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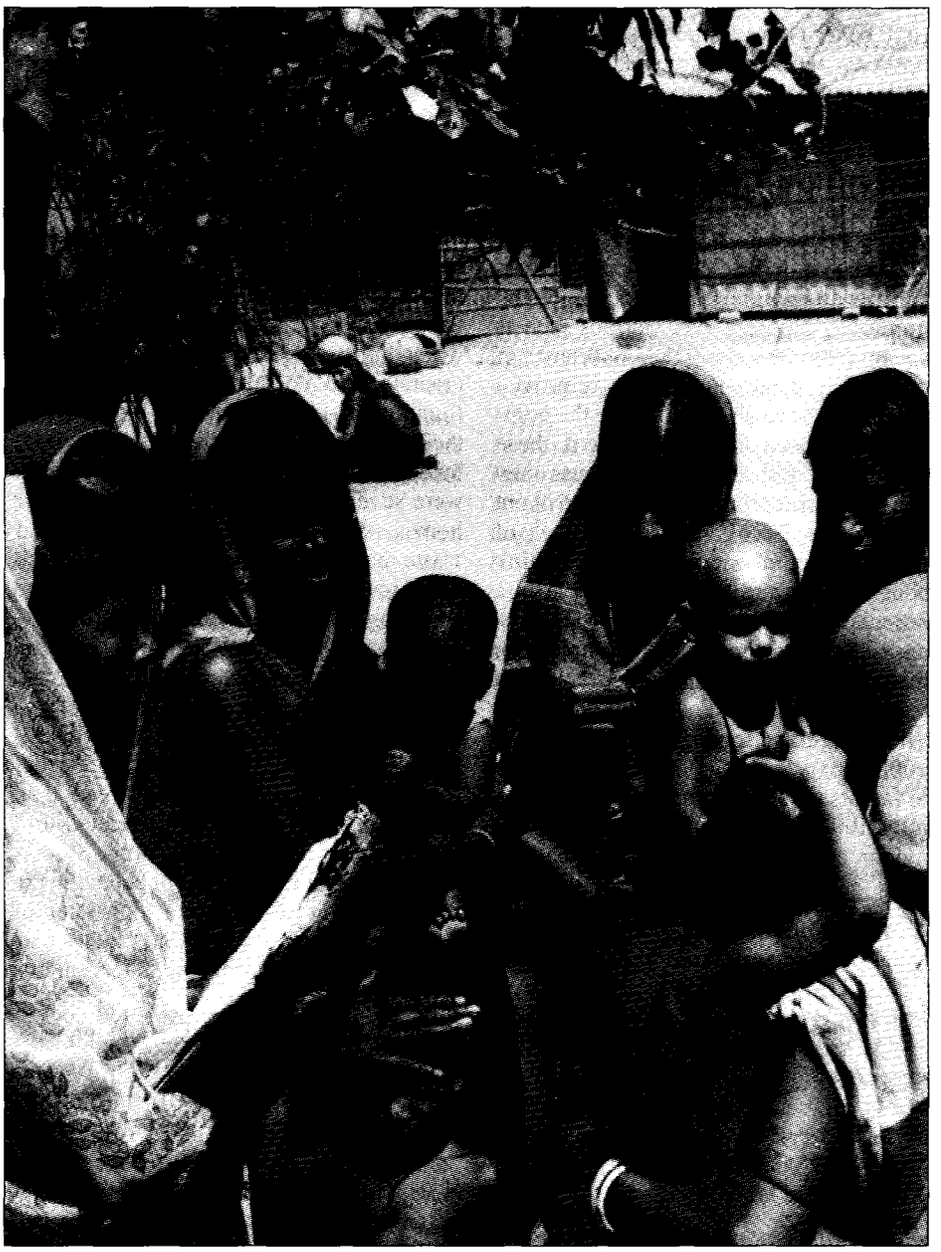
# Dialogue on Diarrhoea

The international newsletter on the control of diarrhoeal diseases



**Health workers must *ask* the right questions, and *listen* to what people say. But they must also *look* at what people do.**

## Ask, listen... but don't forget to look

Helping families to make their homes safer is an important part of the prevention and control of diarrhoeal disease. This issue of *DD* looks at questions which relate to hygiene behaviour: how people handle food, water and wastes – human and animal excreta, and garbage of all kinds. Faecal-oral transmission of diarrhoea germs is the polite way to describe tiny amounts of shit somehow getting into human mouths. This danger has to be reduced. Better sanitation and cleaner water supply can help but, to make a real difference, families also need access to appropriate hygiene education.

### Real understanding

To be effective, this education must be based on genuine understanding of how people think about hygiene in their daily lives and why they do as they do. Suggested changes must fit the local environment, which should include religious and cultural traditions as well as household and economic circumstances. Aspects of looking at hygiene behaviour are discussed on pages 2, 3 and 4, and pages 5 and 6 show how some particularly difficult environmental conditions are linked with persistent diarrhoea due to worms.

### See what people do

Answers to questions from readers about ORT on page 7 also show the importance of understanding what people do and why. This means asking questions and listening to what people say. But, because the asking of a question can influence the answer, it is equally vital always to look at what people actually do. We have to have the whole picture if we hope to improve behaviour.

