reasons for this are discussed below.

The results of structured observations and informal, semi-structured interviews were consistent with the results of the participatory exercises. The total picture on prevalent clusters of hygiene behaviour and why they occur emerged when the complete set of data was analysed as presented below.

Discussion

The significance of water/sanitation related behaviour in disease transmission and therefore in the control of infections has long been recognized by both sanitary engineers and epidemiologists (see Wagner & Lanoix 1958, White *et al.* 1972). However, it was not until the beginning of this decade that pertinent issues concerning method and meaning were tackled by the concerted effort of more than one or two disciplines.

The role of anthropologists in public health research has always been critical although the pace with which the more dominant disciplines have integrated anthropological insights into the design of major health related interventions has been slow and largely limited to diarrhoeal disease research (see Pelto *et al.* 1990, Kendall 1990). The World Health Organization, Tropical Diseases Research (WHO/TDR) programme has also been concerned with building capacity for economic and social aspects of



Figure 1 Examples of drawings used for the three-pile sorting.

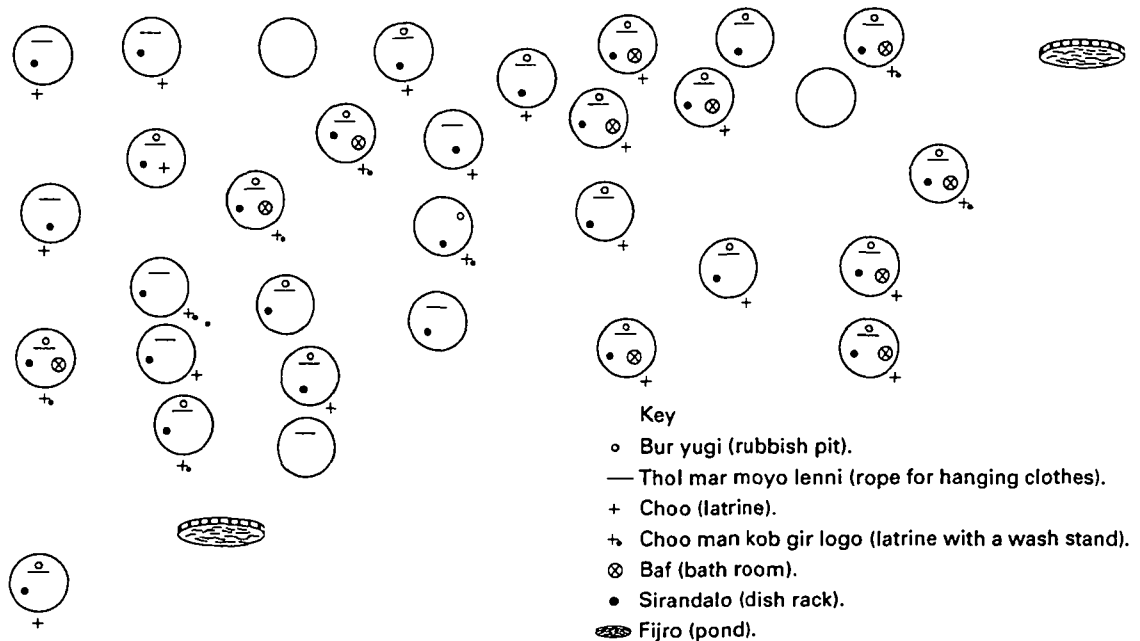


Figure 2 Map of Masanga Village.

health research in developing countries (Vlassoff & Manderson 1994, Manderson 1994). As far as water supply and sanitation interventions are concerned, the role of anthropologists and other social scientists in the company of engineers and planners is fraught with tension (Cairncross & Kochar 1994). Central to this state of unease seems to be a common reluctance on the part of the followers of the Western biomedical paradigm to judge qualitative information on its own terms, using appropriate criteria. Although public recognition of the value of qualitative research is pronounced by those whose disciplinary training and environment rarely allow them to interact with alternative research paradigms, they remain largely unaware of the appropriate criteria for judging the trustworthiness of qualitative data (Black 1994, Pretty 1994).

