Indicators for sanitation — yardsticks for cleanliness?

by Astier Almedom and Ashoke Chatterjee

Full latrine coverage and exclusive latrine use have been promoted widely as the best indicators for sanitation. But for many rural populations, latrines are either non-existent, or not in use. One project is building on grassroots research to develop simple, effective indicators to prepare the ground for step-by-step improvements in excreta disposal.

FOR THE LAST two years, a project carried out by the ODA-funded Environmental Health Programme (EHP) at the London School of Hygiene and Tropical Medicine, has been developing simple and effective indicators for evaluating sanitation. Using the conclusions of the EHP-convened 1991 workshop on measuring hygiene behaviour as starting points,[1,2] a field manual for project staff is being developed.[3] This article charts the project's progress, focusing on sanitation-related behaviour, the methods used for assessment, and the indicators developed.

A good indicator is one which is not only measurable, but also *easy to measure*; and effective in getting to the heart of the problem. When using hygiene-behaviour indicators, measurement is not always easy: there is no single formula which can be used to assess particular hygiene behaviour or activities, so a mix of appropriate methods and tools is often called for.

Bearing this in mind, the EHP carried out a series of field-trials in the Tanzanian regions of Siaya and Dodoma, and in central and southern Ethiopia; testing the various methods and tools available, selected from applied anthropology, and some participatory, techniques.[4,5] The trials have made existing methods and tools for measuring hygiene behaviour accessible to field-level project staff, and, secondly, they have helped to identify some key indicators for evaluating sanitation (and water supply — see article by Almedom in Vol.13, No.2). Several NGOs active in the water-supply and sanitation sectors have already contributed to this work,[6] and there are plans for more collaborations in the field testing of the HEP, in the near future.

Step by step

In the previous article, the writers describe how recent developments in hygiene-behaviour research have included the identification of key indicators for sanitation evaluation. In 1992, research into identifying key aspects of hygiene behaviour — whose modification would help in the control of diarrhoeal diseases — reiterated that, 'To judge whether programmes are having a health impact, it is acceptable to rely on such intermediate indicators as safer hygienic behaviour.'[7]

In May 1993, the WHO Regional Office for South-east Asia held an informal consultation on hygiene and sanitation promotion. Faced with the ever-present problem of inadequate sanitation — indicated by discouraging latrine-coverage figures, particularly in densely populated South-east Asia — the meeting conceded that External Support Agencies (ESA) should redirect their priorities, and aim for 'hygiene promotion for all', and 'full latrine coverage for high-risk populations',[8] and not necessarily 'for all'. This meeting further agreed that pit latrines, or ventilated pit latrines and equivalent or superior technologies, are not absolute requirements, either for the safe disposal of human excreta, or for adequate hygiene.

It concluded that 'Human-excreta disposal, as well as improvements in hygiene behaviour, must begin with the improvement of local practices, and continue with the adoption of a range of improved, simple, and locally af-

Key indicators — local and global

The PROWWESS programme (Promotion of the Role of Women in Water and Environmental Sanitation Services) was launched by UNDP (United Nations Development Programme) in 1983 to demonstrate how women can be involved; the benefits they and their communities will gain; and how this experience can be replicated. PROWWESS — and subsequent experiments on several continents — have helped develop a framework for evaluating progress towards three major objectives in water and sanitation programmes: sustainability, effective uses, and replicability. The most important elements help to identify key indicators, and more detailed, measurable sub-indicators. For example, the hygienic use of water is a key indicator of effective use; it can be evaluated by studying the quality of domestic water, water transport, and storage practices, and site and home cleanliness; and by examining personal-hygiene practices.

The global experience of the PROWWESS framework reflects certain patterns: its broad objectives have relevance, while specific indicators vary according to context. For example, cost recovery may be important in one setting while, elsewhere, a tiered maintenance system may be central to sustainability. Communities will find indicators important to their own local situations (such as guinea-worm reduction, or easier access to a latrine), and the relative importance of these will vary over time. At the beginning of a project, the number of water sources to be improved may be the priority. Later, it may be the number of latrines being built. Gender differences can also influence the chosen indicators of success: women are more likely than men to be concerned with both the health of their children, and with environmental hygiene.