**In this issue:**



AHRTAG
Appropriate Health Resources & Technologies Action Group Ltd

# Learning about what people do and why

*DD* explains why it is important to understand hygiene behaviour and how this knowledge can help to reduce the spread of diarrhoeal infections.

How people carry out day-to-day personal and domestic activities that relate to the transmission of infections, including diarrhoea, is called 'hygiene behaviour'. Hygiene behaviour is important because it affects the household level of contamination by germs, and the extent to which those germs can infect the family. Diarrhoea-causing germs are most commonly spread from person to person by the faecal-oral route. Hygiene behaviours that influence diarrhoea transmission by this route include:

- where people defecate;
- whether and how hands are washed (or otherwise cleaned) after defecating, and before preparing and eating food;
- how babies' faeces are disposed of;
- how water is stored and used; and
- how food is prepared and stored.

## Why do we need to know about hygiene behaviour?

People are likely to have fewer diarrhoea infections if they have access to clean drinking water and good sanitation facilities. But, if hygiene behaviour is poor, the health benefits resulting from provision of improved sanitation and water supplies will be limited. Clean drinking water and better sanitation typically reduce diarrhoea incidence by only 25 per cent[1]. Interrupting faecal-oral transmission of germs also depends on improving personal and domestic hygiene behaviours.

Diarrhoeal disease control programmes have tried to improve hygiene behaviour by introducing different interventions such as educating families about the importance of domestic hygiene. Promoting improved hygiene has been shown to halve the number of diarrhoea infections. But if these interventions fail, it is often because they have not been appropriately designed or put into practice. This can be due to lack of understanding about what people think about hygiene and why they behave in a particular way. Sometimes it is also because the interventions have not been aimed at the behaviours which are most responsible for spreading infections.

It is therefore important to understand people's existing hygiene behaviour, and the factors that determine it, so that health education interventions to change behaviour are appropriate, and so that behaviour does change, leading to improvements in health. Programmes also need to be aware that although people may *know* about the safest practices, certain constraints may prevent them from actually *doing* things the safest way.

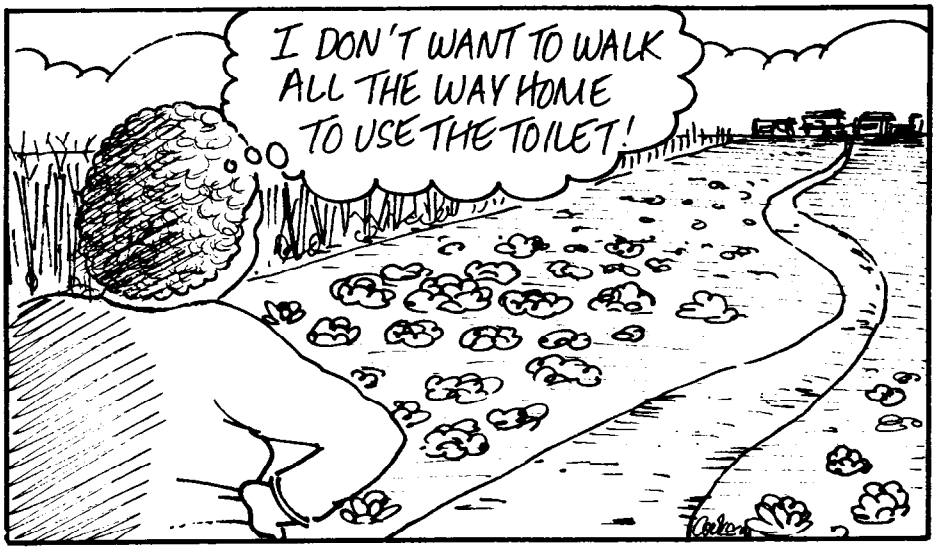
In **Zimbabwe**, Pauline Gwatirisa investigated why providing water and sanitation had failed to reduce diarrhoeal and worm infections in poor rural communities. Studying behaviour showed that, even when latrines were provided, defecation practices did not always change. It was found that, although people agreed that their household toilet was the safest place for excreta disposal, where their food gardens were several kilometres distant from their homes, people pointed out that they would waste much time and energy walking back home to use the toilet. They were therefore encouraged to bury their faeces, or dig a small pit for faeces disposal near the gardens.

Most people in a community will have similar ways of doing things, but there will be variations between families or individuals. Some ways of doing things are more likely to increase infection spread than others, and may therefore be related to a higher rate of diarrhoea infections. Studies help to find out which ways of behaving are most likely to be linked to high rates of diarrhoea. Hygiene behaviour studies carried out *before* introducing interventions can reveal:

- what people think and do about hygiene, and why they act in a particular way;
- the practices responsible for transmitting infection which the programme or intervention should aim to change;
- which factors influence or limit the extent to which behaviour can be changed (such as beliefs about cleanliness).

