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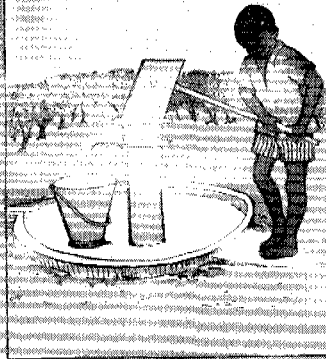
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Hygiene Education in Water Supply and Sanitation Programmes

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IRC is concerned with knowledge generation and transfer and technical information exchange for water supply and sanitation improvement in developing countries. The emphasis is on innovative approaches to prevailing problems. The target groups are management and technical staff concerned with planning implementation and use of water supply facilities in rural and urban fringe areas.

The centre works together with partners in developing countries, United Nations organizations, bilateral donors and non-governmental organizations. Its multidisciplinary staff provides support through development and demonstration projects, evaluation and advice, training and education, publications, and general information exchange.

Activities integrate technical and non-technical issues in water and sanitation and include community participation particularly the role of women, hygiene education, appropriate technology, operation and maintenance, community-based financial management, and development of technical information exchange.

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Sanitation Programmes*

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**HYGIENE EDUCATION IN WATER
SUPPLY AND SANITATION
PROGRAMMES**

*literature review with
selected and annotated bibliography*

Lizette Burgers, Marieke Boot
and Christine Van Wijk-Sijbesma

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Abstract

Based on more than 550 documents, this literature review together with the selected and annotated bibliography give an overview of current knowledge and experience in hygiene education in community water supply and sanitation projects. The review covers a range of documents including unpublished reports and other material of limited access. Aspects covered include importance and purpose of hygiene education, various target-groups, changing hygiene related behaviour, approaches to hygiene education, organization and cost of programme, manpower and training require, use of audio-visual tool, and school hygiene education. A range of abstracts have been included to facilitate access to information on trends, experience and constraints in hygiene education in the sector. The book is intended primarily for those involved in public health, primary health care, and community health in relation to water supply and sanitation. It may serve to introduce the subject to project field staff and provide background information for researchers, trainers and students.

Keywords: hygiene education; target groups; behaviour changes; approaches; programme organization; costs; manpower; training; audio-visual tools; school hygiene education; bibliography.

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Preface

The mere provision of improved water supply and sanitation facilities is not a guarantee for decisive improvements in community health. This is one of the major lessons of the International Drinking Water and Sanitation Decade (1981-1990) proclaimed by the United Nations. The Decade goal has been to provide everyone with sufficient, safe and easily accessible drinking water and sanitation. This is a precondition to achieving a further United Nations goal of Health for All by the year 2000. Improved health from water supply and sanitation facilities can only be expected when accompanied by improved hygiene practices. Therefore attention is being increasingly directed to hygiene education activities to change attitudes and behaviour in order to break the chain of disease transmission associated with inadequate levels of hygiene and sanitation.

In this literature review and annotated bibliography we have endeavoured to present an overview of current knowledge and experience in hygiene education. Quotations and abstracts from individual studies have been incorporated throughout the document. A range of abstracts has been included in the annotated bibliography to facilitate access to information on key aspects of hygiene education including trends, experience and constraints. Reference numbers of the abstracts are printed in bold in the text and reference list.

The book is intended primarily for all those concerned with public health, primary health care and community health in relation to water supply and sanitation. The aim is not only to provide a wide audience with the state-of-the-art but also to stimulate developments in hygiene education as well as further research to increase its effectiveness. The book may also serve as an introduction to the subject for project staff especially at field level. Researchers, trainers and students may find it a useful and easy reference for background information.

As hygiene education within the context of water supply and sanitation projects is relatively new, this review has not been limited to the comparatively few specific studies on this subject. Instead, it encompasses a range of unpublished reports and documents of limited access, often referred to as grey literature. Within the IRC documentation holding some 160 titles related to health and hygiene education were found, including project proposals and reports, case studies, training materials, guidelines, baseline studies, journal articles and proceedings of conferences and seminars. More than 400 documents were reviewed as a result of a request for information in the IRC Newsletter and

an extensive mailing survey to 80 projects and individuals having particular expertise and experience.

In spite of the number of documents reviewed, information on hygiene education was found to be fragmented and limited in comprehensiveness. There is an abundance of information on specific topics, such as village level health workers, the role of women in family hygiene and the use of audio-visual aids. Yet information is seriously lacking on planning, implementation, impact and cost-effectiveness of hygiene education programmes. Also, more information is available on hygiene education activities in water supply than in sanitation projects, and on rural areas than on urban areas.

The content of the review draws heavily on the knowledge and experience of many people involved in community water supply, sanitation and health. We wish to thank all those organizations and individuals who responded so readily and enthusiastically to the mailing survey and request for information in the IRC Newsletter. We also gratefully acknowledge the inputs from the Netherlands Advisory Group on Hygiene Education whose enriching views contributed to the development of the book. The members of this group are: Drs. M. de la Bey, Ir. H.P.J. van Schaik and Dr K.G. Wit from the Directorate-General for International Co-operation; Ir. A.G.N. Jansen from the National Institute for Public Health and Environmental Protection; Dr E. van Praag from the Royal Tropical Institute; and Ing. C. Butijn and Ir. B. Huizinga from the Wageningen Agricultural University.

Grateful mention is made of the following persons for reviewing the draft document: Mr F. Hartvelt and Mrs M. Mauerstein-Bail, UNDP, New York, USA, Dr J. Hubley, Leeds Polytechnic, UK; Dr Nyi Nyi, UNICEF, New York, USA, Mr G. Schultzberg, WHO, Geneva, Switzerland, and Drs. J. Steenhuis, Public Health Consultants, Amsterdam, The Netherlands.

Many people at IRC have assisted in numerous and varied ways to the preparation and production of the manuscript. We are very grateful for all their help and support. Special thanks are due to Mr J.T. Visscher for his advice and encouragement and Mrs H.J. West for editing of the text.

Summary

Water and sanitation related diseases such as various types of diarrhoea, worm infestations, skin and eye infections and vector-borne diseases account for most of the morbidity and mortality in developing countries. Water supply and sanitation programmes generally aim to reduce these diseases and thus to contribute to improving public health, to reducing curative health costs and to decreasing production losses due to poor health and illness. Until recently the main emphasis was on the provision of improved facilities. However, it is increasingly being recognized that additional changes in hygiene conditions and behaviour are also required to reduce the multiple transmission routes of water and sanitation related diseases. Hygiene education aims to address these changes and thus to provide the essential link between improved facilities and practices.

This literature review and selected and annotated bibliography which is based on more than 550 documents, gives an overview of current knowledge and experience in hygiene education. Although many project documents and policy papers stress the need to integrate hygiene education in planning and implementation of water supply and sanitation projects, inputs are often limited and many programmes suffer from being inadequately planned, funded and implemented. Often more comprehensive efforts have not been evaluated or recorded for a wider audience with the result that still little is known about hygiene education programmes in relation to cost, manpower, organization, and possible impact.

There is an urgent need for a more comprehensive record of hygiene education experience which at present is lost to ongoing and future projects. More attention needs to be given to the planning, implementation and evaluation of hygiene education as an integral component of water supply and sanitation programmes. Effort should be made to set realistic hygiene education objectives and to provide the necessary funds, manpower and time. Monitoring and evaluation based on key indicators and valid measurement methods should be a regular programme activity to demonstrate and maximize the potential of hygiene education and to safeguard funds. Comparative evaluation is needed on various approaches to hygiene education in relation to the cost, organization and manpower involved to increase its cost-effectiveness and to allow for more realistic assessments of possible impact. For the further development and implementation of hygiene education, curricula development and training courses are urgently needed for all levels of manpower, including community level workers, project staff, trainers, planners and policy makers. Government

commitment and inter-sectoral co-operation will be needed for the development of sector plans and division of responsibilities and tasks of the various departments to allow for integrated improvements in water supply, sanitation and health, making economic use of limited resources.

Areas of focus

The focus of hygiene education is establishing links between water and sanitation facilities on the one hand and human practices on the other hand, especially with regard to the use, care and maintenance of the facilities; the preservation of water safety and its use in sufficient quantities; and the safe disposal of wastewater, human and other solid waste.

Adoption and use of improved water and sanitation facilities is a prerequisite for health benefits from new and improved facilities. Hygiene education has been shown to be instrumental in getting facilities adapted to the needs and conditions of the users, to ensuring their exclusive use, and to providing for their upkeep and maintenance. Hygiene education can also help to prevent recontamination of water between collection and use, and to stimulate the use of sufficient quantities of water for personal and household hygiene. Safe wastewater disposal is another important aspect of health education, also because improved water supplies often create additional wastewater problems and thus new health risks. The fact that most water and sanitation related diseases are transmitted faecally-orally demonstrates the importance of safe disposal of human waste. Thus a major concern in hygiene education is the integration of sanitation improvements in water supply and sanitation projects.

Definitions and objectives

Hygiene education may be defined as all activities aimed to change attitudes and behaviour in order to break the chain of disease transmission associated with inadequate hygiene and sanitation. As such, hygiene education is part of the wider concept of health education which is any combination of learning experiences that facilitate voluntary adaptation of behaviour conducive to health.

The objectives of the hygiene education programmes reviewed varied from narrow and short-term objectives, such as the promotion of hand-washing with soap, to broad and long-term objectives differing little from the general objectives of water supply and sanitation projects themselves. Hygiene education programmes would benefit from more precise and measurable formulation of objectives leading to more realistic project inputs, implementation and evaluation.

Potentials and limitations

It would seem that hygiene education can be instrumental in bringing about desired health improvements only when certain conditions are met and realistic targets set. Thus, hygiene education programmes which are poorly funded, staffed, planned and implemented are unlikely to achieve their objectives.

Further, to ensure that new water supply and sanitation facilities are used and maintained, projects will have to be prepared to make changes in their own technical design and procedures, instead of demanding that only the users adapt their behaviour through hygiene education.

Target groups

A careful assessment of the various target groups within a project area will help to ensure that hygiene education programmes reach all relevant groups, and to prevent the risk of reaching foremost those with a higher income, more education and wider external contacts. Programmes which worked directly with target groups with the greatest needs and programmes which differentiated their activities according to the needs and the potentials of the various target groups in the community generally met with better results than more general programmes.

Most hygiene education programmes tend to focus on women because they are primarily responsible for the family and for water management and sanitation. Yet, the involvement of men is equally important because women's programmes usually require their support, and improvements at home and at the water source are often their responsibility. Men also have a personal interest in the well-being of their families as husbands and fathers.

School-aged children are increasingly being recognized as an important target group in hygiene education because they are a vulnerable group and because they are the generation of the future. Yet many children, often more girls than boys, do not attend school or leave school at an early age. However, in the literature survey only a few hygiene education programmes for children not attending school could be found.

Technicians and caretakers are frequently referred to as specific target groups because of their direct contact with user groups. However, training is needed to ensure that caretakers become effective health communicators. Particularly as most of them are men and mainly concerned with the technical aspects, whereas primary users are women.

Adoption of new facilities and practices

New facilities and practices are more likely to be adopted when target groups are involved in identifying and setting hygiene education priorities. There is clear evidence that behavioural changes are influenced by a number of factors other than health considerations. The main incentives tend to be affordability, making

life easier and solving a felt problem. Well constructed, conveniently functioning facilities, accessible to all, are more likely to be used in the desired way. Changes in behaviour may be brought about by incentives such as time gain, economic gain, or increased status. Rewards and punishments are also reported to have influenced people to adopt certain practices, usually not for long, however.

Further, the success of a hygiene education programme depends on the extent to which it builds on existing cultural values, and on the practical understanding of health and disease transmission of the target group. Respected key persons in the community may contribute greatly to promoting behavioural change by their example and programme support.

Approaches

Three broad approaches to hygiene education can be distinguished from the literature study. The most frequent, but probably least effective, appears to be the didactic approach by which target groups are instructed to adopt certain practices in order to overcome hygiene related problems as identified by the project agency. The effectiveness of such programmes depends largely on the extent to which these solutions meet the urgent needs and available means of the target groups.

The promotional approach, of which social marketing is the most common example, is characterized by careful consideration of target group needs and preferences. Nevertheless, the objectives and contents of the hygiene education programme are largely determined by the project agency. This is a realistic approach to address single, widespread and urgent health risks. Large numbers of people can be reached in a short period and at relatively low cost. For more complex behavioural changes, this approach appears to be less effective because more active community involvement is needed for sustained impact.

The participatory approach aims to create conditions to help people to solve their own problems. The objectives, contents and methods are determined as far as possible by the target groups in dialogue with the educator and by means of community self-surveys and evaluation. Although reportedly quite successful, the long term effects of this approach have never really been assessed. Because of the greater flexibility required and high demands on the social and technical skills of the educators, this approach is seldom used in large-scale programmes.

The potentials and limitations of both the promotional and participatory approaches need to be investigated further including the extent to which it would be fruitful to combine these two approaches. More information about their short and long-term cost effectiveness would enable programmes to make better use of limited budgets.

Organization

Hygiene education programmes may be organized in a number of ways. In many water supply and sanitation projects, hygiene education is organized as part of the technical programme. Activities are undertaken by technical field staff or project health educators, whether or not assisted by community level workers. While having the advantage of easy communication between project staff, this organizational set up also has disadvantages. Educational and technical activities may have different time spans, thus creating problems in matching activities. Often priority is given to technical aspects because of the greater prestige involved, or confusion and competition may develop with staff from the regular health services.

The need for closer co-operation between technical and health services is increasingly being recognized in a number of projects. This is mainly because of the need for more economic use of limited resources, greater efficiency in implementation and continuity of activities after construction of facilities. For these purposes interdepartmental bodies have been set up in a number of countries. However, to achieve greater co-operation, more government support at policy level and training of staff to work in a multidisciplinary setting are also required.

Potentially, primary health care programmes provide excellent opportunities to integrate hygiene education in water supply and sanitation, particularly when a more participatory approach is used. Provided higher priority and prestige is given to preventive health, more training and supervision is given to primary health care staff and higher budget allocations are made for programme implementation, hygiene education can be effectively incorporated in primary health care programmes. More experience and research will be needed to determine the conditions which yield the best results.

Mass campaigns for hygiene education have also been organized, either in isolation or as part of an ongoing programme. These campaigns usually generate great enthusiasm, both in the target groups and agency staff, and because of their dramatic short-term results attract funding more easily. However, they also place an enormous demand on available manpower and other resources, thus hampering the continuity of regular programmes. Further research may indicate how campaigns can be used most effectively.

Cost and cost-effectiveness

There is a surprising lack of cost data on hygiene education and what data are available are generally difficult to interpret. The proportion of project budgets reserved exclusively for hygiene education tends to range from 2 to 9.5% with varying proportions being spent on training, materials, and implementation.