Communities and project staff may need their own separate indicators; research proves that communities can develop and select the indicators which they consider important, and can use them effectively. Project objectives must be clear and specific, and project managers need to understand and support this culture of participatory evaluation. 'One of the biggest challenges of the participatory approach . . . is to achieve a balance between imposed blueprints, and a total lack of structure . . . field experience has shown that this framework of indicators strikes a reasonable balance between these two extremes'.[9]

fordable options.' An incremental approach to sanitation promotion was endorsed, using the imagery of a 'sanitation ladder', whereby step-by-step improvements in excreta disposal were to be encouraged and built upon, rather than pushing for the immediate implementation of radical changes.

Methods and tools

EHP staff conducted assessments of the sanitation-related hygiene behaviour and activities within three rural populations in East Africa: the Luo of western Kenya and, in central Tanzania, the Rangi, and the Gogo. The Luo are predominantly Christian subsistence farmers, the Rangi are Muslim subsistence farmers, and the Gogo are semi-pastoral followers of both Christianity and the traditional religion.

Table 1 outlines the EHP researchers' methods and tools. They made detailed descriptions of these and summarized the results, primarily for use by the project staff who collaborated in the design and execution of the field studies. It was argued that it is the choice and combination of methods and tools that produces valid results, and not any single method or tool.[4,8] This is echoed by experiences from India, where PROWWESS and other tools for project evaluation have been in use for some time (see box).

Sanitation-related behaviour is difficult to investigate, especially when the time allowed for the study is a matter of weeks, and not months, or at least a year. The topic does not lend itself to casual conversation or direct questioning; careful planning and the adoption of unobtrusive and sensitive investigative techniques are called for.

Juliet Waterkeyn

Villagers agreed that this picture depicted 'bad behaviour', common in the rainy season.

The EHP team tackled this issue by using direct observations and informal interviewing methods and tools (see Figures 1 and 2). When investigating latrine availability and use, for example, the questions focused on infants and young children. Mothers/carers were asked whether young children were 'able to use the latrine', rather than 'is there a latrine?' and 'is it in use?' The woman's reply was, almost invariably, 'but we do not have a latrine', where latrines were not available. Once past this hurdle, the interviewers then found it easy to ask the villagers *why* there were no latrines, and to find out what the adults used as alternatives.

Female project staff, known to the villagers, and who knew about local customs and social norms, deployed these techniques successfully. Anyone wishing to carry out hygiene evaluations must be familiar with the area and the people, and should have been trained in the use of appropriate methods and tools; the shorter the time available, the more knowledgeable the evaluators need to be.

Main findings

Sanitation-related behaviour and activities varied between cultures. Among the mainly Christian Luo of western Kenya, disposal of children's faeces by digging and burying was found to be common practice, regardless of whether or not mothers/carers had access to latrines. Each infant was trained to defecate in a specially designated place, and to tell his or her mother/carer, so that she could dispose of the faeces.

Adults did not always use a latrine, either because it did not provide the basic requirements of privacy and convenience, or because it was not a 'real' latrine, being one of the 'chief's latrines', constructed during or after cholera epidemics, upon edicts from the chief that every household should have one. Such latrines usually looked like latrines from the outside, but often consisted of very shallow pits, or no pits at all. Moreover, universal latrine

Table 1. Methods for assessing sanitation-related hygiene behaviour and activities

Method/tool	*Materials used*	*Hygiene behaviour, activities, and features*
Structured observations	A check-list or spot-check observation schedule (see Figure 1); notebooks and pens.	Defecation sites, disposal of young children's faeces, faecal contamination of domestic and public areas.
Semi-structured (open) interviews	A semi-structured interview schedule (see Figure 2); notebooks and pens.	Defecation sites, disposal of children's faeces, handwashing before handling food, eating and feeding; after handling children's faeces, after defecation, after cleaning children's bottoms, use of cleansing materials. Mothers'/carers' perceptions of diarrhoeal illness, its causes and its management.
Picture-initiated focus-group discussions	Selected pictures to introduce the topic and to stimulate discussion; notebooks and pens.	Choices of defecation sites, feasibility/practicality of handwashing after defecation; after handling children's faeces, or after cleaning children's bottoms.
Mapping	Local materials such as sticks (for sketching on the ground), stones and leaves (for marking different features); notebooks and pens; flip-charts and marker pens.	Location of defecation sites, social taboos regarding the sharing of latrines, feasibility or practicality of handwashing.
Three-pile sorting	A set of 16 pictures with duplicates for use by up to four different groups at the same time; notebooks and pens; flip-charts and marker pens.	Local beliefs, perceptions and attitutes towards 'good' and 'bad' hygiene behaviour; reasons why certain behaviour and activities are perceived to be 'good', 'bad', or 'in-between'.
Pocket-chart	A piece of canvas material (1 metre^2) with polythene pockets sewn on; pictures depicting different variables to go in the pockets along the top row and down the first column; square pieces of paper to cover the empty pockets; colour-coded voting cards; notebooks and pens.	Types of sanitation facility currently in use versus facilities people aspire to have and to use; locally defined criteria of latrine usability (e.g. privacy, convenience, soundness of structure).