The use of participatory tools for facilitating group discussions on hygiene behaviour is promising. For example, three-pile sorting was highly effective in stimulating discussions on sensitive/personal topics such as latrine use and personal hygiene in a very short period of time. Similarly, mapping can be a very quick, reliable and enjoyable way of obtaining

data on general background as well as specifics, particularly where base-line data are unreliable, incomplete, or simply non-existent. The strengths as well as limitations of each method used have been documented in order to dispel any temptation to use a single participatory tool and expect magic results (Almedom *et al.* 1994 a, b). One of the main lessons learned so far is that the combination of participatory and more traditional methods of investigation and analysis may provide valuable insights into which clusters of existing hygiene behaviour and associated activities are prevalent and why. The identification of specific activities relevant for health intervention follows this preliminary stage. The indications so far are that two key clusters of hygiene behaviour, excreta disposal and water sources versus uses, especially with regard to the disposal of children's faeces and water use behaviour, are the most realistic and universally applicable indicators of hygiene/health, especially in the domestic environment (Almedom & Chatterjee 1995).

Sanitation related behaviour and activities varied between study populations. Among the Luo of western Kenya, disposal of children's faeces by

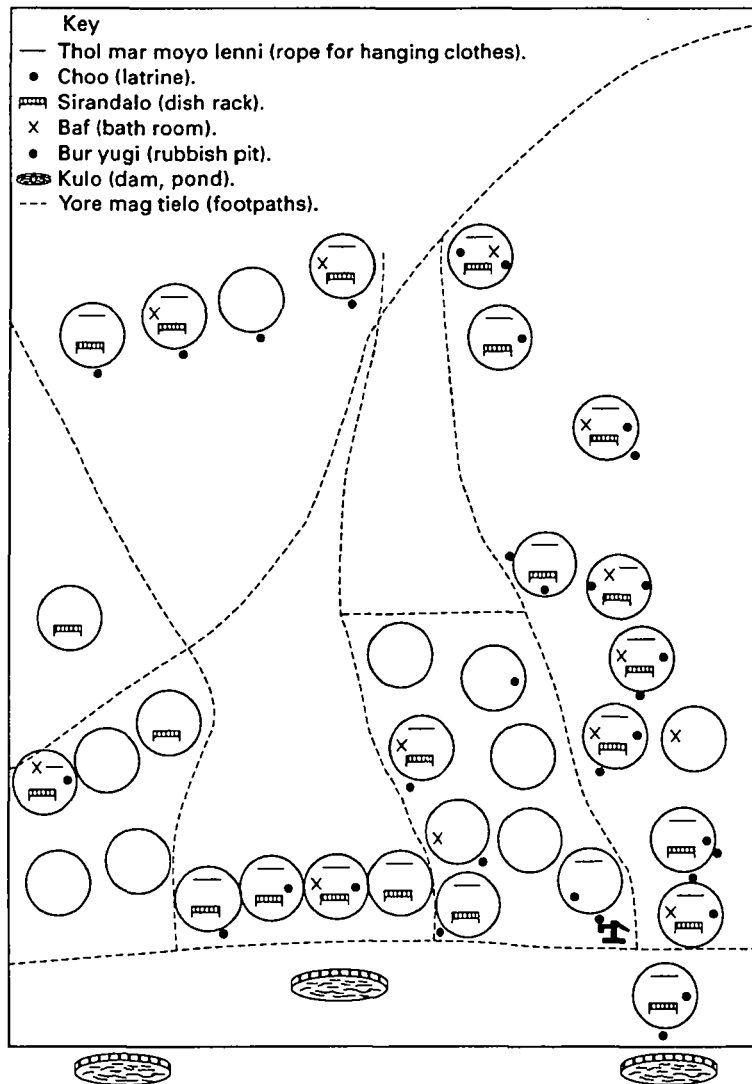


Figure 3 Map of Haudinga Village.