Even less data are available on cost-effectiveness. There is an indication

that expenditure on non-technical activities may contribute to reducing overall project costs, particular for maintenance. International and bilateral donor agencies have recommended that spending on non-technical aspects be at least 5% of the total investment. For low cost programmes, this would be more because community commitment and inputs are expected to be much higher.

Support to hygiene education programmes could be increased if more accurate data were available on the costs, cost definitions and cost-effectiveness of individual programmes. An increasing number of water use and hygiene practices studies are being carried out on the combined effects of technology and hygiene education programmes, but they are not yet sufficiently linked with descriptions of the processes, the organization and finances underlying the results. Good indicators and valid measurement methods should also be established and disseminated to increase the comparativeness of individual programmes so that generalizations on hygiene education can be made more easily and firmly than is at present possible.

Manpower

Little information is available on ministerial level staff responsible for planning and organization of hygiene education programmes. Shortage of staff at this level is reported to be a common and serious obstacle to hygiene education development. However a number of efforts are reported to familiarize high level staff with integrated water supply and sanitation programming and to establish a structure for interdepartmental co-operation. These efforts need the backing of explicit government policies and measures for policy implementation.

At project level, field technicians, public health workers, and project hygiene educators may be involved either directly or indirectly in planning and implementation of hygiene education. Where project level staff work through community level workers, their primary task is to support them actively in hygiene education implementation, to co-ordinate training, and to liaise for technical and/or financial assistance.

Irrespective of the approach and organizational set up, community level workers are the main group of hygiene educators. They may be volunteers, semi-volunteers remunerated by the community, or health staff from local health centres. Sometimes, local caretakers are given promotional and educational tasks.

In a number of programmes, community level hygiene educators have also been involved in technical improvements. Often they are supported by community committees who provide motivational, organizational, and logistic assistance. Both community committees and workers have been reported to become demotivated and inactive without regular contact with higher level staff. Continued and active project support to local hygiene education is required.

Methods and criteria used to select suitable voluntary hygiene educators vary from country to country. Ability and motivation together with acceptance by the community seem to be universal criteria. Selection of suitable candidates is often best left to the target groups. Some guidance may be needed to prevent candidates being selected who do not remain in the community, who are too closely involved in local politics, or who do not have the respect or support of the majority of the target group.

The training period for voluntary hygiene educators may vary from a few days to several months. Special provisions may be needed to give equal training opportunities to men and women. In many countries the shortage of trained trainers, especially in the participatory approach is felt to be a serious constraint. Some interesting efforts to address this problem need to be made more widely known so that other programmes can benefit from this experience. Also, a number of educational and training materials have been prepared that may help to close this gap.

Lack of motivation and unclear task description of community level workers especially for volunteers is a serious long-term problem in many programmes. Lack of recognition, compensation and remuneration and ongoing programme support all threaten their sustained dedication. Long-term solutions have to be found to these problems. Remuneration especially is a matter of serious concern and should not be left to the community alone. In some countries trials are underway to increase recognition through linkage of hygienic education to curative health services and/or technical advice. These and other alternatives deserve further attention.

Audio-visual tools

Development of audio-visual materials is a popular and much emphasized component of hygiene education programmes. The effectiveness of such materials very much depends on how they are used. They can be very helpful in motivating and activating an audience, but they are no substitute for group discussions and activities. However, audio-visuals are often used not as a tool but as an end in themselves. There is a widespread misunderstanding that hygiene education is synonymous with the use of audio-visuals. One of the undesired effects is that their production and distribution frequently takes a large proportion of project time and budget.

Although often not met, a number of conditions govern the effective use of audio-visuals. These materials must actually reach the intended target groups, be of interest and relate to their felt needs. Both the materials and the messages must be clearly and easily understood. The best way to achieve this is to involve target groups in the development and preparation of materials appropriate to the local situation. Pretesting will help to prevent costly mistakes being made. The

selection of appropriate types of audio-visuals will be influenced by the intended messages, resources available and environmental conditions. Useful guidelines exist on how to design and test audio-visual materials.

School hygiene education

Schools have a role to play in imparting hygiene information and in altering hygiene practices both at school and at home. A favourable condition for hygiene education at schools is that in developing countries the budget for primary education is often higher than for health services, and there is a wider distribution of schools and teachers. However, in many countries school hygiene education is still far from being a regular and integrated component of primary school curricula. Further, the type of hygiene education, if given at all, differs widely between and within countries.

Hygiene education usually takes the form of classroom lecturing. Little attention has been given to measuring the impact of classroom learning on actual hygiene knowledge and practices of the students. In some cases hygiene education is combined with improving school hygiene facilities and practices. Other schools also have out-reach programmes whereby pupils participate in community environmental sanitation programmes and are encouraged to influence hygiene practices of siblings and parents. Alternatively, water supply and sanitation programmes sometimes include school hygiene education in their activities.

School hygiene education is usually the task of primary school teachers, and occasionally of health staff. Lack of trained teachers is still a serious limitation to effective school hygiene education. In the last few years more attention has been given to this problem. In a number of cases teachers training institutions have been linked to water, sanitation and primary health care agencies, often with UN agencies support.

For the further development of school hygiene education, the high level support from the ministries of health and education is required to arrive at not only clearly defined policy and inter-sectoral co-operation, but also for curriculum development, including teaching aids, training and evaluation.

1. Importance and Purpose of Hygiene Education

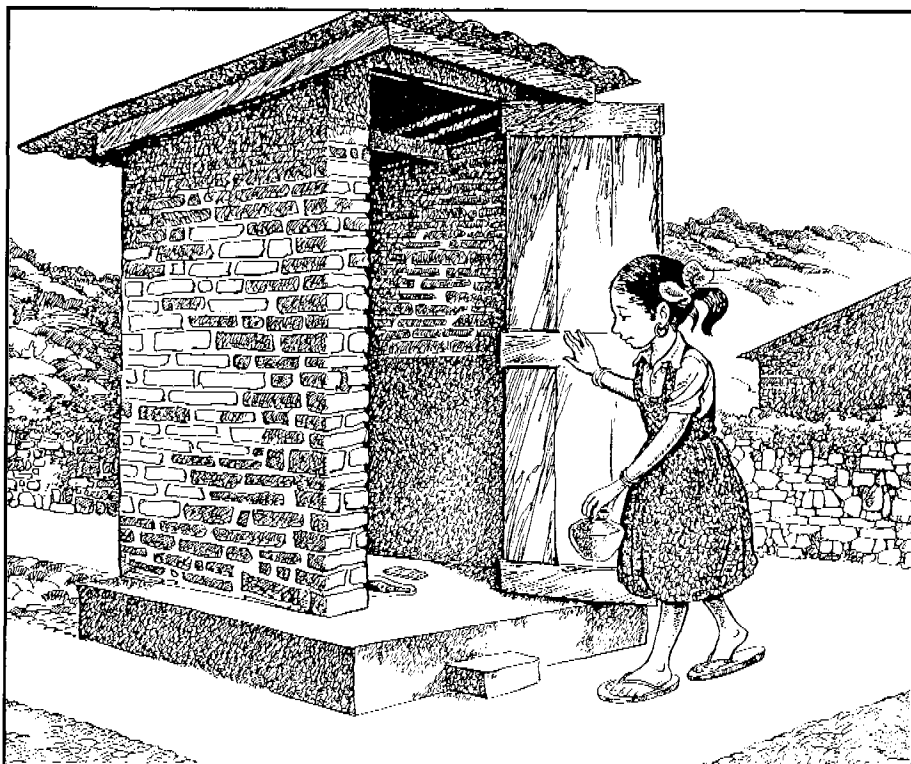
Water and sanitation related diseases such as various types of diarrhoea, worm infestations, skin and eye infections and vector-borne diseases account for most of the morbidity and mortality in developing countries. Water supply and sanitation programmes generally aim to reduce these diseases and thus to improve public health, reduce curative health costs and decrease production losses resulting from poor health and illness. Until recently the main emphasis was on the provision of new and improved facilities. However, it is increasingly being recognized that additional changes in hygiene conditions and behaviour are also required to reduce transmission routes of water and sanitation related diseases (59). Hygiene education addresses these changes and thus aims to provide the essential link between improved facilities and user practices.

1.1 Areas of focus

The need to integrate hygiene education in planning and implementation of water supply and sanitation projects is abundantly clear from many documents (13, 148, 242, 527, 528, 535, 563). The focus for hygiene education is establishing the link between facilities and practices with regard to the use, care and maintenance of facilities, use of safe water in sufficient quantities, and the safe disposal of wastewater, human and other solid waste.

Use of facilities

Even the mere use of improved facilities, a prerequisite for improved health, cannot always be taken for granted. Reported barriers to use of a new water supply include distance from the household, colour and taste of water, and mode of operation of the pumping device or tap. Limited access to the improved water supply because of seasonal migration and exclusion of some user groups for socio-economic reasons are other reported limitations to the general and exclusive use of improved facilities. There are also numerous examples of non-acceptance and non-use of improved sanitation facilities for socio-cultural, economic and functional reasons. In such cases the evaluation of hygiene behaviour has been instrumental in adapting the design of facilities to needs and conditions of users and in improving user practices (15, 20, 69, 91, 108, 139, 140, 282, 346, 355, 356, 478, 511, 571).



Use of improved facilities as focus for hygiene education, Nepal (Flip chart: UNICEF/HMG Nepal).

An evaluation of a water supply project in Guinea Bissau showed that new facilities were rejected because the lifting device - a footpump - was not considered to be appropriate for women to use. When at the request of the local population these pumps were replaced by hand pumps, the new facilities were accepted. A positive relationship was found between the number of visits made by the promotional team and the actual use of the new water supply. In one place the new well which had to be constructed some distance from the village initially was not used at all. But after several visits of the promotional team, almost all women began taking water exclusively from this well (502).

Water quality

Water quality control is another area of focus for hygiene education. The literature survey revealed many examples of safe water from an improved supply

becoming re-contaminated before consumption. At the source dirty water is sometimes used for priming hand pumps (412). Other health risks include collection and storage of drinking water in open vessels and in vessels which are not cleaned regularly, use of communal cups to draw water, and hands touching the water during collection, storage and use (21, 37, 63, 90, 92, 146, 154, 175, 189, 199, 253, 282, 302, 317, 323, 355, 356, 444, 500). Levels of E.coli in water samples taken at the source and in collection and storage vessels have confirmed contamination resulting from such practices (90, 146, 154, 301, 302, 317, 428, 469).

In Botswana, of 500 water samples taken from boreholes, 425 or 85% showed no faecal contamination. Yet, almost all water samples taken from household storage vessels were grossly contaminated (14). A study in Guatemala showed that, although 97% of the water samples collected from the piped distribution system were free of coliform, only 65% of the samples from home containers had acceptable levels of coliform (480).

Contamination with chemical or carcinogenic substances can occur as a result of harmful storage practices. High concentrations of nitrate have been found in water stored in large tree trunks in Sudan. In parts of Tanzania and Sudan the risk of carcinogenic pollution of drinking water is high because of tarring of leather bags and containers used for transport and storage (252, 253).

A number of studies indicate that hygiene education can be instrumental in reducing the risk of disease transmission through water quality control. A participatory and locally specific hygiene education programme in Tanzania resulted in a substantial improvement in drawing and storage of drinking water from hand pumps. Of the 38 households which previously used unhygienic methods, 34 changed their methods. There was a clear relationship between participation in local health discussions and improvement in handling drinking water. Thirty of those who had altered their practices had participated in one or more of these discussions (466).

As a result of an experimental hygiene education programme in ten villages in west Nigeria, nine villages adopted some form of guinea worm control. Prevalence of the disease was less than 5% in the five villages with new wells. In the other villages where filtering and boiling of water was a reported practice, prevalence was less than 10%. While less than 20% of inhabitants were infected in those villages claiming that persons having the disease avoided using the water source. This in contrasts with the range of 30-70% prevalence in neighbouring villages (15).

Water quantity

Several studies show that use of adequate quantities of water may be even more important in preventing water and sanitation related diseases than the quality of the water used (152, 213, 336, 518). The use of adequate quantities of water for personal hygiene, handwashing as well as for food and kitchen hygiene may contribute largely to the prevention of transmission of diarrhoea, skin and eye infections and louse-borne infections (28, 153, 563). Studies on the spread of diarrhoea in Bangladesh indicated that personal and community hygiene education plays a more significant role in preventing cholera than does the provision of water facilities (178, 274).

Some studies indicate that more water is used after construction of improved water supplies (119, 282, 469), yet other studies report no significant increase (154, 473, 518). This may stem partly from unreliable or incomplete measurement of water collection and use practices (563). Customary use of small amounts of water, high cost of water, lack of time and means of transport and shortage of storage vessels, have all been given as reasons for household water use not increasing after the supply has been improved (8, 118, 146, 572). In such cases hygiene education may help to identify and address the underlying reasons for more water not being used while at the same time promoting greater use.

There are indications that handwashing after defaecation and before food preparation deserves special attention. Several studies suggest that better handwashing may lead to a considerable reduction in diarrhoea morbidity (28, 31, 152, 178, 208, 274, 480). A study in urban areas of Bangladesh revealed a relationship between handwashing of mothers before handling food and the incidence of diarrhoea in children under six years of age. After a hygiene education programme improvements in handwashing practices were noted and the incidence of diarrhoeal diseases dropped (103). The importance of handwashing with soap or an effective local substitute in preventing the spread of diarrhoeal diseases has been demonstrated:

In a controlled experiment in Bangladesh, soap and earthenware water storage pitchers were supplied to a group of households with confirmed cases of shigellosis. Health workers explained the need for handwashing and monitored hygiene practices. Spread of infection was significantly lower in the study households (10.1%) than in the control group (32.4%). The greatest difference (over 40%) was found in the group of children under five years of age, probably because they were hand fed by their mothers who apparently unconsciously spread infection if they have not washed their hands before handling food (274).

Wastewater disposal

Safe wastewater disposal is another area of focus for hygiene education, especially because improved water supplies often create new wastewater

problems and thus additional health risks. Inadequate drainage of domestic water supplies and lack of wastewater disposal can create new breeding places for mosquitoes and other disease-transmitting vectors. Improved water supplies provided without adequate drainage increased the population in India at risk to filariasis to 304 million, including 22 million microfilaria carriers and 14 million diseased cases (391). The risks of malaria and hookworm have also increased, especially in arid areas (300). Hygiene education has been instrumental in preventing stagnant wastewater around wells, pumps and taps especially in rural areas. In most cases use of wastewater for vegetable gardens and cattle watering has been promoted (63, 478, 502).

