

# Developing evaluation guidelines for studying hygiene practices

by Sandy Cairncross

MY EDITORIAL in the July 1988 issue of *Waterlines* discussed the impact of water and sanitation on health. The end of the Water Decade is an opportune time for a review of the results of health impact studies. In a review of 12 recent health impact studies undertaken by reputable research groups in Bangladesh, Brazil, the Gambia, Lesotho, Malawi, Nicaragua, Nigeria, Philippines and Sri Lanka, together with older studies,<sup>1</sup> I drew the following conclusions:

- Health impact studies are not an operational tool for project evaluation, or 'fine tuning' interventions in the water supply and

sanitation sector. The results are unpredictable and are sometimes surprising in that they offer no firm interpretation. In particular the small, quick, studies offer little information to assist in the interpretation of their results.

- But notwithstanding the unpredictability of the results of these studies, taken as a whole they provide firm evidence that water supplies, excreta disposal and hygiene education can have a significant impact on diarrhoeal disease. The most significant impacts stem from behavioural changes which constitute hygiene improvements, such as washing

hands, food and utensils; and the disposal of children's faeces.

- Most, but not all, of these studies suggest that access to water in quantity and improvements in hygiene may have a greater impact on diarrhoea than water quality and excreta disposal.

## Interpreting results

These conclusions are necessarily personal, however, because a personal judgement has to be made regarding the reliability of their results when, as often happens, the different studies produce contradictory findings. There are considerable methodological problems in conducting such studies, so that none of them is perfect and their findings are almost never beyond question. A major problem is that it is rarely possible to test the impact of water and sanitation because of the way that drugs and other medical interventions are evaluated — by allocation to one group while another is given a placebo.

Instead, in most studies the health of groups who have and have not benefited from water or sanitation facilities are observed and then attempts are made to eliminate any bias in the way these facilities have been allocated. In the case of water supply the allocation is often made to whole communities, such as when a handpump is installed in a village, for reasons only loosely associated with health. In the case of sanitation, however, and in some cases of protected water sources, the allocation depends on the decision of individual households.

As a result serious problems arise because the households most likely to invest in a latrine, or to prefer a protected water source, are likely to be atypical in other respects. The occupants may be wealthier, better educated, or simply more aware of the benefits of hygiene. These factors are also associated with a lower incidence of disease, so that those using water and sanitation facilities will tend to have less disease, irrespective of whether the facilities have any protective effect.

## Targeting improvements

Most studies tend to support the view that safe water and sanitation



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*Most studies suggest that access to water in quantity and improvements in hygiene may have a greater impact on health than water quality.*



P. Almsy/WHO

*Introducing piped water into a household which previously used a handpump in the backyard is unlikely to have as much impact as introducing piped water into a household which collected its water from a muddy puddle a mile away.*

can reduce diarrhoea incidence by about 25 per cent.<sup>2</sup> But water supplies and sanitation can, in the right conditions, have a powerful impact on other infections. Clean water supplies can almost completely eliminate Guinea worm and substantially reduce the prevalence of trachoma and schistosomiasis (bilharzia). Excreta disposal is a prime control measure for intestinal parasitic worms. Most studies of the impact of water and sanitation on the parasitic diseases have underestimated its public health importance by focusing on how many people have worms; if they had looked instead at how many worms those people have, they would probably have found a greater public health impact.

The health impact of water supply and sanitation can only be understood with respect to the conditions prevailing before they were implemented. Introducing piped water into a household which previously used a handpump in the backyard is unlikely to have as much impact as introducing piped water into a household which collected its water from a muddy puddle a mile away. Where water and sanitation condi-

tions are the least hygienic, provision at a given level of service is likely to have the greatest impact.

Few would dispute that it is equitable to target environmental improvements at those whose environmental conditions are worst, such as those whose water sources are furthest away, or whose environment is most faecally polluted. Such target groups are most likely to feel a need for water and sanitation and are most likely to respond to them by improvements in their hygiene. While the evidence from health impact studies is hard to interpret in this respect, it is clear that in most studies where a significant health impact was found, the provision of water supply or sanitation had been accompanied by improvements in hygiene.