Similar studies *after* an intervention has been introduced also provide useful information which helps to:

- monitor how well hygiene behaviour interventions are working;
- examine how water and sanitation programmes affect health and hygiene behaviour;




Paul Cook

**It is important to find out what influences the use of water and sanitation facilities. In rural Zimbabwe, people pointed out that they could not waste time and energy walking several kilometres from their food gardens to their homes to use the toilet.**

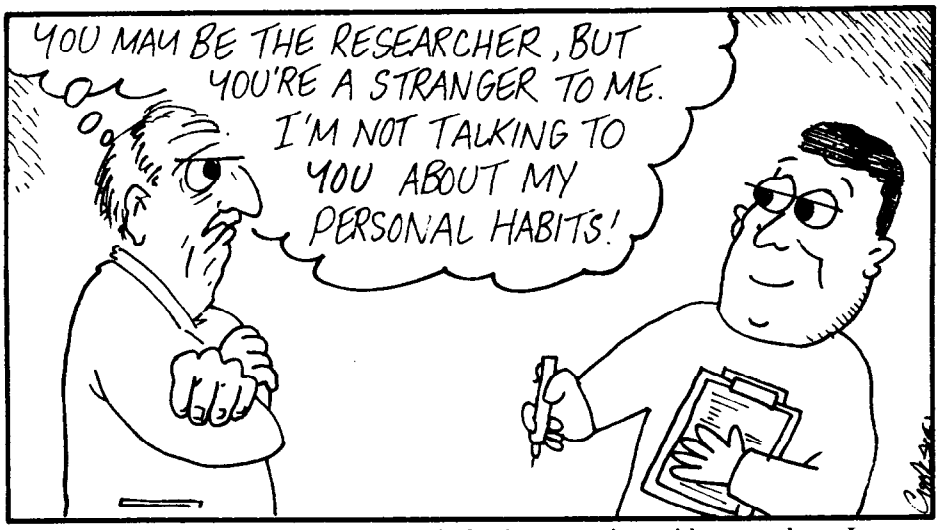
- identify the reasons why a programme might not be having an impact on the incidence of diarrhoea.

## How is hygiene behaviour studied?

Hygiene behaviour studies should collect information from a large number of families if the results are to be useful for programme planners. This is because it is important to know that a significant proportion of people in the community behave in a particular way, in order to design an appropriate intervention for the whole community, or to find out if an intervention has been effective.

Finding out what large numbers of people believe and do, and why they do it, is not easy. Investigating how this information relates to disease is even harder. Behaviour is much more difficult to study than whether water supplies are available. Behaviour is difficult to define, often very variable and determined by cultural context. Identifying 'poor' behaviour can mean that people themselves are blamed for their ill health.

Researchers have developed various methods and practical techniques for collecting information and to help them to identify and measure the behaviours that influence the spread of infections, including diarrhoea. The field workers who carry out the study in the community need training in how to use the techniques. It is helpful to start by finding out more about the social and cultural background of the community, for example family income and level of maternal education.




Paul Cook

**People may be reluctant to discuss certain hygiene practices with researchers. In many communities talking about these issues with another person is considered to be inappropriate.**

### Preliminary studies

Preliminary studies, usually on a small scale, provide information for designing a larger study. Such preliminary studies can ensure that a questionnaire uses the right words to refer to behaviours common in the community. One technique used in these studies is the focus group discussion, where, for example, small groups of women are encouraged to discuss what they think and do about child health and hygiene practices, and give reasons for why they do certain things.

### Interviews, questionnaires and surveys

Surveys are a useful way to find out what water and sanitation facilities are available for domestic use. These methods can also be used to explore accepted norms of behaviour, that is, what most people *think* they should be doing. People may say they do one thing, but actually behave differently. They will also only answer the questions they are asked, so questions have to be well chosen, using information from preliminary studies.

Vijay Kochar describes what happened

## Designing health education messages

This study shows how information about hygiene behaviour was used to design effective educational messages. Researchers in **Bangladesh** wanted to develop health education messages to improve hygiene behaviour and reduce diarrhoea infections in children living in poor areas of the capital city, Dhaka. Through comparing hygiene behaviour in two different groups of families, the study identified which hygiene related practices were most likely to be associated with high rates of diarrhoea infection. Using this information the researchers designed appropriate health education messages aimed at improving these practices.

Diarrhoea incidence in children was recorded by asking mothers to mark episodes of diarrhoea on special calendars designed for non-literate adults. Two groups of about 50 families with children under five were selected: one consisted of houscholds in which the children had the highest number of diarrhoea infections, and the other of those in which incidence was lowest.

Hygiene behaviour in both groups was studied to find out if there were things which people did differently in each group and which might increase infection spread. In the households in which there was a higher incidence of diarrhoea infections, the researchers observed that:

- more mothers did not wash their hands before preparing food;
- infants were more likely to defecate in the family living area, and their faeces were more likely to be found in this area;
- families were more likely to leave household waste uncovered in the living area, and children were observed to put garbage in their mouths more often.

Simple health education messages focusing on these three behaviours were designed to emphasise the need to:

- wash hands before food preparation;
- encourage children to defecate away from the house at a special site, or in a latrine;
- dispose of garbage and infant faeces safely.