Human waste disposal

The fact that most water and sanitation related diseases are transmitted faecially-orally demonstrates the importance of hygienic disposal of human waste. An evaluation by Esrey and Habicht (147) of all published studies since 1950 for a relationship between water, sanitation and health indicates that improving excreta disposal facilities may be more effective than improving water supplies in lowering diarrhoeal morbidity and mortality. Combined water supply and sanitation improvements have more impact on health than either improved water supply or sanitation alone (573). A major concern in hygiene education is therefore the integration of sanitation improvements in water supply projects. Sanitation improvements tend to be a slow and difficult to achieve (56, 491, 492).

In India, rural sanitation lags far behind the rural water supply programme. Although an integral part of earlier plans, rural sanitation has not been successful because it has been pursued in isolation and in the general development programme (498).

Many water supply programmes now include the promotion of construction, maintenance and use of latrines, as in Bangladesh (39, 177), Guatemala (71, 479), Honduras (500), India (371, 398), Kenya (355, 356), Indonesia (128), Maldives (346), Nepal (307, 477, 550), Nigeria (56, 490), Pakistan (343) and Tanzania (472, 551, 552). In some projects, latrine construction by the community has even been made a precondition to receiving water (56).

In the Nawal Parasi Hill Project, Nepal drinking water systems were only implemented after every household had constructed a latrine. Latrine construction was seen as an organizational test for a village. Local leaders able to mobilize their communities to build latrines were expected to be better able to manage the construction and maintenance of their water system (550).

A number of projects report that latrine construction is easier to achieve than latrine use. Therefore special emphasis in sanitation improvements is needed in hygiene education and motivation. In an urban sanitation programme in Nepal, hygiene education was combined with latrine construction from the beginning. The programme started with an awareness campaign on the relationship between sanitation and health. Only when people were convinced that action should be taken, did health workers start to discuss appropriate latrine options. All households made their own choice before construction started (307).

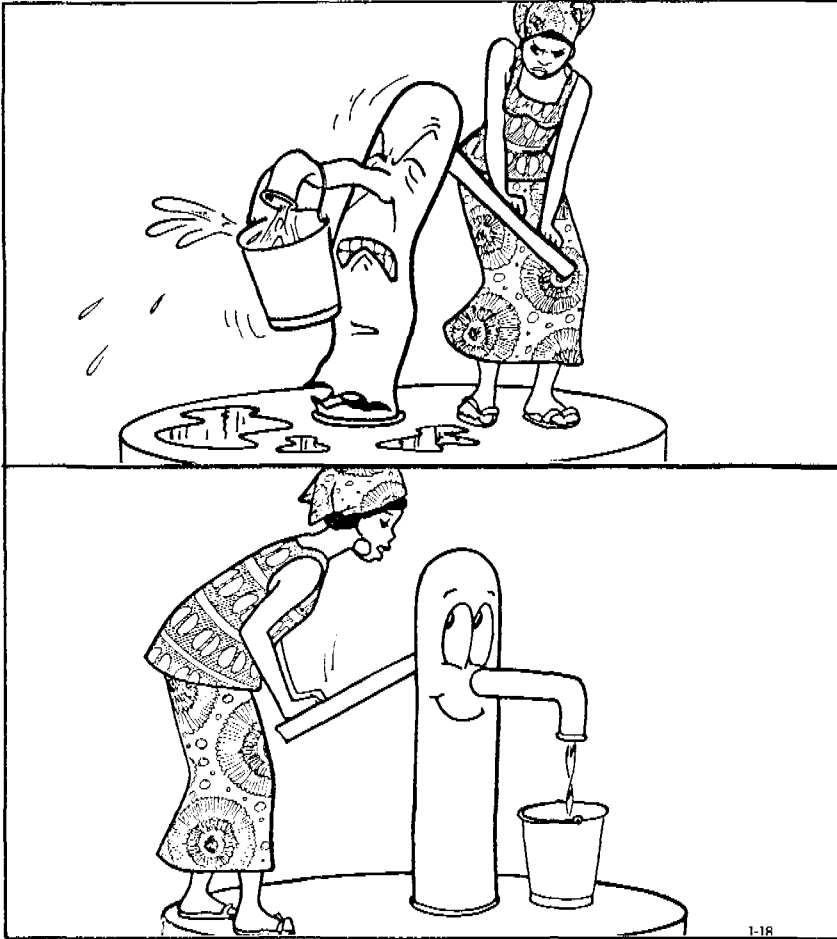
There is also a need for hygiene education to stimulate the proper use and maintenance of sanitation facilities. An extensive study in seven countries showed that latrines may have a negative health effect if not properly used and cleaned (574). Also, adequate disposal of the faeces of infants and small children calls for particular attention. Contrary to popular belief, the level of disease organisms is higher in the faeces of infants than adults (178).

A village hygiene education programme in Tanzania greatly contributed to improving latrine hygiene. Whereas beforehand 54 latrines were observed not to be clean, after the programme this number dropped to only three. The proportion of latrines fitted with fly-covers increased from 51% to 92%, with all but one observed to be in place. Many makeshift covers (for example, a piece of a pot) had been replaced by proper covers with a handle (466).

Care and maintenance

The breakdown rate of improved facilities is still alarming (152) and creates serious health risks because people are forced to return to former, often unhygienic facilities (44a, 552). Hygiene education has been shown to be instrumental in demonstrating the links between care and maintenance of facilities thus reducing potential health risks (64, 185, 323, 331, 417).

The participatory approach to hygiene education followed in the Tanzanian Rural Water Supply Programme was evaluated. Linkage of hygiene education to water projects was found to be very important in stimulating local hygiene improvements. The hygiene education component also contributed to better village maintenance (466). In the Bangladesh rural water supply sanitation programme, initiative for repairing tube wells was increased with greater health awareness of both men and women. The education campaigns made households more maintenance minded (16). In Samoa health education linked to the traditional women's organization resulted in improved care of waterpoints and collection of funds for maintenance (418).



Hygiene education may contribute to careful use of facilities, Burkina Faso (CIEH, Geohydraulique, and Cinam, 1983).

1.2 Definitions and objectives

Hygiene education may be defined as all activities aimed to change attitudes and behaviour in order to break the chain of disease transmission associated with inadequate hygiene and sanitation. This wide definition allows for the inclusion of activities such as campaigns to reduce fly breeding, latrine construction programmes, and promotion of desirable behaviour including handwashing (235). The definition also indicates that hygiene education is not necessarily

limited to water supply and sanitation programmes but is an important component of primary health care and other such programmes. In fact, hygiene education is part of wider health education which encourages behaviour that promotes health, prevents illness, cures diseases, and facilitates rehabilitation (533).

In its broadest context hygiene education may benefit from the widely acknowledged definition of health education developed by Green (189), as "any combination of learning experiences which facilitate voluntary adaptations of behaviour conducive to health". One of the most distinguishing characteristics of health education is the voluntary participation of the group or individual (for example, user of the facility) in determining their hygiene/health practices. The preconditions are that people must experience the need to change their habits, as well as have the resources, materials and skills required to improve their environment (189).

Health or hygiene education concerns voluntary choice of behaviour patterns, and this implies active participation of individuals and groups in the process of change. This is reconfirmed in many water supply and sanitation programmes in which community participation is perceived as being essential (86, 155, 176, 188, 192, 213, 242, 257, 408, 479, 517, 563). In fact, hygiene education necessarily includes or stimulates user participation (244).

This concept of hygiene education is not always reflected in the selected objectives of hygiene education programmes. Review of project documents revealed that objectives vary from being narrow and short-term, such as promotion of washing hands with soap, to very broad and long-term, such as improving living conditions, improving community health, and maximizing the impact of water supply and sanitation projects. Frequently, these broad objectives differ little from the general objectives of a water supply and sanitation programme. (6, 21, 56, 119, 242, 293, 307, 333).

Very often hygiene education objectives are qualitative only, without giving direction to project inputs, implementation and evaluation.

Compared with the clear quantitative objectives of technical programmes, the "foggy" formulation of hygiene education objectives increases the chance that programmes are poorly executed and treated merely as an add-on to a water or sanitation project. Hygiene education is implemented solely to meet project requirements, as has happened in Tunisia, Peru and Korea (138, 244).

Hygiene education would benefit from more precise and specific formulation of immediate objectives. This would lead to more realistic programme inputs and more efficiency and effectiveness in programme implementation (242, 434, 381, 546).

The immediate objectives of hygiene education in the urban sanitation programme in Lesotho were formulated as follows:

- motivation of groups with no sanitation to build VIP latrines, especially householders, landlords, school governing bodies, local authorities responsible for public places, and hospital administrators;
- motivation of groups having sanitation facilities such as bucket and pit latrines to up-grade them to VIP latrines;
- encouragement of full use of latrines by all household members especially children;
- ensuring that latrines are cleaned and maintained, fly screens checked for damage and that refuse or toxic materials and disinfectants are not poured down the pit;
- encouragement of hygiene practices such as handwashing with soap, disposal of infant faeces, cleanliness of food preparation and clean storage of drinking water;
- promotion of child health practices such as oral rehydration therapy for diarrhoea and breast-feeding in preference to bottle feeding (214).

Because local conditions and practices vary considerably, more specific objectives and targets can only be set in the first phase of a hygiene education programme in consultation with the community. Specific objectives and targets would also facilitate project evaluation and permit adaptation of the educational programme on the basis of field experience.

One objective of the hygiene education programme of a water project in Honduras was to introduce at least four changes in sanitary behaviour: to cover drinking water vessels at home so preventing dust, insects or animals contaminating the water; to use a ladle or to pour water from storage containers, thus avoiding putting hands in the water; to cover the latrine and keep its surroundings clean; and to contribute money to maintain the rural aqueducts. Evaluation one year after the project started showed that 75% of the population involved had implemented two or more of the four recommended practices. On the basis of this new activities were formulated (500).

1.3 Expectations and limitations

It is now being increasingly accepted that hygiene education is a necessary project component to ensure that newly installed facilities are instrumental in bringing about the desired health improvements. The importance of hygiene education in water supply and sanitation is supported by a number of health impact studies (59). For example, in Malawi it was found that reduction in the risk of diarrhoea is greatest when water supply and sanitation improvements are combined with hygiene practices (573). A guinea worm control programme in

Togo showed that improved water supply together with hygiene education had the most effect (162).

Many planning documents stress the need to integrate hygiene education into initial water supply and sanitation programmes and to provide the necessary funding (13, 148, 491, 494, 495, 527, 528, 535). Yet despite this general acceptance, there are still many programmes which do not give priority to these activities. Very often hygiene education is underfunded and poorly staffed, planned, implemented and evaluated (148, 151, 213, 242).

Lack of thought about the meaning and purpose of hygiene education has resulted in it becoming a part of the accepted jargon of the International Decade for Water Supply and Sanitation Decade (93).

This problem was considered at the International Drinking Water Supply and Sanitation Consultation in Interlaken in 1987. The Working Group on Community Participation and Hygiene Education stated that "there is a general awareness and willingness to implement community participation and hygiene education approaches, but that it has been neglected to fully operationalize these approaches". Lack of definition in project documents and lack of appreciation of the time needed for real participation and hygiene education are serious constraints (535).

Hygiene education in the context of health education tends to be limited to the project level, whether it be primary health care or water supply and sanitation programmes. Hygiene education activities have thus been implemented with varying degrees of success. The impact is likely to continue to be somewhat limited until hygiene education is made a national priority and receives political support. This will ensure commitment at all levels, national, provincial and local. When officials feel they are accountable action to stimulate and support hygiene education is most likely to be forthcoming. Further national priority and commitment will stimulate into sectoral cooperation necessary for sustainable hygiene education programmes.

Although hygiene education has great potential, it is not a universal remedy. When the desired or expected health benefits from a water supply or sanitation project are not achieved, it is often suggested that the users have not complied with programme activities or that field staff have neglected their responsibility to pursue personal and community hygiene.

Inadequate or lack of health education has often been the scapegoat for programme failures. Planners and administrators would like to change people's behaviour to fit programme requirements, technology and procedures. Health education can become a tool of compulsion (287).

Thus to ensure that facilities are used and maintained, projects will also have to be prepared to modify their designs and procedures to meet user needs, instead of only requiring users to modify their practices through hygiene education (410). In the Maldives, for example, latrine design was adapted and in Zimbabwe tap design was modified to meet the women's requirements (346, 478).

Unrealistic expectations have sometimes led to the conclusion that hygiene education achieves very little. However, there is clear evidence that it can bring about change in behaviour, but only if these changes do not require too much extra effort or lead to other problems. Women, for example, are prepared to walk a little further to a water source of better quality, but not too far and not when they are very busy (20, 37, 108, 282, 298, 323, 563). Underestimation of what hygiene education may achieve has stemmed from project reports stating that hygiene education has had a limited effect. Yet closer examination has revealed that often there have been insufficient inputs in hygiene education to ensure success, because it has been treated merely as a project appendage, or has only been implemented to meet project requirements (54, 90, 138, 203, 428).

Although hygiene education primarily aims to reduce health risks and to improve specific health knowledge and practices, it may also have broader developmental effects. Strengthening of local development capacities has been reported in projects which have stimulated communities to analyse their local conditions and to organize themselves for joint problem solving. Women's groups especially have initiated further actions and improvements (88, 143, 180, 261, 271, 283, 335, 347). Women's garden groups have made economic use of waste and water in Zimbabwe (478). In Senegal and Nepal, women have established a maternity centre and dispensary as a follow-up activity to hygiene education (307, 443). User co-operatives in Guatemala and Brazil have used the income from laundry services and compost production to create a children's playground (417) and a local health clinic (185).

In a malaria vector control programme, India, two commercial enterprises were undertaken to link vector control operations to developmental activities from which the villagers could derive a direct benefit:

- economic exploitation of algae for the paper industry;
- conversion of lagoon areas into prawn culture ponds. The money earned ensured continuation of vector control by the villagers after the departure of the project team. Malaria control became a by-product of the total programme. (392).

The tendency towards this wider, all-embracing role of hygiene education is reflected in more recent projects which have integrated health and socio-economic aspects. In projects in Kenya and Burma this has been done by

linking water and sanitation to women's income-generating activities based on the time saved. Family gardens for food production via micro-irrigation is the main additional objective in projects in Chad, Niger, Mali and Kampuchea (492). Linkage with economic activities can in turn also be of importance for additional health benefits since income generated or controlled by women is generally spent on the prime needs of the family, which include water and hygiene improvements (563).

2. *Target Groups*

Community and family health can only be improved if everyone has access to and makes hygienic use of water supply and sanitation facilities. This means that the entire community needs to be involved in activities to improve environmental hygiene (62, 191, 259, 373).