digging and burying was found to be common practice regardless of whether or not mothers/carers had access to latrines. Infants were trained to defaecate in a specially designated place and they would always inform the mother/carer when they had defaecated so that she could dispose of the faeces. Combined results of observations, interviews and discussion that followed on from the initial interest in children's behaviour suggested that adults did not always use latrines either because the latrine did not

provide the basic requirements of privacy and convenience, or because it was not a real latrine. A latrine was not real if it was one of the 'chief's latrines'—latrines constructed during or after a cholera epidemic, upon an edict from the chief that every household should have a latrine. On observation, such latrines looked like latrines from the outside but often consisted of very shallow pits, or no pits at all. Moreover, latrine use by everyone was often not desirable because of socio-cultural taboos

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prohibiting certain categories of people from sharing the use of a latrine. For example, a latrine located within the courtyard of a Luo homestead could not be used by the homestead head's in-laws. A breach of this rule was tantamount to 'undressing in front of one's in-laws'.

Among the Gogo of central Tanzania, most latrines were 'temporary' pits that got destroyed during the rainy season. Lack of time was reported by a large proportion of the women interviewed in their homes, as the main reason for not constructing permanent latrines. Among the Rangii, more advanced socioeconomic conditions (relative to the Gogo), including higher levels of exposure to and interaction with governmental and other organizations, contributed to a more widespread use of latrines that were better constructed, permanent latrines. In both cultures, digging and burying appeared to be a widely used means of excreta disposal when cultivating land away from the home or the vicinity of a latrine.

Concerning hand-washing, the findings of the rapid assessments echo those of longer studies from places as different as Bangladesh and Guatemala (see Hurtado 1994, Zeitlyn 1994). People wash their hands in different ways at different times of day for different purposes. For example, in Tanzania, women reported washing their hands 'first thing in the morning, on rising and last thing at night, before retiring' as a matter of course. In all three countries, people reported washing their hands 'before and after eating'. However, none of these practices were linked to health as much as they were to social norms. Most notably, at meal times, hands were washed only with water before eating while soap was used to remove food particles and grease after eating.

Among the Luo and the Gogo, hand-washing after defaecation was often perceived to be impractical mainly because of the lack of hand-washing facilities that are both easy to use and locally affordable. Among the Rangii, hand-washing after defaecation or after cleaning children's bottoms and/or handling children's faeces was part of the ritual ablution habits, but the use of soap was limited for economic reasons. There was evidence of the use of alternative detergents such as ash. In Tanzania, the idea of using an appropriately designed hanging calabash

(*kangambiwa* or *ijanta* for the Gogo and Rangii, respectively) was identified as a locally acceptable and usable facility (Fig. 1(4)).

In all study sites, the task of fetching water was accomplished mainly by women and children. The choice of water source depended on the intended use for that water. For example, river water was chosen for washing clothes because the water lathered quickly ('did not waste soap' and thus was 'soft') and there was plenty of it; while water from the borehole was chosen for drinking because it was 'clean' and the quantity allowed was sufficient if used solely for drinking purposes (Almedom & Odhiambo 1994). This should perhaps not have been surprising given that people are rational beings and rural or urban women in less developed countries are no exception. However, the realization that traditional, often unprotected water sources continued to be used even when protected sources had been provided, and for reasons other than sheer ignorance, does surprise many a project planner and implementor. Water quality according to the users was found to be different from that defined by the Western biomedical model. To women who fetch water with specific uses in mind, good quality water may be soft, agreeable in smell, but not necessarily free of faecal contamination. Nonetheless, once the benefits of clean water have been explained to users, they will use it exclusively for drinking, even if it smells and/or tastes of potentially 'disagreeable' substances such as chlorine (Almedom & Odhiambo 1994).

Returning to the question of appropriate methods, a point worth mentioning here is that the methods and tools described and used are not in themselves sufficient for good results. The investigator's attitude and behaviour are equally, if not more, important. For this reason, sufficient training and periodic review of results and procedures in the field are essential components of the operational research protocol.

It is hoped that these findings will pave the way to increased interaction between the research community and practitioners who would all benefit from a greater understanding of the purpose and meaning behind observed hygiene behaviour, so that interventions may be effective in bringing about improved health, directly or indirectly. The ultimate test of

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success would be to see whether target populations show their involvement in the process of visibly/tangibly (as opposed to merely verbally) changing their existing hygiene behaviour for the better. Clearly, the methods and tools for effective incorporation of local knowledge into project design and implementation are here for the taking.

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