A later study showed that these interventions succeeded in changing the three behaviours and in reducing the number of diarrhoea episodes, particularly among two and three year olds.

*Clemens J D and Stanton B, 1987. An educational intervention for altering water-sanitation behaviours to reduce childhood diarrhoea in urban Bangladesh. Am. J. Epid. vol. 125:284-301.*


Paul Cook

**Often researchers have only a few hours in which to observe behaviour, due to limits on time and resources in a large study. Some practices may not occur during this period.**

during his research in West Bengal, in **India**: 'We were studying hookworm transmission in a village with no sanitation facilities. When interviewed, villagers confirmed our expectations, saying that people have special places for open air defecation, which are used only for that purpose. However, when I examined the actual stool distribution around the village, I found it to be much more varied than had been indicated in interviews, and saw that people use the defecation grounds for other activities too, such as collecting wood.'

Cultural factors can be a major obstacle to obtaining information. In **Zimbabwe**, researchers found that it was difficult to collect data on the usage of sanitary facilities by older people – in many communities it is not culturally appropriate to discuss such issues with another person.

It is not always necessary to question people about what they actually do. Sometimes discovering what they think about hygiene can be useful in itself. One example of this is a study in **Papua New Guinea** which was designed to find out what mothers believed about the role of babies' faeces in spreading infection, not how they actually disposed of infant faeces[2].

Field workers completed a questionnaire during open discussions with mothers. The information was then compared with the number of diarrhoea infections in their children over a year. Children whose mothers believed that infant faeces were not a source of infection were more likely to have had diarrhoea. This finding helped planners to design an appropriate educational intervention for women about the infectiousness of babies' faeces, and the need to dispose of them safely.

### Direct observation

Direct observation enables researchers to compare people's hygiene behaviour in their own homes with what they say they do. Seeing what people actually do, for example, about storing and using water, can reveal hygiene practices that could increase the spread of infection.

In a study on water use in **Bangladesh**, in an area where most families had access to clean water from handpumps, people were asked where they obtained their drinking water[3]. Although most said that they drank only handpump water, close observation revealed that some people used contaminated pond water for many other household purposes such as cleaning feeding bottles, and that the two sorts of water were usually stored side by side in the home. This increased the risk of transmission of infection from contaminated water.

Direct observation is, however, a labour intensive method. In addition, people may change their normal way of doing things when a researcher – usually a stranger to the family – is present.

Jane Baltazar comments on carrying out such a study in a poor community in Metro Manila in the **Philippines**: 'We designed an "observation checklist", which included sections for the observers to record practices related to young child defecation, and maternal water handling and food preparation behaviour. However, we encountered a major problem. Due to limits on time and resources, we could only spend one hour in each household. Often the events we wanted to observe, like infant defecation or rubbish disposal, did not occur during this time. Even when the interview was extended to five hours, these behaviours were recorded in only 10 per cent of the households.

### Indirect observation

Sometimes researchers do not have to observe how something is done. Instead they look for and see signs that indicate that a person has done something in a certain way. For example, a clean yard can mean that infant faeces have been swept up and disposed of safely. These signs can be useful measures of behaviour and are easily observable even during short interviews. Special arrangements should not be made for visits, since if people are expecting a researcher to come to their homes they may change how they normally do something.

## Conclusion

The International Reference Centre for Community Water Supply and Sanitation (in The Netherlands) is using the experience of a number of hygiene behaviour studies to draw up guidelines to help programme planners to design cost effective and useful studies, particularly in relation to water and sanitation programmes. These studies will enable planners to introduce and monitor hygiene behaviour interventions that will best reduce transmission of infection in their community.

The guidelines will be published by the International Development Research Center in 1992. (Details will be included in a future issue of *DD*.)

***DD* would like to thank the following for permission to use papers presented at the Workshop on Measurement of Hygiene Behaviour, held in Oxford, UK, in April 1991: Dr Sandy Cairncross, Dr Jane Baltazar, Dr Pauline Gwatirisa, Dr Patricia Haggarty and Professor Vijay Kochar.**