2.1 Need for differentiation

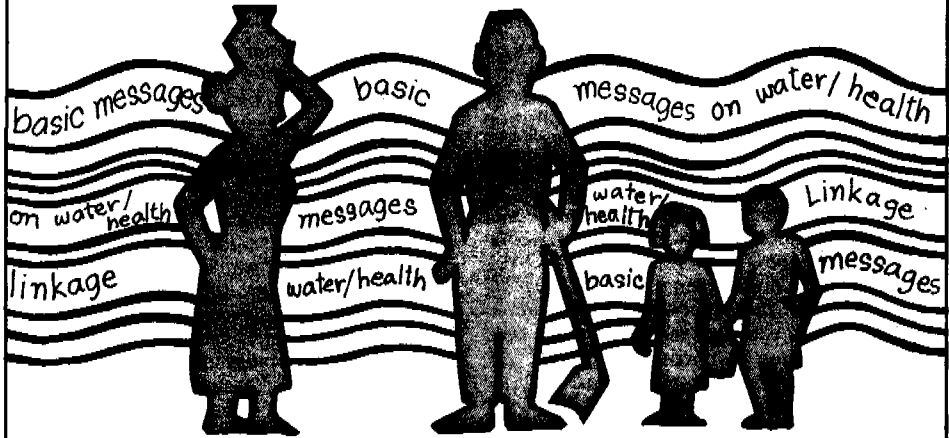
Theoretically, the target group for hygiene education is the entire population in the programme area. In reality communities or audiences are seldom homogeneous. Economic, religious and ethnic differences, differences in roles and responsibilities of men and women and other variations, require clear definition of the target groups and the objectives and methods appropriate for each group.

This need for differentiation became clear in a sanitation programme in Thailand. One of the reasons identified for the limited impact was that the programme focused mainly on the men, ignoring the women, children, and youth groups. Also, insufficient account was taken of households composed of the children of migrant city workers; households not owning the property they occupy and thus unwilling to make improvements; and households too impoverished even to repay a sanitation loan (434). In Lesotho, landlords needed to be treated as a specific target group to enable their tenants to benefit from sanitation improvements (214). In Nepal, the initial focus on the sweepers responsible for human waste disposal had to be redirected to farmers as they were working with raw sewage (307).

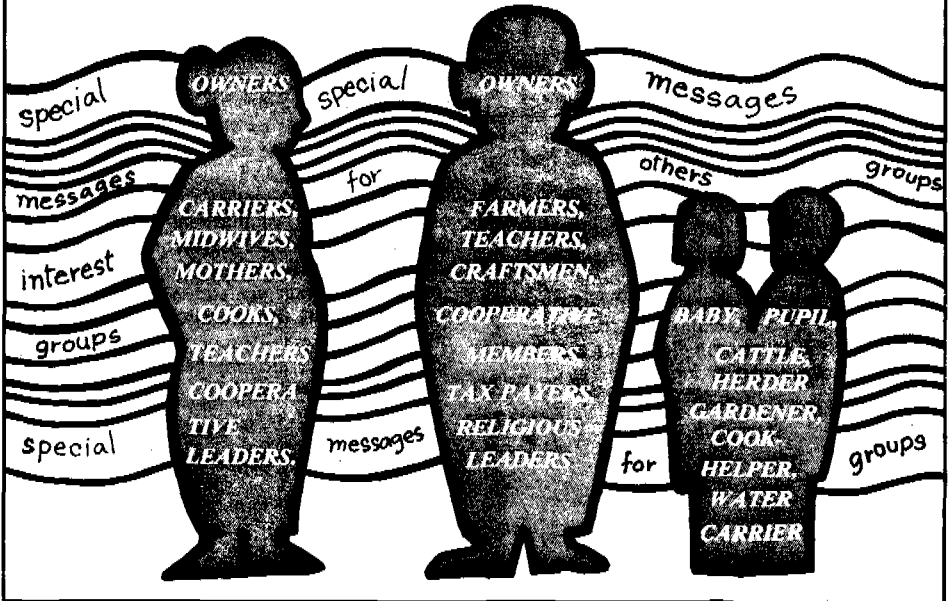
Many hygiene education programmes fail to make such distinctions and thus run the risk of reaching firstly and foremostly those with a higher income, more education, and with wider external contacts. Extensive research on the adoption of innovations shows that in two-thirds of cases there is a positive relationship between adoption and high income, education or literacy, standard of living, and possession of expensive goods (406). Latrine ownership was found to be related to higher socio-economic status in numerous studies in a variety of cultures (29, 371, 386, 446, 473).

Hygiene education programmes tend to reach higher status households because they have more means for improvements and easier access to sources of information. Members of these households are more likely to belong to voluntary associations and/or have leadership positions. As a result they are better

BASIC MESSAGES ON WATER/HEALTH LINKAGE, PERSONAL HYGIENE, DISPOSAL OF FAECES AND GARBAGE.



SPECIAL MESSAGES FOR DIFFERENT INTEREST GROUPS



Basic messages in hygiene education must be linked to the specific target groups (UNICEF/EAPRO, 1985).

informed and are more easily involved in hygiene education programmes, as illustrated by a project in Sri Lanka:

Staff of a water and latrine project found that by working through an existing village organization, the lowest income groups had been excluded from the hygiene education programme. Assisting them in forming their own association provided an opportunity to join the programme (269).

Similarly, membership of women organizations is higher for those in higher income groups, as reported in India (197), Ivory Coast and other West African countries (79), Tanzania (199), and Indonesia (437).

The women's clubs teach about nutrition and food preparation, and household hygiene including how to make soap, and baby care. Sewing classes are given and cultivation of kitchen gardens is promoted. The women who dominate these meetings are, as a class, the least likely to undertake many of these chores themselves. The clubs do not reach the lower classes who actually do this type of work (197).

Poorer families often have little time for hygiene education as they have to spend as much time as possible on providing for their households. There are additional socio-cultural reasons for their exclusion, varying from not having appropriate clothes to attend meetings (437) to belonging to non-scheduled castes or minority groups (92, 127, 272, 314, 447). Neglect of the poorest and those at highest risk is further aggravated by the fact that extension workers themselves often focus on the higher socio-economic groups. This is partly because they cannot bypass influential community members and partly because social distance with the upper village classes is less, and therefore communication is easier.

Some hygiene education programmes are therefore directed to poorer households, and are linked to productive activities, as for example in Kerala (452); a women's dairy co-operatives project in Andhra Pradesh (125); training in carpentry, shoemaking, car repair, dressmaking, handicrafts and typing in Bihar (398).

2.2 Women as a major target group

Most hygiene education programmes focus largely on women (175, 199, 335, 479). The main reasons given for this are firstly that women have the major responsibility for water, sanitation and family health and for teaching and care for children (142, 143, 239, 469, 563, 564). Secondly, women have a much greater role in transferring health knowledge and managing water sources and sanitation in their community than has been previously realized (563). Information on

health and hygiene often spreads through informal networks which unite women through family ties, similar interests and/or activities (88, 222, 383, 427). Accounts of women managing community hygiene come from Tanzania (466, 518), Zimbabwe (478), Sri Lanka (272), Samoa (418), and Mexico (417). Thirdly, data on the incidence of water related diseases identify women as a particular risk group (81, 178). Their close association with children and their work in water collection, and washing and bathing increases the risk of schistosomiasis, onchocerciasis, and injuries from falls on slippery paths to and from the water source (311, 466, 563).

Marriage is almost universal in Bangladesh and most women become mothers between the age of 15 and 19 years. The incidence of cholera in women is highest in this age group, and is double the rate in men of the same age group. This higher incidence of cholera in young mothers is attributed to their closeness to children who have the highest cholera rate in the population as a whole (30).

However, when daily duties bring both men and women into close contact with water, these differences are not found:

In Niger several villages received mass treatment for schistosomiasis. The rate of severe re-infestation was very slow in adults 15 years of age and older and no difference was found between men and women. Re-infestation after treatment was very fast in children under 10 years of age (68).

Many hygiene education programmes do not make use of women's knowledge about water and hygiene and their active role in spreading such knowledge. Instead, women tend to become passive, individual receivers of health information (20, 142, 259, 463, 475). Also, more attention needs to be given to the fact that in many cultures, women cannot easily enter public places and often have too much work to attend hygiene education gatherings (12, 157, 563).

In a number of hygiene programmes, cultural restrictions to attending public meetings have been overcome by obtaining permission or support from male leaders and husbands (207, 479). Ways used to get better access for women include selecting and training female workers (22, 56, 343); making home visits or organizing small group meetings (22, 263); making well-planned use of mass media (563); reducing their work load (193, 326) and communicating with women in working places and markets (104, 293, 446, 466).

2.3 Need for increased men's involvement

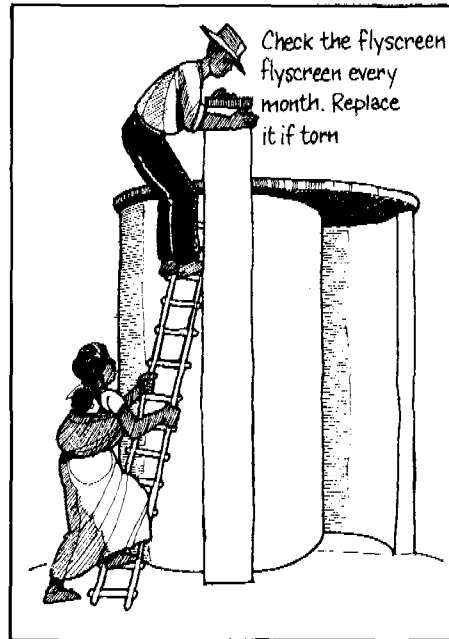
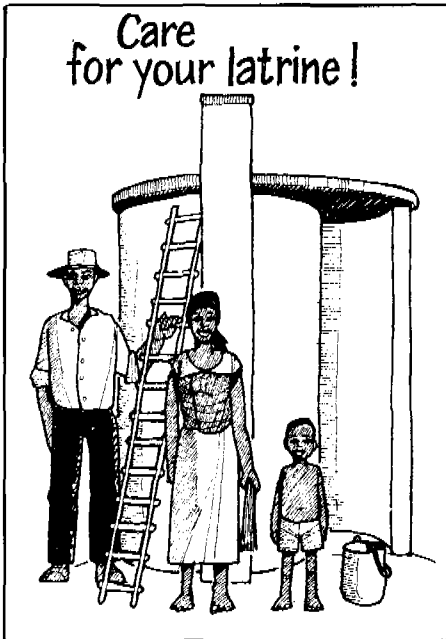
Some programmes make specific reference to hygiene-oriented activities for men. These include a small water supply project in India (336), a broader health education programme in one district in Tanzania (207), a participatory health education programme in Guatemala (479) and a public health programme in an urban area in Japan (337).

A hygiene improvement programme in a low income urban area in Japan changed from a mass programme to a community based programme with environmental self-surveys and special health classes for mothers, fathers and grandmothers. This resulted in a 90% drop in intestinal parasites, a 12% increase in kitchen improvements and a 29% increase in health knowledge (337).

In other cases, hygiene education has reached men, but this was more or less unplanned, because the contents of the programme were really designed for women.

The scene is a small village in Upper Region (Ghana). The community education staff of the Water Utilization Project have agreed to visit the village and make a public presentation on water protection. They arrive, are greeted by the chief and wait in his compound conversing with him, while the villagers are summoned for the meeting by the elders. The meeting takes place at the chief's meeting place. Community education staff must, by tradition, address the chief and elders. Men occupy the most prominent seats closest to the visitors. The women, however, sit in the rear of the meeting place, some unable to hear or see clearly. Yet the women are the primary water users in the compound and at the pump site (250).

Yet, the involvement of men is equally important for the success of a hygiene education programme. Programmes for women usually need the support of male leaders and husbands, especially in cultures where women lead a secluded life, or have segregated areas of activities (12, 199, 477). Support from husbands is frequently needed for specific hygiene improvements in the home or at the water source. In a number of cases, husbands have rejected an improved water supply and hygiene improvements for their family or community because they feared reduction in water collection time would make women and children idle and provide opportunities for undesirable behaviour (336, 361). If husbands are not involved then some improvements advocated in hygiene education programmes for women, such as latrine and kitchen improvements, may be unrealistic, when traditionally these decisions and work have been the responsibility of men (12, 43, 98, 346, 466, 469, 479).



Hygiene is the responsibility of all members of a household, Zimbabwe (Discussion card: Ministry of Health).

In West and East Africa, latrine construction and kitchen improvements are often carried out by women. But essential tasks, such as pit digging or roofing, which are important to prevent non-use and collapse of clay slabs in the rainy season, and other building activities are men's tasks, as also pointed out by the women themselves (43, 469, 563, p.94). In Tanzania the lack of involvement of men was lamented by the women who needed their financial support to buy water storage tanks (469).

Exclusion of husbands and fathers from hygiene education programmes also does not take into account their feelings of responsibility and pride in their families and children (563). Interviews with men in rural and urban Zimbabwe showed that hygiene education was just as important to them as to the women interviewed:

A household survey in five rural and two urban areas in Zimbabwe, in which 575 men and 1029 women were interviewed, revealed that 49% of the men expressed a need for hygiene education. Yet there is little explicit recognition of this in most health training or educational programmes, and seemingly few ideas about, or great interest in how hygiene education might be made accessible to men (98).

The needs of men are little reflected in existing programmes. A water supply project in Tanzania experimented with hygiene education through women groups in one area and through the local hierarchical structure in another area. Hygiene education for women only was found not to be very effective at household level because the men were not involved. Hygiene education through the hierarchical structure alone did reach the local representatives, mainly male, but not the village community as a whole, both male and female (469). A careful and flexible approach is thus required to involve the multiple target groups.

2.4 School-aged children as a target group

Involvement of school-aged children in hygiene education is often stressed because they are the generation of the future. Children are exposed to many risks. They play in waste heaps, stagnant water, and river banks used for excreta disposal, as reported in Mexico (417), Indonesia (73), and Bangladesh (32). Awareness or identification of these risks by the people themselves has sometimes led to participatory projects, such as waste recycling and a children's playground in Mexico (417) and water supply and sewerage in Rio de Janeiro (64) and in Belo Horizonte (185).

Attending school may increase the risk of disease. Studies showed that insufficient numbers of school latrines, contaminated water and dirty school

towels have led to the transmission of diarrhoea and eye diseases in school children (332, 288). Furthermore, children tend to drink any water available and are often poor users of family latrines. Swimming, bathing and clothes washing in contaminated water exposes children to schistosomiasis (68, 83, 189, 466).

Children in the age group 6 to 11 years are ideal to teach about hygiene because they are eager to learn and master skills, and are anxious to demonstrate their capabilities. In some programmes children are involved as agents of change for passing on information to their families. Water supply and sanitation programmes with a focus on both school and community hygiene can be found in projects in Ecuador (83), Micronesia (405), and India (260, 339, 413).