Usafi wa mazingira (Environmental sanitation)

1. *Kuna dalili zozote za uchafuzi kwa kinyesi?* Is there evidence of faecal contamination?
   (a) *Kando ya barabara?* Along the roads? _____
   (b) *Kando ya njia za miguu?* Along the footpaths? _____
   (c) *Karibu na chanzo cha maji?* Near the water source? _____
   (d) *Kwenye/karibu na shambani?* In/near the fields/shambas? _____
   (e) *Kwenye mazingira ya nyumbani?* Outside the houses? _____
   (f) *Ndani ya nyumba?* Inside the houses? _____
2. *Uchafuzi gani ulionekana?* What contamination was observed?
   (a) *Kinyesi cha watoto* Infants'/young children's faeces _____
   (b) *Kinyesi cha watu wazima* Adults' faeces _____
   (c) *Kinyesi cha ngombe na/wanyama mengine — mahali pa kuzaliana inzi* Cow dung and/or other animal faeces — breeding places for flies _____
   (d) *Mengineyo* Other _____
3. *Je wakati wa 'Matembezi ya Afya' ulimwona mtu yeyote anakunya? (Nani/Wapi/Elezea)*
   Did you see anyone defecating during this 'health walk'?*
   (Who? Where? Describe).
4. *Kaya ngapi ulizotembelea zenye vyoo?* _____
   How many of the houses you visited have a latrine?
5. *Choo kimejengwa wapi?* Where is the latrine located?
   (Toa sababu ikiwezekana) (Indicate reasons why, if possible)
   (a) *Ndani ya mazingira ya nyumba* Inside the compound _____
   (b) *Nje ya mazingira ya nyumba* Outside the compound _____
6. *Chunguza choo kilivyo* Observe the latrine
   (a) *Ua wake unafaa?* Does it have a sound superstructure? _____
   (b) *Je sakafu ni imara kusimama mtu pale?* Is the ground safe to stand on? _____
   (c) *Je kina bamba?* Does it have a slab? _____
   (d) *Tundu lake ni salama kutumika kwa watoto?* Is the hole small enough to be safe for children? _____
   (e) *Je kuna faragha ya kutosha?* Does the latrine provide adequate privacy? _____
   (f) *Hali nyingine yoyote ya choo?* Any other features? _____
7. *Kuna dalili yoyote inayoonyesha kuwa choo kinatumika?* _____
   Are there signs to show that the latrine is in use?
   (a) *Njia ya kwenda kwenye choo iko wazi?* Is the path leading to it clear? _____
   (b) *Choo ni safi?* Is it clean? _____
   (c) *Je hakuna harufu?* Is it reasonably free of smells? _____
   (d) *Kuna vifaa vya kujisafisha/kuchambia ndani ya choo? Ni vipi?* Are there cleansing materials in the vicinity? What are they? _____
   (e) *Je kuna maji ndani ya choo?* Is there water in the vicinity? _____
   (f) *Je kuna majivu ndani?* Is there ash in the vicinity? _____
   (g) *Dalili zingine zinazoonyesha kuwa kinatumika?* Any other evidence of use? _____
8. *Vifaa vya kuoshea mikono vipo karibu kiasi gani na choo (maji na majivu au sabuni)?*
   How close are handwashing facilities (water and ash or soap) to the latrine?
   (a) *Karibu na choo* Next to the latrine _____
   (b) *Mbali kidogo na choo* Within walking distance _____
   (c) *Ndani ya nyumba* Inside the house _____

Note
*This question was difficult for project staff to translate directly, probably because it was unusual and embarrassing, even though it was not going to be posed to anyone apart from themselves.

Figure 1. A spot-check observation schedule.