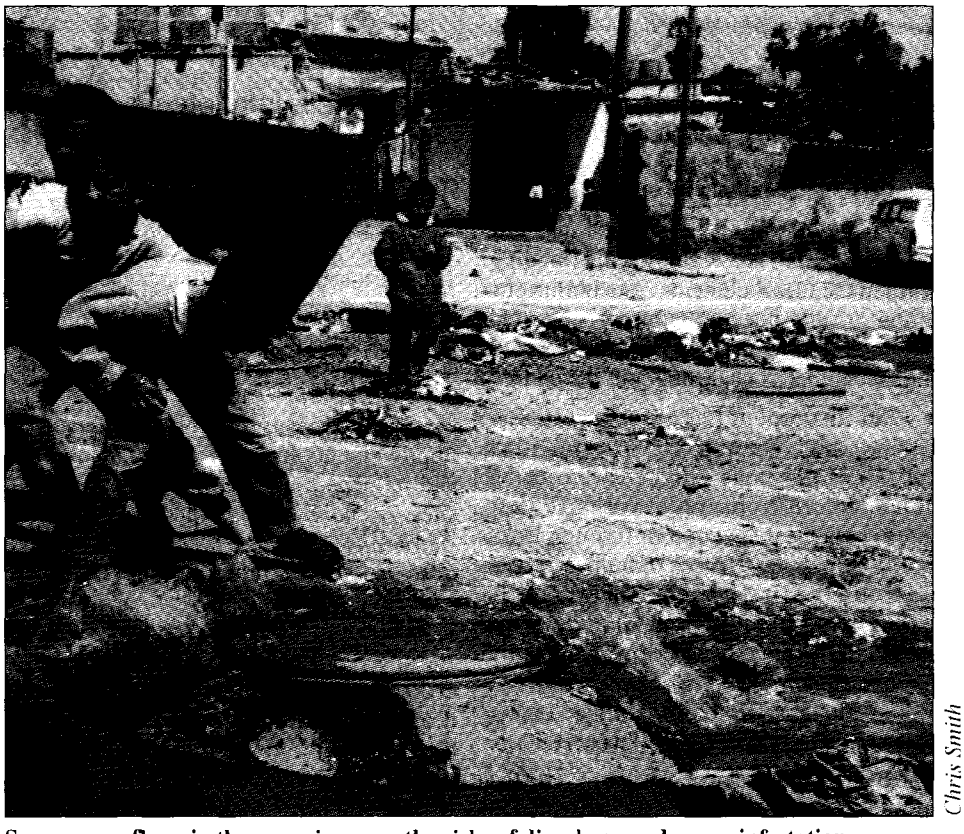
*1. Esrey S et al. 1985. Interventions for the control of diarrhoeal diseases among young children: improving water supplies and excreta disposal facilities. WHO Bulletin, vol 63:757-772.*

*2. Bukenya et al. 1990. The relationship of mothers' perception of babies' faeces and other factors to childhood diarrhoea in an urban settlement of Papua New Guinea. Ann. Trop. Paed. vol 10: 185-189.*

*3. Zeitlyn S and Islam F. 1991. The use of soap and water in two Bangladeshi communities: implications for the transmission of diarrhoea. (Forthcoming publication)*

# Water and sanitation are not enough

Chris Smith discusses why worms, often associated with diarrhoea, are still a major problem for young children in Palestinian refugee camps, despite widespread access to piped water and sanitation facilities.



Chris Smith

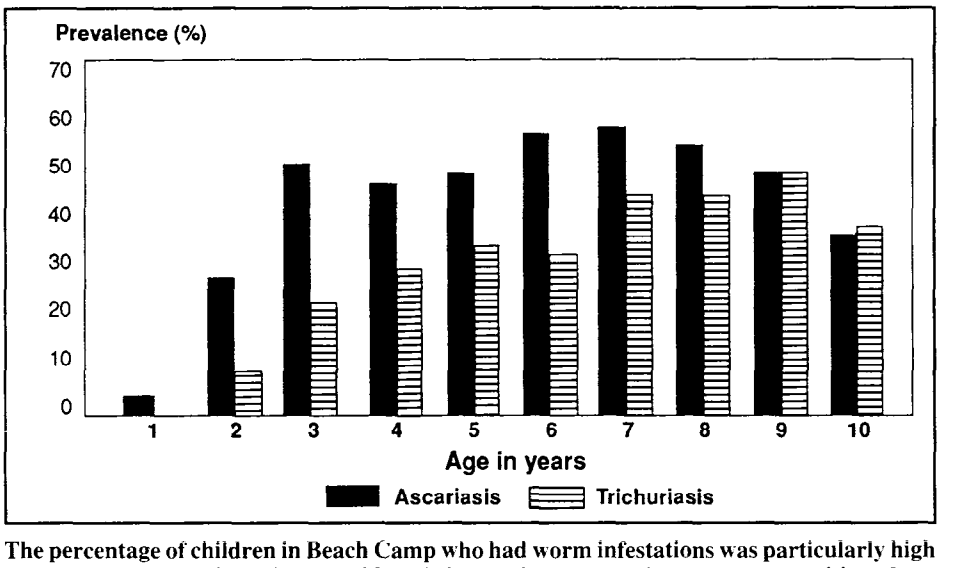
**Sewage overflows in the camp increase the risks of diarrhoea and worm infestations.**

The Gaza Strip has a population of approximately 700,000 Palestinians living on a narrow strip of land about 25 miles long and 5 miles wide. The area is part of the Occupied Territories, and lies on the east coast of the Mediterranean Sea, bordering Egypt to the south and Israel to the east. Most people are refugees, with over half living in seven camps administered by the United Nations Relief and Works Agency.

The vast majority of people living in the refugee camps have access to both a piped water supply with a tap in their house or yard (98 per cent) and some kind of latrine (97 per cent). However, infestations by roundworm (*Ascaris lumbricoides*) and whipworm (*Trichuris trichuria*) are endemic (the latter having a known association with persistent diarrhoea). In 1988 a study was carried out to try to find out why these infestations are so common in spite of high levels of access to water and sanitation.