A complicating factor in reaching school-aged children is that very many of them, often more girls than boys, do not attend school or leave school at an early age. In 1982 it was estimated that 420 million of 1000 million school-aged children do not attend school or attend only for a short time before starting work at home, on farms or in the private sector (538). Educational opportunities in developing countries are limited and sporadic for children not attending school (538). Very few examples of hygiene education programmes could be found for these children. One such programme was found in India:

In 16 urban slum areas in Thirupathi, India, ten of 300 out-of-school children in the age group 8-12 years, were selected and trained in the basic principles of health and how to take care of younger children. The school-going children helped them to read and write, and they conducted a survey to detect the vaccination drop outs (232). In another programme for out-of-school children, special learning packages have been developed based on their daily experiences. One of these packages centres on improvement of the village environment including disposal of human excreta (389). More information is needed on the objectives, effectiveness and impact of these programmes.

Since 1978 several Child-to-Child programmes have been started to involve children in activities to prepare them to take better care of younger brothers and sisters (1, 151, 339, 510, 515, 537). Activities focus on rehydration and prevention of diarrhoea, clean-up campaigns, school gardens, puppet shows and plays by school children, and investigations of health behaviour and conditions in their own homes. Activity sheets, guidelines and readers have been developed on various topics such as good food, dirty water, and accidents for use by primary school teachers, youth leaders and health workers (1, 112, 205, 206). Programmes can be found in India (501, 509) Indonesia (407); Jamaica (515), Mexico and Brazil (510). Evaluation of Child-to-Child programmes (232) have identified problems in implementation, such as lack of financial resources, material, and time and personnel. In Indonesia and the Dominican Republic participatory training workshops were organized for the community on health and nutrition

education of school-aged children. From these workshops a manual was developed (270).

2.5 Additional target groups

Technicians responsible for construction of water supply and sanitation facilities may be important target groups for hygiene education, because of the preventive aspects of their work (273). Therefore, some programmes are training technical staff in water hygiene in order to understand their responsibility for the functioning of water supplies and quality of the water. Such programmes can be found in Botswana (146) Tamil Nadu, India (91), Paraguay (75), and Nepal (63).

The water technicians were trained in disease transmission, personal and home hygiene, technical options, communication techniques, use and distribution of educational material and construction of latrines. The initial resistance to the new training changed after a survey of the technicians about their health. All 50 technicians had suffered each construction season from an excreta-based disease, such as dysentery, roundworm and hookworm. Only 30% had sanitary facilities at home. By appealing to their interest in improving their own health, they saw greater relevance for the project and its integrated approaches (477).

Those in charge of operation and maintenance of facilities are also frequently referred to as a target group (13, 269). Training materials including hygiene education have been developed for them. For example, the training programme for village hand pump caretakers in India includes subjects such as water related diseases, clean water is not always safe, how to best protect safe water, and how to prevent contamination at the pump and during water collection (366). However, little is known about the positive effect of this training on measures to prevent pollution and repairs undertaken. It is not yet clear whether these caretakers are effective hygiene educators given the limited scope of their training, and the fact that many are men and unaccustomed to discussing these subjects with women.

3. *Changing Hygiene Related Behaviour*

3.1 Defining priorities for action

To maximize the potential benefits of water supply and sanitation improvements, facilities have to be used and related behavioural risks reduced. This implies that for any hygiene education programme there may be a number of action points, as summarized in Figure 3.1. As all these points cannot be dealt with simultaneously, priorities need to be set and the hygiene education programme adapted accordingly.

The longer the list of actions that the health educator asks the community to carry out, the less likely they are to perform any of them (213).

In defining priorities for action, distinction needs to be made between practices which are positive or neutral and those which are genuinely harmful (56, 332). Only the latter need to be target for change while taking into account the views of the users themselves. Positive practices should be recognized and encouraged, not only because they can be reinforced and extended when new technology becomes available, but also to prevent education programmes being reduced to slogans telling people to change their life style (23, 56, 151, 180a).

To define priorities for action, a number of programmes carry out baseline studies, knowledge, attitude and practices (KAP) studies or short environmental investigations (32, 51, 98, 102, 189, 301, 346, 348, 360, 371, 444, 464, 474, 506, 582). In some cases these studies to identify the main local disease transmission risks are carried out by project staff alone. Subsequently, a few major improvements are selected for action, such as better water storage (253, 293, 317, 500), increased water use and kitchen hygiene (428), full coverage and upgrading of traditional household latrines and construction of improved latrines at schools and clinics (472). In other cases, the communities themselves have been involved in identifying local transmission risks and setting their own targets for improvements. In this way, formulation of immediate objectives and subsequent measurement of results has become an educational process in itself and a starting point for the participatory process (157, 160, 162, 242, 293, 307, 335, 456). The literature surveyed suggests a relationship between the extent to which target groups are involved in identifying and setting priorities for action and the adoption of new facilities and practices (54, 86, 90, 162, 213, 242, 469, 563).

Table 1: Potential action points for hygiene education

WATER SOURCE

- Does the whole community (children, women and men) use safe water sources for drinking, clothes washing, and bathing?
- Are improved water sources looked after and well kept?
- Is there risk of contamination of water sources from nearby latrines, poor drainage or free ranging cattle?

WATER COLLECTION

- Is drinking water collected in clean vessels, without coming into contact with hands?
- Is water transported in a covered water container?

WATER STORAGE

- Is water stored in vessels which are covered and cleaned regularly?

WATER USE

- Are adequate amounts of water available, transported and used for personal and domestic hygiene?

WATER DRAWING

- Is drinking water taken from the storage vessel in such a way that hands, cups or other objects cannot contaminate the water?

FOOD HANDLING

- Are hands washed before preparing and eating food?
- Are vegetables and fruits washed with clean water, and is food properly covered?
- Are kitchen utensils washed with safe water and kept clean?

EXCRETA DISPOSAL

- Do all men, women and children use hygienic means for excreta disposal at home and at work?
- Are stools of infants and young children safely disposed of?
- Are hygienic facilities used by all throughout the year and are these regularly cleaned and maintained?
- Are handwashing facilities available and hands washed after defaecation?

WASTE WATER

- Is household wastewater disposed of or reused properly? Are measures taken to ensure that wastewater is not left to create breeding places for mosquitoes and other disease transmission vectors, or to contaminate the safe water?
 - Can excreta wash into water sources or enter the groundwater-table through drainage or latrines?
-

Innovations are more likely to be accepted when they are simple to carry out, compatible with the existing situation, can be tried out by the community, produce observable results in the short term and have perceived advantages over existing methods (406). In addition the acceptance of new behaviour by an individual or a community may well depend on the availability of factors such as, time, money, skills, equipment and appropriate services (189, 213).

Some of the key factors and conditions that influence the adoption of new facilities and hygiene practices are listed below. Facilities and practices are more likely to be adopted when they:

- make life easier and solve felt problems;
- are functionally appropriate;
- are affordable and materials easily available;
- are based on people's practical understanding of how water and sanitation related diseases are transmitted in their own environment;
- are in line with the cultural values and behaviour of the users;
- appeal to a sense of modernity and status;
- are encouraged through incentives and disincentives;
- are promoted through the example of key persons in the community.

3.2 Preconditions

Hygiene education can only be successful when it takes into account the necessary preconditions that people can afford the new water supply and sanitation facilities and are able and willing to use them. There are numerous examples of projects which do not meet or only partially meet these preconditions.

One of the most important reasons for new facilities and practices not being embraced is inadequate functioning. For example, certain types of foot and hand pumps are difficult for children, pregnant women and the elderly to operate (383, 502, 571). Safe sources for drinking water may be rejected because of taste or colour problems (73, 91, 384, 516). Water may not be acceptable for washing clothes because it does not give a good lather or because it stains the clothes (91). Long distance (108, 272, 291) lengthy waiting times, and unreliable or insufficient water supply can also result in continued use of unhygienic traditional water sources (67, 146).

In Ghana, the water from a borehole was too hard to lather and tasted very salty. Worst of all, it took 10-15 minutes of vigorous pumping to raise the water. The pump was so stiff that people gradually gave up using it and returned to their old rainwater ponds (571).

Other reasons for non-use of improved water supplies are related to non-access for particular socio-economic or religious groups. Exclusion of particular socio-economic groups by local elites is reported in projects in Egypt (427), Kenya (298), Nigeria (490), Sri Lanka (255, 272) and Peru (201). In India, Bangladesh and Sri Lanka, lower castes and casteless groups have been reported not to have access to improved water supply facilities for socio-religious reasons (123, 127, 255, 272, 289). In a project in Sudan, migrant labourers were not permitted access to improved drinking water sources despite both their needs and the economic importance to national cotton production schemes (516).

Latrines are often rejected because of the risk of collapse (54, 91, 490), poor construction (379, 550), great distance from the house (346, 355), presence of snakes, children's fear of the dark hole and of falling in (10, 158, 177, 291), and bad smell (177, 346).

An investigation on why latrine construction and use was seriously lagging behind in a barrio in the Philippines revealed several objections: smell and appearance of the latrine; high construction costs; and danger of falling into the pit. One farmer said "we like the toilet because we know it is good for our health, but you see we have something better than the odorous thing you are offering" (155).

Man: What on earth is the use of latrines?
Dog: Is he still wondering?



A perceived need for a latrine is essential, Costa Rica (Tin-Glao, 1984).

These functional constraints not only restrict the adoption of new facilities, but may also increase costs of implementation (490) and generate bad publicity (155, 177). In such cases hygiene education has a better chance of having an impact if these constraints are addressed, as already discussed in Chapter 1.

Promoting hygiene behaviour obviously makes little sense if large groups of people cannot afford the improvements advocated or the means to implement them are not available. For example, in Tanzania, Nigeria and India, handwashing with soap has been advocated. Yet at that time soap was neither available nor affordable for the majority of the people. To make it worse, the hygiene education message neglected to promote the alternative local solutions, such as the use of ashes and/or certain types of leaves (282, 285, 286, 287). During a hygiene education campaign in Botswana, the message "to use more water for personal hygiene" was difficult to convey in the dry season when little water was available. The promotion of plastic jerrycans for improved water storage met only with limited response because the ability to pay for the jerrycans had not been considered (146).

3.3 Incentives

Time and economic gains

The strongest reason for changing behaviour is that this will make life easier and reduce or solve a problem. This is particularly the case in water collection and use. Many studies confirm that women tend to choose the most convenient water source, provided the quality, quantity, colour and taste of the water are acceptable, that they can pay the price, and that they are not barred socially from its use (563). Thus, a key factor in changing hygiene related practices is that the promoted change be perceived as an improvement (155, 213).

Time gains resulting from improved facilities at a shorter walking distance are often an important impetus for acceptance. However, promoted changes in water supply and sanitation may require extra effort and money from the individual or community, without having an observable effect in the short term. Therefore, focus on reduction of related burdens can lead to increased acceptance and use of facilities and practices. Water use for personal hygiene, for example, increased significantly through the availability of transport in Kibwezi, Kenya (8) and the construction of communal washing facilities at water points (478). Communal washing facilities have also helped to reduce the incidence of schistosomiasis (83) and shigellosis (483). Alternatively, where access to improved facilities is not reasonably easy, for example when washing and bathing at tap or pump is forbidden, women and children continue to wash

in schistosomiasis-infested sources instead of carrying home water from the improved source (119, 189, 282).

Economic gains may also be an important lever for changing behaviour. In Bangladesh changes in social and health behaviour were successfully linked to a large-scale loan programme:

To receive a small loan (\$100 maximum) from the Grameen Bank in Bangladesh, several criteria have to be fulfilled. One is that members are obliged to build latrines and to boil drinking water. The bank gets 10 000 new members a month (385).

Status

Another factor often influential in the adoption of facilities and practices is the status derived (446). This mechanism appears to operate particularly in the installation of latrines (34, 155, 264, 265, 355, 372, 379, 384, 426).

In Kirtipur, a village in Nepal, health was not the main reason for the apparent enthusiasm for new latrines. A reason frequently mentioned was that tourists coming to Kirtipur might otherwise think that the villagers do not know how to behave themselves. Only very Westernized or educated people gave health as a reason (436).

Migration, urbanization and contact with outsiders have also contributed to making people more receptive to new ideas such as using latrines, renovation of wells and construction of soakage and compost pits (71, 355, 372).

Many of the inhabitants of Kibwezi, a relatively new settlement area in rural Kenya, had lived in Mombassa or Nairobi for some time or had worked on the railways and has thus been exposed to new ideas and practices. They often constructed their own latrines or were the first to adopt the use of communal latrines (355).

In Kibwezi having and using a latrine is accompanied by considerable prestige:

Ownership and use of latrines is invariably associated with enlightenment and respectability. Defaecating in the bush is considered to be "backward" and has influenced ownership and use of latrines. Remarks like 'it is embarrassing', 'it is not enlightened' and 'it is not respectable' indicate the high social status associated with latrine ownership (355).

However, association of facilities with status has also resulted in many people owning latrines but using them for other purposes, such as storage (54), or only for visitors or certain members of the family (155, 386). The use of status symbols

as motivation to increased adoption of hygiene behaviour thus needs to be supplemented with other mechanisms such as practical health knowledge for all users.

Rewards and punishments

Sometimes, behavioural change occurs not because the change itself is seen to be advantageous for convenience, health, status or economic benefits, but because it is associated with a reward or punishment. Various types of rewards are given to communities and individuals for participation in hygiene education activities. For example, soap and basins are given to families interested in trying new sanitary practices (479); financial rewards are given to ensure ongoing community action (91); and awards, such as certificates and flags are given to households and communities for the best performance (146, 164, 307). Some programmes also use the provision of a community water supply as an incentive to improve sanitation, by requiring that a certain number of latrines be built first (56, 380, 550).

The use of rewards also has disadvantages. For example, the people of Bhaktapur, Nepal, suggested that future cleaning-up campaigns should not be competitive because of discontent about the distribution of the rewards (307). The construction of a certain number of latrines as a precondition for a water supply should only be used when latrines are a felt need and the design and quality of construction meet the users' requirements (380). If not, they are likely to be poorly constructed and abandoned soon after (550). Imposing construction also raised a number of questions:

In the Imo State Drinking Water and Sanitation Project, Nigeria, the agreement was that a village would receive a borehole and hand pump only after the required numbers of latrines had been built. This policy produced latrines, but raised two important issues: the ethics of withholding water in water-scarce areas and the contradiction in pressuring people into accepting a project element while advocating local ownership and participation (490).

Sometimes punishments have been used to enforce water and sanitation improvements. In Kung'ombe, Tanzania, the village councils set deadlines for each household to have a latrine, and by-laws imposed fines (equivalent to US \$3) for non-conformity. Funds from these fines were used for community latrines and payment of caretakers to protect the water sources (209). In Kenya, legislative measures were imposed to ensure latrine construction but have not necessarily achieved the desired effect:

While legislation has resulted in some increase in latrine ownership, there is evidence to suggest that it has not resulted in significant improvement in latrine

use. Enforced construction of latrines leads to facilities being built to avoid harassment and prosecution. For the same reason they are kept clean and unused so that they are in a presentable state in case of unexpected visits by authorities (355).