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

Nonetheless, despite the limited use of latrines, little or no faecal contamination was observed, either in and around village homes, or on the roads and footpaths. Digging and burying was considered to be an adequate method of disposal, and it appeared to be 'safe', at least in the dry season. The study team recommended that more investigation should be done during the rainy season.

For the Gogo of central Tanzania, most latrines were 'temporary' pits that were destroyed during the rainy season. 'Lack of time' was cited as the main reason for not constructing 'permanent' latrines. In contrast, among the Muslim Rangi, more 'advanced' socio-economic conditions, including higher levels of exposure to, and interaction with, governmental and other organizations, contributed to more widespread use of better-constructed, 'permanent' latrines. In both cultures, digging and burying was the norm when villagers were cultivating land away from home and latrine facilities.

Among the Luo and the Gogo, handwashing after defecation was felt to be impractical, mainly because of the lack of easy-to-use and locally affordable facilities. For the Rangi, handwashing after defecation, after cleaning children's bottoms, and/or handling children's faeces, forms part of their ritual-ablution habits but, for economic reasons, the use of soap, ash, or other traditional detergents was limited. In Tanzania, the idea of using an appropriately designed, hanging calabash (*kangambwa* or *ijanta* for the Gogo and Rangi, respectively), was identified as locally acceptable and usable. In Kenya, the study findings were used for the modification and fine-tuning of ongoing project activities. In Tanzania, the study results provided baseline data against which hygiene improvements could be measured, once the study areas had been provided with water.

Yardsticks for sanitation

The main indicators for sanitation — developed for East Africa, but likely to be transferable to other parts of the world, pending field-testing — are:

- *Disposal of children's faeces* Measuring this indicator involves appropriate combinations of methods/tools. For example, the field trials conducted in East Africa included spot-check observations of the home surroundings, to look out for faecal contamination; together with opportunistic, direct observations of the handling and/or disposal of children's faeces, cleansing of children's bottoms, and use of cleansing materials. These were carried out easily and unobtrusively. The researchers conducted informal, open interviews with mothers and carers; they held focus-group discussions and, where applicable, used participatory tools to stimulate discussion, to generate data, and to facilitate on-the-spot analysis.
- *Handwashing* after cleaning infants'/young children's bottoms and handling and/or disposing of children's faeces was investigated through direct observations, informal interviewing, and group discussions with or without participatory tools. Again, this was done without

Rob Cousins/Panos Pictures

Children need access to easy-to-use, convenient — if less than ideal — handwashing facilities.

embarrassing the villagers, because attention was focused on the children and not on the adults.

The measurement of both categories of hygiene behaviour may include sub-indicators relating to physical features, such as the soundness of a latrine superstructure, and the availability of handwashing facilities, including water and ash, mud or soap, where such facilities exist.

Conclusion

Assessing hygiene behaviour and activities is not always easy, but it can be done by appropriately trained (preferably 'on-the-job') fieldworkers. For the purposes of sanitation evaluation, the measurement of the following key indicators of improved hygiene may be the only 'sanitation' improvements feasible to propose: disposal of children's faeces (with or without latrines), and handwashing (with soap, ash, or another local alternative) at critical times.

These indicators have been used for measuring/assessing existing hygiene behaviour and activities, and not for measuring behaviour change; to measure change, previous measurements are required, against which present data can be compared. Follow-up measurements would be expected to measure hygiene-behaviourchange. ●

Jina: Name: *Kijiji Mtaa/Kitongoji:* Village section:

Habari za asubuhi/mchana Good morning/afternoon

1. *Habari yako? Watoto wako? Familia yako?*
   How are you and how are the children? Other members of the family?
2. *Una watoto wangapi?* How many children do you have? _____

Wasichana Girls: _____		*Wavulana* Boys: _____	
Jina Name	*Umri* Age	*Jina* Name	*Umri* Age

3. *Je watoto wako wanauwezo wa kujisaidia chooni wenyewe?*
   Are your children able to use the latrine?
   _____
4. *Kama sivyo, wanajisaidia wapi?* If not, where do they defecate?
   _____
5. *Watoto wanapojisaidia, vinyesi vyao unavitupa wapi?*
   How do you dispose of the faeces?
   _____
6. *Nani mwingine anatumia choo?* Who else uses the latrine?
   _____
7. *Wewe mwenyewe unatumia choo?* Do you use the latrine?
   _____
8. *Kama hapana, kwa nini?* If not, why not?
   _____

Figure 2. A semi-structured (open) interview schedule.

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