To start with, stool samples were collected from young children coming to the clinics in the camps. Tests on the samples showed that in all the camps up to half the children treated had worm infestations. Following this initial sampling, a community based survey was carried out in one of the camps (Beach Camp), in which infection levels were measured in children aged under 10 years. Of 447 children tested, 40 per cent had roundworm and 26 per cent had whipworm, showing a typical age prevalence pattern (see table).

Seventy-four sand samples from the camp were analysed for the presence of helminth ova (eggs), 23 from sandy courtyards and 51 from the street: 61 per cent of the yard samples and 75 per cent of the street samples contained *Ascaris lumbricoides* ova, although none contained *Trichuris trichuria*.




**The percentage of children in Beach Camp who had worm infestations was particularly high for those aged from 2 to 10 years old. This is a typical pattern in many communities where worms are a problem.**

## Investigating the problem

Environmental conditions and hygiene behaviour were analysed to find out why so many children still had worm infestations; household questionnaires included sections on house and street environments, hygiene related knowledge and attitudes, and hygiene practices of children. Some households were selected for observation of hygiene related behaviour. The results suggested that the persistence of worm infections was due to a combination of:

- **Inadequate sanitation**

Almost every house in the camp had a latrine, in some areas connected to a pit. While some pits were linked to a newly installed underground piped sewerage system, others overflowed into the street.

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These pit overflows provided a regular source of pollution and a suitable damp environment for helminth ova to survive (until they contaminated food, water or people's hands and were swallowed).

**• Seasonal flooding**

In winter during heavy rains, local flooding washed the faecal contents from latrine pits to the street surface. Piped sewers flooded the streets during these rainstorms, spreading faecal materials throughout the camp.

**• Poor disposal of faeces**

During observation, researchers saw that the faeces of young children were being deposited in household yards, either through direct defecation or through leakage from nappies. Traces of human faeces were observed in 10 per cent of the houses during the survey. Faecal remains were eventually swept or washed away – usually into the street.

## Prevention and treatment

The overflow problem can be solved by the installation of piped sewerage networks in the camps, while health education can help to improve hygiene practices. But the problem of winter flooding will be more difficult to solve in the near future. Without a storm drainage system, the sewers will continue to flood the street surface.

While infestations persist, proper treatment of infected children can reduce the harmful effects of these parasites. The study suggests that, at present, although treatment of children with anti-worm medicine is common, children who had been recently treated did not have a significantly lower prevalence of either infestation compared with children who had never been treated. This was true regardless of sex, age, education of parents and occupation of father. The most likely explanation for this is that medicine is being used incorrectly – for example, the practice of sharing out bottles of anti-worm medicine among children in a family is known to be common.

This finding highlights the need for community education about the proper use of available drugs and medicines. The option of organising general or targeted treatment should also be considered.

**Chris Smith, Project Officer, UNICEF (West Bank and Gaza Strip), PO Box 141, Shu'fat, East Jerusalem, Israel.**

*This study was conducted by Birzeit Community Health Unit in co-operation with the Gaza Red Crescent Society and the UN Relief and Works Agency.*

# Comment

## Should helminth infections be controlled by mass medication? William Cutting offers one viewpoint.

The germs that cause diarrhoea and the worms that are sometimes passed in stools both live in the human gut. These infections are transmitted from the stools to the mouth – the faecal-oral route. The most important preventive measures for both are therefore improvements in water supply, sanitation and hygiene behaviour. Two of the parasites, *Trichuris trichuria* and *Strongyloides stercoralis*, can cause watery, mucoid and even bloody diarrhoea when infestations are heavy.

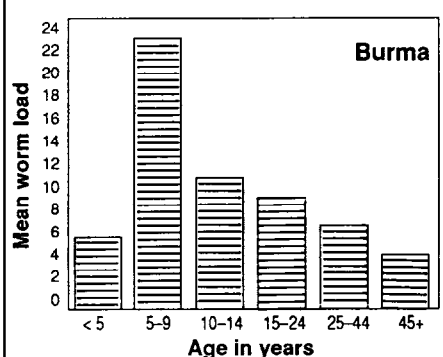
Apart from these features, the infections are different in almost every way. Worms are directly responsible for very few deaths, compared with the number caused by diarrhoea. Mortality from roundworms (ascaris) may be 1 in 100,000 children infected, perhaps 13,000 in the world each year. Acute diarrhoea infections still kill almost 4 million children each year, and have severe effects on the growth and development of many millions more.

Worm infestations are endemic in developing countries, mostly in children aged from five to ten years (see table). However, levels of infestation vary enormously from place to place. High levels are associated with poverty, poor sanitation and poor hygiene practices.

Some major health agencies have recently focused on developing medication programmes for controlling helminth parasite infections[1]. They believe that with three antiparasitic drugs (albendazole, praziquantel and ivermectin) it would be possible to give mass treatment for most of the major human helminth infections. This treatment, given once every year, could be combined with giving key nutrients, vitamin A in particular. Doing this through the school system would reduce the costs to about $1 per child per year, and it is believed that this approach would reduce malnutrition, ill health, and the number of deaths; and improve growth, development and even intellectual performance.