After taking worm medicine this seven-year old Nepalese girl produced 64 round worms in three sittings. She won the first prize in a deworming competition. The community is now convinced that there is a health problem. Right: The same girl several months later (Lohani and Guhr, 1985).

In other cases fines have been imposed when the basic rules or specifications for healthier behaviour were not followed (42, 171, 209, 293). However, a system of fines will not have the desired effect unless decided on and supported by the users themselves, and implemented impartially. Practices which are only adopted because of the adherent rewards and punishments may produce short-term changes and increased dependency instead of self-motivated and lasting improvements:

When those too weak for independent action are offered incentives to adopt new behaviour, practices persist for only as long as the incentive has value. More importantly, the people must recognize that their behaviour change depends on the receipt of the incentive which is directly manipulated by the change agent. Thus, incentives mark an increasingly dependent rather than independent relationship, and therefore are less compatible with local development programme strategies (479).

3.4 Cultural values and understanding

Cultural values and practical understanding of health and disease transmission greatly influence the adoption of new facilities and practices. People in all cultures, especially women through their daily experience and observation, have acquired basic and practical knowledge of water, sanitation, health and hygiene on which hygiene education programmes can be built (23, 84, 180a, 219, 563).

However, a number of programmes seem to ignore or underestimate community knowledge and experience. This may result partly from the type of health knowledge and practices studies carried out. Practical health knowledge and the complex reasons underlying hygiene practices do not always emerge from conventional social surveys, in which questions and scope of answers are determined by the researcher. Also, there is always the risk of measuring ideal rather than actual behaviour, and of oversimplifying findings in terms of "right" or "wrong", without taking into account the underlying logic of the people themselves. In other cases, cultural values and health beliefs are perceived as constraints for adopting new facilities and hygiene practices, whereas in fact educators could build upon these as keys to success (162, 332, 334, 519, 563).

The activities were effective because positive methods used in identifying attitudes about water did not downgrade traditional thinking, and people actively participated in discussions. Negative reactions lessened, the number of private house connections increased over seven years, people paid for their connections on a monthly basis and morbidity decreased (336).

The need to look at the reasons behind existing ideas and practices is strengthened by the strong link often found between hygiene and broader cultural values (285, 286, 533). In many cultures the concepts of pollution and purity are not derived from a Western notion of hygiene based on a germ theory, but from more complex cultural and religious concepts (31, 33, 285, 286, 350). Selection of water sources in Bangladesh, India and Nepal, for example, is based on a combination of practical and cultural-religious factors (70, 213, 285, 286, 289). Religious beliefs about cleanliness may stimulate some types of hygiene, such as personal cleanliness (31, 568). Yet, for the introduction of other changes

the same religious beliefs may well be a constraint. Latrines, sewerage systems and soakpits and those who clean them are considered to be sources of contamination and contact with them should be avoided (275, 285, 286).

Other examples of cultural values affecting hygiene programmes are the use of soap which is considered to be a beauty product for women (22, 180a), and the boiling of water which is often associated with the treatment and not the prevention of disease (213, 289, 299).

Many projects have used cultural values in their educational programmes, for example by making a link with religious concepts on hygiene (285, 286, 568) or with social obligations evolving from making a decision in public (307, 334, 433).

In rural communities in the Philippines a man loses face if he does not keep a commitment made in public. Pledges made in village meetings to build and use a latrine were therefore readily honoured, especially because the villagers had already been involved in the identification of sanitation problems and the design of the latrine (155).

Latrine projects have benefited especially from the cultural demands for privacy and safety for women and girls (307, 426, 512). Neglect of cultural values, on the other hand, has led to rejection or non-use of latrines, for example, when the user was visible to others through the ventilation space under the door (404); when latrines were located so that the user could be seen entering (42, 289, 426) or was facing Mekka (214); or when household latrines had to be used by relatives with whom one is not supposed to mix socially (12, 189, 214, 281, 291, 426, 466).

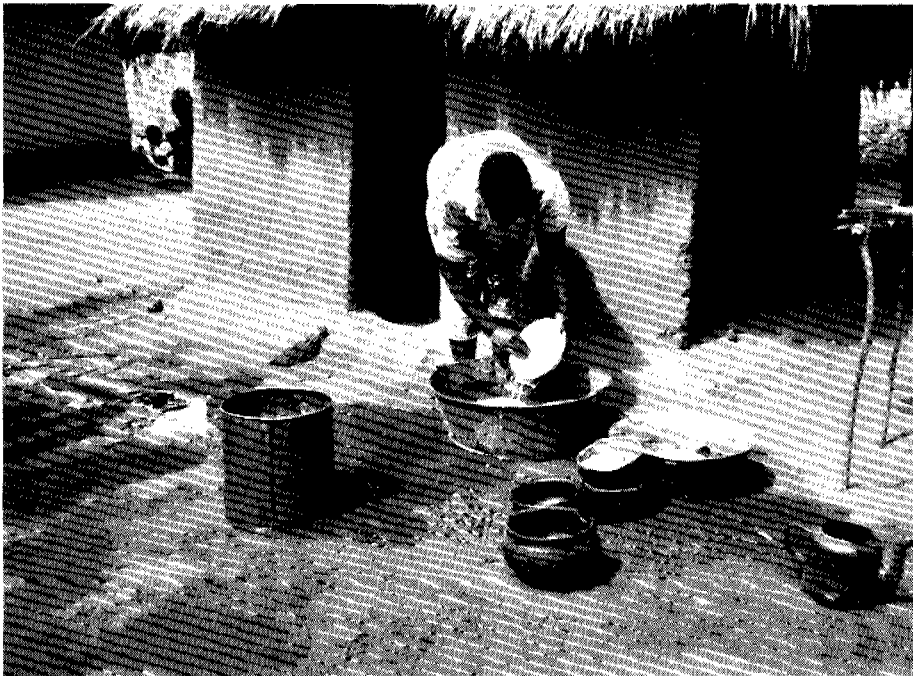
While it is stressed that successful hygiene education programmes should be built on existing values and beliefs, this does not mean that practical health information cannot be useful in promoting hygiene behaviour. Introduction of new and improved facilities often gives rise to the need for health related information. Thus, with a new safe water source prevention of water contamination between collection and use becomes a topic for information exchange (466, 500). Further, some practices based on cultural beliefs may need health information. For example, in many countries there is a widespread belief that excreta of babies and young children is harmless and does not require disposal in a latrine or by other safe means (22, 30, 37, 153, 158, 189, 289, 422, 563). Yet, there is considerable evidence that those who have obtained theoretical knowledge of water related diseases from general hygiene education do not necessarily apply this knowledge to their personal situation and practices (10, 102, 189, 282, 291, 360, 473, 474, 506, 563).

Health education messages on water use were communicated for a period of 6 months. A knowledge, attitude and practices study was done before and after to

measure the level of compliance. The results of this study revealed that the people had acquired an understanding of the need to use tubewell water for personal and domestic purposes. However, this was not reflected in the actual practice of water use (32).

3.5 Promotion by respected key persons

Various studies have shown that the support and example of respected members in a community provide an important impetus for behavioural change. Cases are found in hygiene education programmes in Guatemala (479), the Philippines (155) Tanzania, (469), Nigeria (10, 293), and Mexico (334). Support and example of respected key persons is not limited to official leaders but may include a variety of individuals who are trusted and consulted on specific community health problems, such as women's leaders, teachers and traditional healers and birth attendants. These people may represent the community as a whole, but more often a specific group for a particular subject. Studies in Indonesia (19),



The chairperson of a village tap committee demonstrates good water use, Malawi (Ministry of Works and Supplies; PSWS project Malawi).

and Jamaica (408) have shown that key persons for environmental health improvement are not necessarily the same as for other issues. In many cultures key persons for women are not always the same as for men. (21, 71, 121, 263, 293, 469, 563).

Respected key persons can make the link between the objectives of a hygiene education programme and their implementation in the community. They may contribute to programme success, for example, by organizing meetings or bringing people together (307). Often they are well aware of their role in behavioural change, as for instance in Guatemala:

After sessions on background information, discussions about the desirability of health behaviour changes and barriers adoption, an implementation plan was to be developed. This plan would detail who to invite and how to organize and run forums. In the midst of the planning, a much respected group member stood up. He quietly expressed his fear that since many committee members had not adopted the changes they would be promoting, the group attending the forum might laugh at their advice. The ensuing silence was broken by commitments to begin the next day on construction of latrines and adoption of other behaviour (479).

4. *Approaches to Hygiene Education*

Three broad approaches to hygiene education can be distinguished in the programmes reviewed: didactic approach, promotional approach and participatory approach. In programmes following the didactic approach, the agency itself defines the problems in water use and hygiene and the solutions to be offered. Subsequently, efforts are made to convince the users to apply these solutions. Success depends on the degree to which the message reaches the users and whether the solutions offered meet both urgent needs and available means of the target groups. In promotional programmes the starting point is still the agency who decides the programme contents. However, the solutions offered and ways of promotion used are adapted to the needs and means of the target groups concerned. Participatory programmes aim to assist the target groups to achieve what they themselves want to achieve. These programmes are characterized by joint problem analysis and problem solving.

Many programmes combine elements of these three general approaches to hygiene education. The most appropriate mix still needs further consideration. Therefore more comprehensive evaluation is needed to learn more about the potentials and limitations of the promotional and participatory approaches especially in relation to cost, organization, manpower and possible impact.

4.1 **Didactic approach**

More traditionally oriented hygiene education activities in developing countries tend to follow a didactic approach, which tells people what is good for them (401). Often health organizations or projects using this approach are organized in a way which makes it difficult for the users to react to proposed solutions or to inform project staff about their own needs and expectations. As a result, communication tends to be one-way: from the project to the users, without dialogue between or feedback from users to project. Moreover, the objectives, content and methods of educational interventions are formulated by the education or project agency, on the basis of its own means and capacities, for example, its expertise, policy and budget (409). This type of hygiene education has been reported in water and sanitation projects in Botswana (146), Bolivia (482), Tanzania (199, 291, 559), Zimbabwe (505), Colombia (384) Ivory Coast (90) the Maldives (346), Tunisia (54) and Nigeria (56). Other examples of this type of hygiene education can be found in countries where the function of health

inspectors is often limited to inspectors on the British colonial model. Their job is "to cajole an ignorant rural populace to mend their ways" (115).

Educators who have only just started or have never got anywhere by such questions as: "How can I motivate them?", "Can you provide me with megaphones, video screens, and other media so that I can make them see the light?" The basic problem for these educators is how to "transfer" knowledge through some form of communication. "If they only knew what was good for them!". And we are not dealing here with lunatic politicians who want to impose some hare-brained scheme on the world. We are dealing with sane specialists, technicians and experts who want to reduce disease, protect the environment, prevent dental caries in children, and so forth (410).

The didactic approach is also more likely followed in hygiene education programmes only implemented to meet the requirements for a project grant, as for example in Tunisia, Peru and Korea (54, 138). Evaluation of these projects showed that hygiene education has not decreased the likelihood of users contaminating water that was potable at the source. This may indicate that hygiene education was not effective. In fact the problem has more to do with the attention given to hygiene education in these programmes and the approach being used.

Programmes using the didactic approach often only blame hygiene education itself or the target groups for not achieving change in behaviour (409, 410, 486). However, when the target groups are not involved and when the reasons for change are not understood, changes may be viewed as being externally imposed, and thus easily refused or rejected (517). Limiting hygiene education to one-way information transfer directed to individuals generally have been found to be less effective in achieving behavioural change (466, 469) and may increase the chance that the necessary changes according to the project design are not made.

4.2 Promotional approach

The main characteristics of a promotional approach are identification of specific target groups, study of the needs and means of each group, adaptation of programme contents and methods to the groups concerned, pretesting of messages on understanding and acceptability and continued monitoring of results to improve the programme. The objectives and contents of programmes using the promotional approach are determined by the educators or project staff.

Whereas the promotional approach allows for better adaptation of the hygiene education activities to user needs and preferences, there are also limitations. Most project agencies, for example Ministries of Health or Water



Promotion of careful washing of fruit and vegetables to prevent diarrhoea, Jordan. The woman's head is not shown for cultural reasons (Diarrhoeal diseases control, WHO, 1982).

have very specialized capacities and expertise, and only develop programmes to solve certain types of problems, which may not necessarily be of high priority to the community.

The promotional approach was used for example in a hygiene education programme on wells and latrines in Nigeria. Water filters and latrines were promoted through exhibition and clean water was provided in the market place free of charge (293). In Imo State latrines were promoted by special sanitation teams during visits to rural villages (56). To increase the number of customers of water enterprises in Indonesia, the promotional approach was combined with community development.

The target audiences are divided into a number of market segments. The general characteristics of their communication style and perceptions, attitudes

and behaviour, especially concerning drinking water, are determined for each segment. Subsequently the activities of the construction programme are matched to each market segment (129). Guidelines for the development of a sanitation communication programme have been prepared based on social marketing to facilitate adoption of on-site sanitation by the urban population. Communication packages have to match the objectives, target groups, media and the executives (128).

Latrines and other hygiene related innovations have been promoted through the mass media in programmes in Ecuador and the Gambia (395, 446).

Social marketing

Social marketing is a special form of the promotional approach. It applies commercial marketing concepts to bring about socially desirable changes in behaviour (376). There is increasing interest in using this approach in hygiene education because of the effective communication techniques and consumer research.

In social marketing a product research technique using "focus groups" is developed to determine needs and preferences in relationship to the product. Studies of social and cultural practices help determine preferences and the design of the messages. If a population does not perceive the product as a priority, then considerable background work must be done prior to marketing. The price must be cut, the benefits clarified, or other means used to help the population perceive it as a need. Continuous evaluation helps determine how a product is being received, and how it or its marketing should be improved (491).

Examples of social marketing for water use and hygiene improvements include programmes for public health improvements, installation and use of household latrines and reduction of infant diarrhoea through oral rehydration therapy (56, 109, 151, 163, 190, 440, 497, 506).

In Honduras and the Gambia an oral rehydration therapy programme was preceded by careful investigation of mothers' views and practices on infant diarrhoea. Thereafter a primary health care mass information campaign was set up through radio messages, posters, flyers, primary health care centres, village volunteers, and a healthy baby competition. It focused on treatment of dehydration (the main cause of death) with a mixture of water, salt and sugar, and continuation of proper feeding. Radio messages were broadcast at peak listening times for women. Training covered central, regional and area teams who in turn trained local staff and volunteers to promote and demonstrate the method at group and household level. Monitoring of the programme showed 95% knowledge and 50% use in Honduras, and 80% knowledge and 48% use in the Gambia (109, 163).

