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Attempts to measure the health impact of water supplies and sanitation have a long and chequered history. Many of them have been made by amateur epidemiologists at the behest of the agencies funding the construction of the facilities, and with insufficient planning and rigour. Even some studies supervised by eminent specialists have produced almost useless or meaningless results, after taking years to complete and costing substantial sums of money. This unhappy experience led a panel of experts, convened in 1975 by the World Bank, to conclude that the Bank should not undertake any long-term longitudinal studies of the question. **(1)**

There were brief hopes during the 1980s, the International Water Decade, that a new technique, the case-control method, would provide a quicker, cheaper means of measuring the impact on diarrhoeal disease **(2)**. However, several experimental studies of this type produced disappointing results, and it became clear that they suffered from similar shortcomings to studies of the more conventional design.



One review of the literature listed eight common errors found in health impact studies; one or more of these shortcomings was found in every one of the studies reviewed. **(3)**

Epidemiological studies depend on the intervention studied (in this case, water and sanitation) and an outcome measure (the health impact). Part of the problem is the nature of the intervention. The ideal way to measure the impact of any health intervention, the double-blind, randomised, controlled trial, is not feasible for water and sanitation. There is no placebo for a pit latrine. Moreover, the unit of intervention usually has to be the community, rather than the household. Besides, it is almost impossible to allocate water supplies and sanitation at random - ethically, politically and practically.

The principal outcome is diarrhoeal disease; by any reckoning, more than 90% of the health benefits of improved water supplies and sanitation arise from reduced diarrhoeal illness, most of it in children less than five years old. This raises other problems. Diarrhoea is caused by a wide variety of micro-organisms, transmitted by a wide range of different routes. Water supply and sanitation affect only some of these. For these reasons, well-designed water supply and sanitation interventions typically reduce diarrhoea incidence by about 25%. **(4)**

Instead of attempting to measure disease rates, studying patterns of hygiene behaviour has far greater diagnostic power, in terms of indicating opportunities for project improvement. Since it is further back up the causal chain, it is easier to attribute to the project intervention. It is also quicker and cheaper than epidemiological studies. It can also be done at the project design stage. This will not only help to establish a baseline yardstick against which to compare evaluation results, but also improve project design. A convenient user-friendly manual is available (7), and so is a more detailed account with case studies. (8)

World Bank (1976) *Measurement of the Health Benefits of Investments in Water Supply*. Report No. PUN 20. Washington DC: The World Bank.

Briscoe J, Feachem RG and Rahaman MM (1985) *Measuring the impact of water supply and sanitation facilities on diarrhoea morbidity; prospects for case-control methods*. Geneva: Wat. Genewnn diarrho-ds.