**The severity of worm infestations varies with age, as seen in two village communities**


*Source: Elkins et al 1986. Trans. R. S. Trop. Med. and Hyg. 80: 774-792.*




*Source: Thein Hlaing 1985. Article in Ascaris and its Public Health Significance, Taylor and Francis, London.*

## Best use of resources

Any campaign would thus be directed at school age children. However, in most developing countries it is pre-school children who suffer most ill health. Among older children, it is usually those who are not attending school who are in greatest need.

This type of approach would have some serious consequences. Money spent on such a programme might detract from investing resources in the development and strengthening of primary health care systems and even basic health care services like the provision of water supplies. WHO estimates that over two million child deaths every year could be prevented by ORT – ensuring the right use of ORT has to remain a primary objective for health services. A decision about including deworming in a child health programme should be preceded by careful surveys to find out which children in the community are at risk of infection, and therefore should be given medication. Preventive measures, which also help to control the spread of diarrhoea infections, need to be given priority.

**Dr William Cutting, University of Edinburgh, 17 Hatton Place, Edinburgh EH9 1UW, UK.**

*1. Warren, K S, 1991. Helminths and health of school age children, Lancet, 338:686-7.*

Another viewpoint on this issue will follow in a future *DD*.

## A child refusing to drink?

Oral rehydration therapy may be easier in theory than in practice. What can be done in the case of a child with dehydration from diarrhoea who cannot be persuaded to take ORS solution, and where there are no facilities for IV treatment?

**Alhaji A B Amadu, The Zonal Health Management Committee Office, Lokoja General Hospital, Lokoja, Nigeria.**

Children with definite signs of dehydration are usually thirsty; they almost never refuse to take ORS solution. The two most common explanations for refusal to take ORS solution are (i) the child is not really dehydrated or (ii) the child is too weak or lethargic to take the solution, as may occur when dehydration is severe. In a few instances the cause is severe dehydration, and rehydration should be by the intravenous route or, if this is not possible, by giving ORS through a nasogastric tube.

Giving ORS solution takes patience and time, especially if a child is weak or drowsy. A child is more likely to be persuaded to accept ORS solution from his or her mother, or someone else known and trusted. Older children, who do not have signs of dehydration, may refuse the solution because they do not like the taste. For such children, try adding a little fruit juice, or give the ORS solution alternately with plain water or with another familiar fluid that the child is more willing to drink.

## Correct recipe for SSS?

In my area there is some disagreement over how to make sugar-salt solution (SSS) for rehydration. Some doctors say that the recipe we promote (one pinch of salt to four pinches of sugar) is wrong. This confuses health workers. Can *DD* help?

**Fr Emmanuel, Operation Health 2000, 32 College Road, Nungambakkam, Madras 600 006, India.**

Teaching people how to measure out the correct amounts of salt and sugar to make home made solutions is often a problem. The amount of sugar or salt in a finger pinch can vary considerably, according to the individual's hand size and their judgement. People have tried using teaspoons, but the size of these also varies. Some programmes have promoted other standard-sized and locally available measuring devices (such as special plastic spoons or fizzy drink bottle tops).

Studies show that people are more likely to make a solution that is more rather than less concentrated than recommended. Solutions containing too much sugar and/or salt can be dangerous, and may even increase the diarrhoea.

A child in danger of dehydration needs to be given fluids. It is better to give a child as much as they will drink of a less concentrated solution than risk giving them too much of one that may be dangerous.

**Because of these problems, WHO now recommends the following quantities of salt and sugar for home made SSS: 3g (half a level teaspoon) of salt and 18g (four level teaspoons) of sugar dissolved in one litre of clean drinking water.**

WHO does not encourage the use of finger pinches or hand scoops to measure salt and sugar for the reasons given above. The recipe used in Madras appears to provide too little sugar, as one pinch (using the thumb and two fingers) equals about 0.5g of salt or sugar. Thus, four pinches would provide only about 2g of sugar (per litre of water).

## Alternatives to packets?

Diarrhoea is a major problem in our area. We use ORS packets from UNICEF. But we have not been able to teach people how to make their own oral rehydration solution because sugar is not available locally. Salt can sometimes be found in a market which is four hours' walk from us.

People do have honey available. Can honey be used instead of sugar to make a home solution for ORT? Are there any leaves that have enough natural sodium content that they could be dried, crushed and added to the drink?

**Sharon Smith, Nurse Practitioner, Box 127, Addis Ababa, Ethiopia.**

There are no widely used 'natural' substitutes for salt.

Honey can be used as a substitute for glucose or sugar as 30 to 40 per cent of honey is glucose. About 50ml of honey to a litre of water will provide the required amount of glucose for a home solution.

Cereal flour (such as rice, wheat, millet, sorghum or maize) can also be used instead of sugar to make a home made solution. Cereals contain carbohydrates which are converted into glucose in the intestine.

Make this solution by adding two handfuls of flour to a litre of water. Boil, stirring constantly, until the first bubbles appear (usually about five minutes), and then remove from the heat. The solution should not be too thick to drink. After the mixture has cooled, add two three-finger pinches of salt.