### **Behavioural changes**

'Hygiene', meaning practices such as the washing of hands, food, and utensils, or the disposal of children's faeces, may be promoted by better access to water and sanitation, or by hygiene education. Improvements in hygiene may be reflected in increased water consumption. It

appears that the most significant impacts on disease incidence stem from the behavioural changes which constitute hygiene improvements, and which interventions in the water sector seek to bring about. If no such change in behaviour accompanies improved water supply or sanitation, then the only health benefits likely to occur are those stemming from improved water quality; in many settings, it seems, these are relatively minor or even negligible.

It follows that, unless we know more about the conditions under which these behavioural changes occur, or the particular changes most likely to reduce the transmission of disease, we do not know much about how or in what circumstances a health benefit can be expected. The recent health impact studies had difficulty measuring even quite simple behavioural factors such as household water consumption. But the objective study of human behaviour is clearly not impossible, as a wealth of anthropological literature can testify. The problem is that the necessary techniques are not well known in the water and sanitation sector, and no



*Guidelines will help researchers to design studies that illustrate how water and sanitation conditions influence health.*

coherent attempt has been made to adapt them to the sector's needs.

### Study guidelines

A set of guidelines for the study of hygiene practices would serve several valuable purposes:

- They would provide practical tools for the operational evaluation of water and sanitation projects. A study of behavioural factors can be carried out more quickly, and more cheaply, than a health impact study, and its results would offer far greater power to diagnose problems in

an existing programme. For example, a finding that the health impact is small does not indicate how the impact can be increased; however, a finding that, say, latrines are not widely used will suggest measures to improve the situation. In fact, the guidelines envisaged would greatly facilitate implementation of the Minimum Evaluation Procedure for Water Supply and Sanitation Projects.<sup>3</sup>

- Operational tools for the assessment of changes in hygiene practices would be particularly valuable for the evaluation of hygiene education programmes. Little is

known about the relative cost-effectiveness of the various possible approaches to hygiene education, and without objective, preferably standardized, methods to measure the impact on behaviour of each approach, our understanding of this subject is unlikely to improve.

- Methodological guidance on the measurement of the intervening behavioural factors would be invaluable to researchers planning any future health impact studies. It would help them to design their investigations in such a way as to permit a better examination of the pathways by which, and conditions under which, water and sanitation may influence health. Future interventions can then be designed to maximize their health benefits, although this, it must be stressed, is not a short-term goal.

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## Conclusions

Guidance is clearly needed on the methodology of hygiene measurement. An international meeting of experts to discuss case studies and hammer out the main issues on the methodology of hygiene measurement and to develop guidelines was therefore suggested.

With support from IDRC, ODA, UNDP, USAID, and WHO, this meeting was organized and took place in Oxford from 8-12 April 1991. Most of the 44 participants were behavioural scientists; indeed it was the first time so many anthropologists had ever met to discuss the needs of the water supply and sanitation sector, outnumbering even the engineers and public health specialists.

An important theme to emerge from the meeting was that it is not enough to consider people's behaviour from the perspective of its potential public health significance only; it must also be understood in terms of its meaning and purpose as the people themselves perceive it. The meeting also advocated participatory approaches, so communities could note their own hygiene behaviour, and their health.

A guideline document will now be prepared with help from the IRC Water and Sanitation Centre in the Hague. It will be based on the Oxford meeting's discussions, and will be published next year by IDRC. It is also planned to publish the papers presented to the meeting, and a manual on the use of structured observation techniques. ●

## References

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## Coming in the October issue

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A.S. Kochhar/WHO

*People's behaviour must be understood in terms of how the people themselves perceive it. This man prefers his recycled pipe to the expensive, imported gadgets he might be offered by outsiders.*