Social marketing is especially suitable for promoting single facilities and practices to meet an immediate and urgent need of large user groups. It includes careful before-after analysis of the users' concepts and reactions and makes sure that the materials and skills needed for application are available and affordable (496, 497). Other advantages are that its programmes can reach large numbers of people in a short time and at relatively low cost (65, 151, 316). For long-term effects, closer linkage with ongoing programmes and existing services is recommended:

Social marketing has proven effective in campaigns, but care must be taken to ensure that it is part of an ongoing project for its effects to be sustained. One caveat is that social marketing campaigns are aimed primarily at individuals within a target group, and thus do not necessarily focus on government partners or other influential groups. Social marketing has also traditionally relied on mass media, rather than seeking out strategies such as community organization or traditional means of communication. In principle, however, social marketing could be incorporated in other strategies and appropriate media identified as, for example, the use of a simple logo of mother and child found to be effective in Egypt (491).

Whereas commercial marketing deals with behaviour which is relatively easier to change (for example, changing from one brand to another), social products are more complex and give less immediate satisfaction to the consumer. Also, social marketing needs to have a much higher percentage of acceptors and sustained usage, as for example in a promotional sanitation programme, if community and individual health benefits are to be fully realized (151, 376, 569). Therefore, for more complex behavioural changes demanding longer programmes, social marketing is considered to be less appropriate.

There are other major differences. On the one hand commercial marketers tend to focus on middle or upper income audiences. Social marketers in health, on the other hand, tend to focus on target groups with the greatest need, usually the poor, who have neither time or money to devote to health and who are often without ready access to health services (569). Also, commercial marketing usually has a much larger budget (376). Private firms allocate at least 10% of their resources to marketing (151, 491). Such a heavy financial investment has seldom been available for hygiene education. Programmes using social marketing are usually funded by donors and may not easily be absorbed in national budgets (151, 491). For example, the social marketing approach in the oral rehydration therapy campaign in Honduras was only possible with a US AID grant of US\$ 1 million (500).

Further, some health educators and planners fear that social marketing will become another name for "selling", whether or not a population wants the

product (491, 497). During a workshop on promoting hygiene behaviour in water and sanitation projects, social marketing was put forward as being useful only if the process and techniques can be adapted to the realities of the countries and populations concerned (65, 308, 491).

Another constraint in using the social marketing approach is that these programmes rely on a system of trainers, managers, researchers, field-workers and volunteers to demonstrate the necessary skills, to manage supply of materials, to encourage application and to monitor results. This puts considerable pressure on existing services and therefore the approach may only be feasible when extra support is available.

4.3 Participatory approach

The participatory approach to hygiene education starts with the question "How do I help people achieve what they want to achieve?" The main characteristic of this approach is joint problem analysis and problem solving. The role of the educator is to create conditions to help people solve their own problems. The objectives, content and methods are determined as much as possible by the target groups themselves together with the educator, in dialogues, discussions, meetings, community self-surveys and evaluations. This approach is used in various types of development programmes having special field-workers who meet regularly with user groups, for example in rural extension (410), community health education (506, 517) and women's programmes (335, 563). A participatory approach to hygiene education has been advocated from as early as 1954:

Environmental changes cannot be achieved without the widespread participation and understanding of the people who are to benefit. Essential information to be obtained beforehand includes appreciation of environmental health problems by the community itself and the perceived urgency.

Participation in planning of a hygiene improvement programme and presenting the advantages and disadvantages of various solutions for a "user's choice" can give considerable impetus to problem solving. Evaluation should not be limited to quantitative achievements but should also measure the extent to which people accept responsibility for setting and attaining their own goals. The role of the project worker is to assist the users (122).

The participatory approach is also known as the organizational approach in health education, because mobilization, organization and training are essential elements (244). Other characteristics are flexibility and negotiation:

A more realistic policy recognizes that the relationship between an agency pursuing a development project and a community is one of negotiated

Hygiene education programmes emphasizing dialogue and local organization have been reported to be quite successful in a number of cases, although their long-term effects have rarely been assessed (15, 36, 45, 162, 187, 258, 293, 295, 335, 343, 464, 469, 479, 562, 563). However, the intensive collaboration and local flexibility involved in this approach places high demands on the social and technical skills of the staff. Therefore, such programmes are often relatively small, varying from one or two villages (293, 469, 479) to 57 communities (466). Few larger scale programmes were found in the literature review. While large scale application is not impossible, it appears to depend on the availability of well trained field and village workers committed to and skilled in working with communities, rather than teaching and promoting new facilities and practices:

There is a need for fundamental change in the conventional top-down extension approach to rural people applied by many projects in the past. In this approach, the extension agents act as instructors, delivering specialized knowledge. The agency predetermines the content to be learned and directs the villagers to comply. This directive approach tends to increase dependence on an outside source to solve local problems. This is totally contrary to the objective of community participation. A facilitative approach is needed to help people become more self-reliant and responsible. This approach would make it easier for villagers to see the value of the experience; to become more confident in expressing their ideas, feelings and beliefs; in assessing needs and in exploring solutions. The field-worker must learn to use non-directive, facilitative techniques to help people take the initiative and to seek the technical information needed for problem-solving. New information can be brought to bear on the problem, but it should be assimilated by the people into their own context (486).

Some programmes have used mobile field staff who stay in the community to assist in problem identification, analysis and planning of a community action programme and then follow up the local programmes through periodic visits (262, 271, 333, 372, 416, 464, 469, 500). Other programmes have trained local workers or volunteers in executing or guiding community analysis and local project planning and implementation, for example, the group leaders in the hygiene education campaign in Tanzania (198) and the health volunteers in a latrine programme in Sri Lanka (448). Other programmes using volunteers can be found in Nigeria (11, 56), Zaire (164), Indonesia (6), Nepal (307), Malawi (321), Burma (375), Tanzania (294, 469) and Togo (162).

5. *Organization and Cost*

In this chapter the organization and cost of hygiene education are examined. However, very little information on the cost and cost-effectiveness of hygiene education could be found and there is clearly a need to pay more attention to this important subject. Based on available literature, four ways of organizing hygiene education programmes can be distinguished:

- hygiene education within technical programmes;
- linkage of technical and health programmes;
- hygiene education within primary health care programmes;
- mass campaigns.

5.1 Hygiene education within technical programmes

Many water supply and sanitation projects organize hygiene education within their own programme, not only because of the importance of the subject itself but also because health promotion is seen as a means to stimulate community interest and involvement (6, 22, 76, 103, 124, 204, 333, 463, 464, 502). In those cases hygiene education is often undertaken by technical field staff who are given the added responsibility for social and educational activities. For example, in Nepal technicians play a central role in community organization and education during project planning and implementation, and maintenance activities are combined with sanitation education (63). In Malawi and Guatemala field staff are recruited for their communication skills and interests and are trained in both technical and social skills (236). In another Guatemalan project, water supply technicians organize community participation and work together with local teachers and health workers in hygiene education (111). In Bolivia, community organization and sanitation education are part of the daily work of technical staff (200).

Alternatively, promoters, animators, or health educators may be attached to technical programmes to undertake social and educational services. For example, the social activation section in the Buba Tombali Water Supply Project in Guinea Bissau aimed particularly at bringing the well construction activities in line with the views of the village community, and at promoting proper use of water. The project also introduced health education and garden plot watering for vegetable growing (502). Other examples can be found in Colombia (394, 548), Ecuador (226), Honduras (380, 500), the Dominican Republic (149, 378), Burkina Faso (72), southern Tanzania (119) and Sri Lanka (416).

Integrating hygiene education into technical projects has the advantage of facilitating communication between project staff, but problems are also reported. It may be difficult to integrate technical and educational activities because education often requires a longer time period than the technical implementation (22, 464). Further, technical activities are often given higher status and thus higher priority (490). Hygiene education through technical projects may also create confusion and competition with health staff who also have regular hygiene education tasks. In Colombia, lack of co-operation between project staff and village health workers in the primary health care programme led to conflicting hygiene education messages:

Whereas project staff promoted the water from the slow sand filtration as being safe, the health worker still advised people to boil this for drinking (567).



Technically sound programmes are not enough: communication about hygiene must also be included, Indonesia (Handbook for village level workers, UNICEF Indonesia).

The need for closer co-operation between technical and health services is being increasingly recognized in a number of projects. Both the rural piped water supply programme and the hand pump programme in Malawi have established closer co-operation with health workers. Training courses for technical and health staff are now being carried out jointly (321):

More recently we have begun to hold training courses for health extension and technical field staff to improve the links between water and health. Courses are held jointly to facilitate co-operation and co-ordination and to increase the impact (96).

Reasons reported for closer co-operation are the economic use of limited resources, and greater efficiency and continuity of activities, also after facilities have been constructed. In a Zambian project it was calculated that with the present staff hygiene education activities could not be undertaken in all project villages. This would need to be organized through the existing health infrastructure (202).

5.2 Linkage of technical and health programmes

A number of water supply and sanitation projects are based on co-operation between the water department responsible for construction of facilities and the health department responsible for health education and rural sanitation. Sometimes the department of social services or community development is also involved. Such interdepartmental programmes operate in northern Cameroon (165), Botswana (146), Togo (463), Nepal (349), Nigeria (490), northern Tanzania (463, 472), southern Tanzania (464), and Sri Lanka (170).

In the Western and North Western Provinces of Zambia the need for co-operation was acknowledged with the setting up of water supply, sanitation and health education committees at provincial and district levels. All government agencies concerned including Water Affairs, Health, Social Affairs and Agriculture are represented on these committees (202, 577).

In India, the Ministry of Health co-operated with the Water Supply Department in a slow sand filtration project. A before and after study reported general use of safe water and considerable improvements in sanitation and hygiene conditions (174, 175, 176). However, this experience did not lead to co-operation between the two ministries in other water supply and sanitation projects in the same region (563). Similarly in the north of India, co-operation between ministries in six villages was not extended to other projects (336).

While affiliation with existing government structures and services has advantages for manpower availability, efficiency and opportunities for follow-up

activities, agreement on priorities and establishment of co-operation and co-ordination in the field are often complex (146, 229). The lack of engineers trained and experienced in an integrated approach to water supply and sanitation projects is one of the problems.

As a natural outcome of their education and professional practice, engineers are reluctant to introduce social and health components, let alone re-orient their whole programme on the principles of community development. Engineers responsible for projects need to be convinced of the practicality of involving the community, which requires the introduction of these concepts into international and national engineering education curricula (322).

Another problem relates to the professional career of engineers (233). While career advancement depends on quantitative performance, such as the number of latrines built, there are no real benefits for engineering staff in increased and lasting co-operation with other departments. Problems are also due to the health education services themselves:

Health education has traditionally been developed as a vertical programme, isolated from the other health services. This has alienated other health professionals and made it very difficult to measure the contribution of health education to an overall health service programme. As the cost-effectiveness of health education activities was hard to demonstrate, they were often considered ineffective (401).

A number of barriers within the health structure have been identified. These include lack of government commitment and national policy for health education; the weak position of the health education specialist; and medical personnel with little training in behavioural sciences and communication having overall responsibility for health education (213).

Further development of interdepartmental co-operation thus implies greater commitment and formal agreement from central government and departmental staff. This is needed because it requires resetting of national targets and sector plans and reconsideration of responsibilities and tasks of the various departments.

5.3 Hygiene education within primary health care programmes

The 1978 United Nations Conference on Primary Health Care in Alma Ata stated that provision of safe drinking water and basic sanitation is an essential

and integral element of primary health care programmes (536). "Health for All by the year 2000" can only be met if health workers understand the relationship between water, sanitation and health and provide practical contributions to improving the situation (438, 520, 522, 528, 540).

Although there is consensus that water supply and sanitation are essential elements in primary health care, implementation is far more difficult. In many countries the national health councils and the co-ordinating committees for Health for All through primary health care, do not include representatives of the agencies responsible for water supply because of intersectoral rivalry (527).

To find out the extent to which primary health care workers deal with the problem of water and sanitation, Zacher compared the job descriptions of health care workers in 22 programmes. The programmes varied from nationally launched and country-wide primary health care programmes to small scale privately organized efforts. Of these 22 programmes in Africa, Asia and Latin America, 75% of the job descriptions gave water and sanitation as one of the main activities. However, this emphasis was not supported in the type of training received and the training material used (574).

A universal problem at field level is that curative health is often given higher priority and prestige than preventive health. (13, 15, 56, 213, 382, 506, 574). Health workers have been reported to put sanitation at the bottom of their duty list (438) or alternatively to receive little support from medical staff for their education activities:

The medical establishment in Tunisia is heavily oriented to curative rather than preventive health care. Health teams responsible for rural hygiene education often find their cars requisitioned for other purposes (54).

Another factor hampering hygiene education in primary health care programmes is the lack of budget allocations and training opportunities in many ministries of health (156, 506).

Despite the rhetoric of many governments promoting primary health care over the industrialized country model of hospitals and specialized care, budget allocations for preventive and promotional aspects are meager in too many countries. Governments rarely spend more than 0.5% of their health budgets on health education (151).

Many constraints in the implementation of health education were identified from primary health care programmes in South-East Asia. Limitations in the number and quality of health educators, lack of intra- and inter-sectoral co-ordination, inadequate resources, and inadequate training and management are some of the reasons given for the limited impact of health education (546).

Yet various sources emphasize the great potential of primary health care workers to assist locally specific hygiene education and improvements in technical projects because they are an excellent resource group for a participatory approach (357, 358). In India, a primary health care programme contributed to decreasing infant mortality and morbidity, building houses for the poor, installing hand pumps, digging wells and other development activities (546). In Indonesia and Togo, participatory water supply projects have stimulated other primary health care activities in rural communities. Research has shown that more children completed immunization series in communities with participatory water projects than without such projects (144). In unserved areas primary health care workers can assist communities and groups to make their own basic improvements in water, sanitation and hygiene, as reported in Papua New Guinea (78), Maharashtra, India (87), Cameroon (165), Niger, Benin and Zaire (292), Botswana (117), Nigeria (15, 67) and Burkina Faso (172).

In Malaysia, health workers are trained for nine months in health education, minor water supply construction, latrine construction, refuse disposal, nutrition and village clean-up campaigns. They organize water supply action committees which establish a water fund and organize latrine construction. Rural health supervisors at district level (one per 12 villages) provide low cost technical assistance in design and construction (378).

To date community self-improvement programmes through primary health care and other field-workers have received little recognition in national programmes and by donor agencies (67, 562). Oversight of these activities not only means neglect of rich resources for better health and development, but has also led to duplication of efforts. For example in Kenya, the technical water programme has been implementing projects in villages where self-help improvements are also being carried out with the health department (421). In Malaysia such a situation has been avoided by co-ordination of efforts. The Ministry of Health supports community self-improvements only to communities where the Ministry of Works and Utilities does not plan a major water supply improvement within five years (378).