If it is not possible to get ORS packets or to make home solutions with salt and sugar or sugar substitutes, giving other types of fluids readily available in the home helps to prevent dehydration. As well as plain water, these include vegetable and pulse based soups and cooked cereal porridge.

## Different formulations?

Many families, especially in rural areas, do not think SSS and ORS solutions are appropriate treatment for diarrhoea, as they believe that tablets, capsules and syrups are the only 'real' treatment for illnesses.

I suggest that WHO and other organisations should consider developing ORS in tablet or syrup form, or making pills of the correct amount of sugar and salt which can be dissolved in a specific amount of water, so that people are more convinced of their effectiveness. What is your opinion about this?

**Bulama Abatcha, General Hospital Monguno, Monguno Local Government, Borno State, Nigeria.**

Medicines are usually bought, and given, in small quantities after a child has been sick for a few days. If ORS is perceived as a medicine, to be bought in tablet form, there is a danger that people will not give a child sufficient solution soon enough after diarrhoea starts to prevent dehydration. Tablets and other formulations may also be more expensive to produce, and therefore to buy, than ORS packets.

**It is important to teach people about the value of giving extra fluids, as well as ORS solution and SSS, at home as soon as a child has passed the first loose stools, in order to prevent dehydration.**

Oral rehydration therapy, in all its forms, enables families to take care of children with diarrhoea themselves, without having to spend money on expensive drugs.

However, ORS tablets (one tablet for 120ml, about one glassful, of water) are commercially available. The product has been registered in many countries of Africa, Asia, Central and Latin America and in the Middle East. For information contact: PATH (Program for Appropriate Technology for Health), 4 Nickerson St, Seattle, Washington, 98109-1699, USA.

## ORT success in the Soviet Union

ORT was first promoted widely in the Soviet Union for treating adults during cholera outbreaks in Astrakhan (a region in southern Russia) in the early 1970s. But, until 1985, the standard treatment for childhood diarrhoea was an intravenous drip. Doctors advised withholding food to 'rest the bowel' and often prescribed antibiotics. Since 1985 the Institute of Epidemiology, together with the health authorities, has set up ORT units in city hospitals and local children's clinics, in rural hospitals and health facilities, and they have also promoted home treatment. Health workers at different levels are being trained, and TV and radio broadcasts used to educate health workers and parents about ORT.

Analysis of 250 case reports from the Regional Infectious Clinical Hospital's ORT Centre showed that most cases were in children under a year old who were given artificial milk alone or in combination with breastmilk. Four fifths of patients were treated at home with WHO formula ORS solution, and the vast majority recovered within two or three days.

An evaluation of the ORT centres after five years shows that:

- ORT is effective for in-patients;
- ORT units had been set up in all outpatient departments;
- hospital admissions for diarrhoea had decreased; and
- most mothers are aware of ORT and correct feeding practices.

But some actions are still needed:

- health workers and doctors need more training on ORT, as many of them are still using intravenous drips unnecessarily, and on correctly diagnosing the degree of dehydration; paediatricians often use ORS only to prevent dehydration or during recovery, not to treat dehydration;
- the supply of ORS packets should be improved to meet actual needs;
- the use of antibiotics, especially in rural areas, as a first-line treatment for acute diarrhoea should be discouraged;
- breastfeeding should be more vigorously promoted.

Learning about oral rehydration at the ORT centre in one of the hospitals in Astrakhan, Soviet Union.

Institute of Epidemiology, Astrakhan

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## USA learns ORT lessons

Diarrhoea is not just a cause of child death in developing countries. In the USA, 500 children under five die every year from diarrhoea – one every 18 hours. Many of these deaths occur in poor communities with inadequate sanitation. More than 200,000 children are taken to hospital with dehydrating diarrhoea every year. Intravenous therapy is the standard treatment. This usually means several days in hospital, but in spite of this, studies showed that half the children who died of diarrhoea did so in hospital. This may have been because parents did not take the child to hospital soon enough or gave the child inappropriate fluids at home.

Most of these deaths could be prevented if oral rehydration therapy (ORT) were to be used. ORT has other advantages which are as relevant to the USA as to developing countries:

- it is easy to give, at home as well as in hospital;
- it is inexpensive;
- it reduces the need for admission to hospital, thus reducing the costs to the national health budget and to families.

Various organisations are co-operating to form the National ORT Project, to promote the use of ORT in the USA. Dr Mathuram Santosham of Johns Hopkins University campaigned ten years ago to promote ORT in a Native American Indian community in Arizona, USA, and child diarrhoea mortality there was reduced to almost zero. He comments: 'We have been behind in introducing this therapy. We ought to catch up with the developing world.'

The cost in the USA of commercially available ORS, or ORT solutions (premixed fluids), is however very high. One litre costs between $4 and $6, and a dehydrated child usually needs at least 4 litres. Reducing the cost would make promotion of ORT much easier. Johns Hopkins Hospital has started to give people less expensive ORS packets based on the WHO formula, and has found that these are acceptable to families and correctly mixed, if proper education is given.

Health staff resistance to using ORT quickly disappeared, when they found that the time it takes to explain ORT to a family is far less than the 12 hours or more needed to rehydrate a baby intravenously.

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