5.4 Mass campaigns

In some countries, mass campaigns have been undertaken to strengthen hygiene behaviour. These campaigns usually convey a limited number of simple messages. Mass campaigns generate enthusiasm, are launched in a limited time-frame thus making interagency co-operation easier than in more regular and long-term

programmes, and attract funding because they can produce dramatic short-term results (151).

When a community has the resources and the will to act, mass campaigns can help bring about changes in behaviour. However, campaigns based on mass media alone usually do not have a long-term impact. Failure of the message to reach a specific community, and the lack of opportunity to clarify the message through discussion are some of the severe constraints to these types of campaigns (213, 434). Therefore mass campaigns must include interpersonal communication, as was done in the Mtu ni Afya ("Man is Health") campaign in Tanzania. This campaign included twice-weekly radio broadcasts combined with radio listening groups led by trained discussion group leaders. Discussion leaders were chosen by the groups themselves, by local leaders, or from village volunteers. Broadcasts and printed materials were designed to stimulate group discussion and community action:

Interspersed throughout the study-guide sections are questions intended to stimulate group discussions and action. The questions followed a narrative:

- Look at the members of your family. Do you see any signs of hookworm?
- Why do some people in your village not use latrines? Discuss how such taboos can be broken. Discuss your village and find places where a public lavatory is necessary. How could a latrine construction scheme be started in your village? (198).

The campaign was very successful and resulted in improvements in removal of vegetation around the house and in latrine construction and use. Unfortunately, the campaign was never linked up to rural water supply. In Botswana a hygiene campaign was initiated by the Ministry of Water Affairs as part of a village water supply programme and follow-up was planned through the regular health infrastructure.

The campaign aimed to increase water consumption and to decrease water contamination between collection and use. It was launched through existing communication channels, the most important being the school and health structures. Inter-ministerial water hygiene workshops were held at national and regional levels to promote co-operation and co-ordination of efforts. In villages, key persons were trained as hygiene communicators. The campaign was supported by radio programmes, newspaper articles and educational material such as a hygiene handbook, workbooks, literacy booklets, posters and pamphlets. After a year the campaign became an ongoing programme of hygiene education within the Ministry of Health (146).

Mass campaigns have the disadvantage of placing an enormous demand on manpower and other resources, thus frequently hampering continuation of

regular programmes (151). The widely praised vaccination campaign in Colombia, for example, as well as the "Man is Health" campaign in Tanzania, depleted Ministry of Health funds and distracted people from their regular work (151, 457).

In general, mass campaigns which are part of a package of programme activities, including personal follow-up, with clearly defined objectives can be useful (303, 304). This type of campaign is also reported to be effective in maintaining long-term changes in behaviour (151). Further research is needed on the effectiveness of campaigns and the role of communication media.

5.5 Cost of hygiene education

Available documents show a remarkable lack of cost data on hygiene education (148). Even in programmes with a strong hygiene education component, as for example in IMO State, Nigeria (56) or in Bhaktapur, Nepal (307), project documents give few cost data on hygiene education. What figures are given concern mostly overall project costs or construction costs, and no breakdown on budget allocation and spending for hygiene education is given. Other project documents make general statements about hygiene education, whereas budgets still concentrate on technical and technical training aspects (230).

Where cost data are provided these are generally difficult to interpret. To mention a few of the complicating factors, costs for hygiene education may be put under the same heading as costs for participation, training or institutional overhead costs (60, 63, 236, 565, 577). Technical staff may be responsible for both the technical and educational tasks (see Section 5.1). Hygiene education may be part of more comprehensive health activities (Section 5.3). Hygiene education may be given by professionals or volunteers (Chapter 6). Costs of expatriate staff may not appear on the budget (577). Thus it is difficult to estimate how much is budgeted for and spent on hygiene education.

The proportion of project budgets reserved exclusively for hygiene education activities as identified ranges from 2% for rural projects in Yemen (342) and Kerala (504) to 9.5% in Honduras, excluding staff salaries (500). Hygiene education programmes, including training, supervision and evaluation of village health workers, show different ratios spent on materials versus human development. In some cases, budget reservations are limited to the production and distribution of educational materials. In Yemen, all expenditure was for health education equipment and posters (342). In Kerala, approximately 8% of the software budget has been reserved for materials and organizing hygiene education campaigns (504). In northern Tanzania, 50% of the total budget was reserved for training and 7% for educational materials (472).

Table 2: Budget for hygiene education component of the Harispattuwa Water Supply and Sanitation Project, Sri Lanka, 1984-1985

Item	Cost (Rs)
Study of existing beliefs and practices	5 000
Brochure/folder on the Water & Sanitation Project (2000 copies)	10 000
In-service training of public health staff, project staff and hospital attendants	30 000
Manual for public health staff (600 copies)	10 000
Orientation/training of community leaders	10 000
In-service training of school teachers	10 000
School health education program	10 000
Essay competition in 100 schools	35 700
Poster competition (prizes, printing and exhibition)	55 700
Preparation and printing of primary school text book	25 100
Community health education programme	P.M.
Health education work in medical institutions	10 000
Training of health volunteers	20 000
Publicity campaign for improved water and sanitation	P.M.
Monitoring costs	36 000
Evaluation costs	20 000
Travelling allowances for public health staff	80 000
Typing and stencilling education master plan	2 000
Other contingencies	55 500
Grand Total	425 000

Source: Ganewatte, 1984 (170)

Exchange rate US\$1 = Rs 16 (1984 prices)

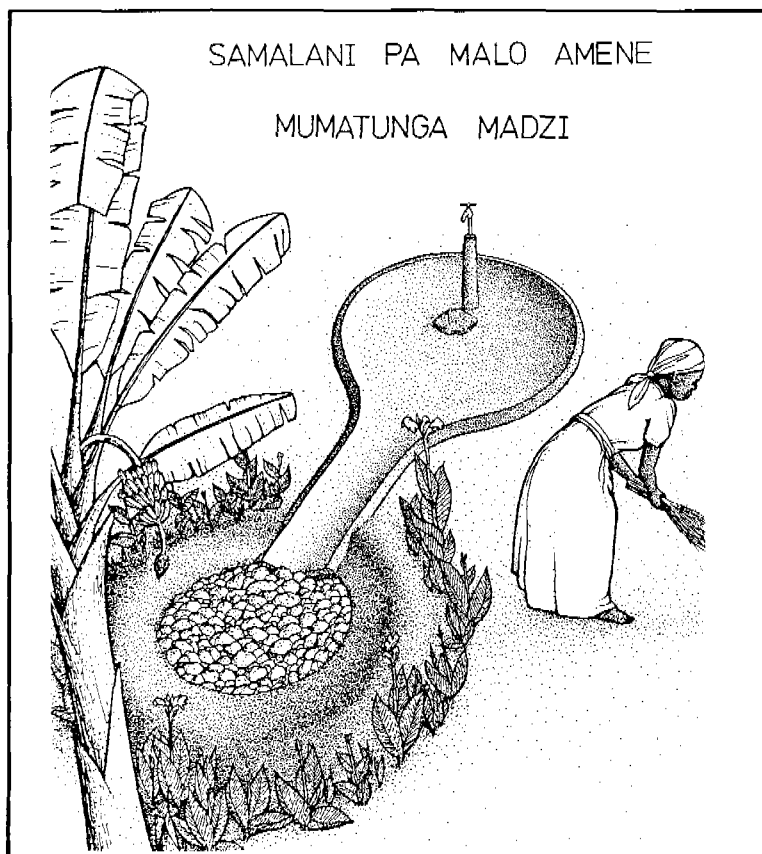
Note: The project started in 1981 with the objective of providing approximately 150 000 people with improved water supply (hand pumps and piped supply) and 5000 sanitary latrines.

One of the more comprehensive overviews of comparative project expenditure is found in a final report on a rural water supply project in Burkina Faso. The annual expenditure between 1983 and 1985 was as follows: administration, 9%; hygiene education and participation, 6%; hydrological studies, 12%; and well construction and pump installation, 73%. Half of the hygiene education and participation allocation went to salaries for the 12 educators and half was spent on transport, including 15% for procuring transport and 35% for running costs (419).

A few projects provided a cost breakdown for the various aspects covering the hygiene education programme. The budget for the hygiene education plan of the Harrisputtawa (170) water supply and sanitation project in Sri Lanka is shown in Table 2. The costs for the educational intervention for altering water and sanitation related behaviour to reduce childhood diarrhoea in urban Bangladesh has been inserted in the abstract (456). In Botswana, pula 140 000 (local currency) was set aside for a hygiene education campaign to support a national rural water supply project. Some 10% was used in the planning stage, 38% for the development of health education materials, and 30% for the salary of the co-ordinator. Since the campaign planned to work with existing organizations, costs for transport were expected to be very low and only 4% of the budget was allocated for this purpose. Provision was not made for organizing workshops and distributing materials (145, 146).

In Ivory Coast the National Service for Hygiene Education of the Ministry of Health organized a hygiene education programme with two components: one to promote operation and maintenance of facilities and the other to reduce the incidence of diseases related to poor water supply and sanitation. In this programme 37% of the budget was used for transport and 16% for water analysis equipment. Twenty per cent of the money was spent on didactical aids and educational materials such as posters, booklets, flannel boards, etc. (247).

Communities are often expected to pay for the services of community health workers (see Section 6.4). The cost of hygiene education above community level is usually financed from the regular budget of the Ministry of Health and donor organizations. Occasionally special funds are raised, for example, in Ivory Coast the hygiene education programme was financed from a surcharge on urban water supply by a water company. However, the undesired side-effect of the company's self-sufficiency being endangered has led to new ways of financing being sought (566).



Drainage water can be used for vegetable gardening and fruit production to raise an income for the community health workers, Malawi (Promotional Poster, Ministry of Health).

5.6 Cost effectiveness

Very limited data are available on the cost-effectiveness of non-technical project components, let alone hygiene education.

In a hand pump programme in Guinea Bissau, the costs of the community participation programme were 17% of the total programme cost. A study on the effectiveness of the programme showed good results for preventive maintenance and well-site hygiene. Increased participation in well location and increased hygiene education led to 100% use (383). The cost of the participation

programme in a pilot project in Tanzania was 7.1%. Increased community participation resulted in better distribution of water points for more general use, and community initiatives to improve functioning and local hygiene conditions and practices, in particular in school sanitation (466).

It has been estimated that up until 1986 less than 1% of all water supply and sanitation investment funds was allocated for non-technical inputs. There are indications that this is far too little to achieve optimum results. International and bilateral donor agencies have recommended that spending on non-technical aspects should be increased to at least 5% of total investments (530, 534). This opinion is shared by others. It has even been suggested that 5% of allocated project funds should be set aside exclusively for hygiene education (6). Increasing the proportion spent on participation and education appears to be especially important for low cost water supply and sanitation as higher commitment and inputs from the population concerned are expected (236).

The very few data available also indicate that expenditure on non-technical activities may contribute to reducing overall project costs.

An important consideration for replicability is cost-effectiveness. The Imo State project is providing communities with clean water at a cost per villager of between US\$ 9 and 16. This compares with an average per capita cost of US\$ 68 for other Nigerian water supply projects, a cost five times higher; and these other projects do not even contain the social components of the Imo State project "package", regarded by UNICEF as its essence (56). In the national water programme of Guatemala, software development costs were between 13 and 15% of overall programme costs, while recurrent costs for software implementation varied from 10% to 12% (133a). The resulting cost savings in construction average about 20% while local operation and maintenance costs are 100% community financed (133).

The lack of information on the cost-effectiveness of hygiene education clearly shows that more research is needed on the potential and limitations of hygiene education. Support to hygiene education programmes would be greatly strengthened if more data were available about the costs, cost definitions and effects of individual programmes, and also more detailed descriptions of local conditions and the educational approach. There is a need for more comparative evaluation of the cost-effectiveness of various approaches to hygiene education:

Much research has been carried out on educational efforts to change beliefs, attitudes and behaviour in sanitation, for example. As yet none of these studies has demonstrated the effectiveness or cost-effectiveness of methods to improve hygiene practices in various types of communities and community groups. Recent studies have demonstrated the value of involving men, women and

children more actively in locally specific health education programmes, and the need to take into account the particular practices, responsibilities and potential of each group. There appears to be scope for comparative evaluation of various approaches to health education, also because the almost universal call for more health education seems to overestimate what can be achieved (519).

6. *Manpower Characteristics and Training*

Hygiene education manpower involves three levels: ministerial, project and community. Much of the literature reviewed relates to the community level worker, and little information was found on project and ministerial level staff. Thus in this chapter the focus is primarily on community level workers.

6.1 Levels of manpower

Ministerial level

Little information is available on ministerial level staff such as policy makers, project planners and project officers responsible for hygiene education funding, planning and organization. A few reports have emphasized that the promotion of hygiene behaviour at community level requires the active support of programme planners and policy makers.

The community worker is the major cog in the primary health care or hygiene education programme wheel, but he/she cannot work effectively alone. Policy makers and planners would prefer that no health worker would be left to cope in isolation. This would mean a restructuring of services to provide the guidance and support for all manpower involved. No matter how well they are trained, the effectiveness of staff at all levels is minimized without adequate support (49).

Various sources point to the shortage of skilled high level staff hampering the progress of hygiene education development (11, 438, 507). The need for specialist health education resource persons and units in developing a national policy for hygiene education, has been emphasized by Hubley (217).

Another problem is that often several ministries and departments are involved in water supply, sanitation and hygiene education, and therefore it is not surprising that integration may be quite complicated (145). As a result, no action may become the easiest action:

"Given the complex web of ministries and agencies which might claim some say in sanitation policy matters, the simplest tendency is towards inertia" (229).

In some cases, special efforts are reported of orienting high level staff in technical departments to an integrated approach of water supply, sanitation and health education and establishing a structure for inter-departmental

co-operation. In Botswana, Nigeria, Malawi, Togo and Tanzania, for example, inter-ministerial teams have been formed and national workshops organized to promote the interest of water engineers and council staff in hygiene education (146, 387, 313, 464, 490).

In Botswana, a hygiene education programme has been organized in co-operation with a reference group of members of different ministries. It took considerable effort to achieve co-operation as many departments were not accustomed to working together. Although abandoned after a year, the team worked together long enough to create awareness and support the campaign development (146).

These and other programmes also included training for high level health staff. In Botswana, Nigeria, Malawi, and Tanzania (146, 321, 464, 490) policy makers, supervisors and trainers have had training in integrating hygiene education and community participation in technical rural water programmes. In a Honduras rural water supply and sanitation project, local counterparts were trained in organizing hygiene education programmes in order to take over the existing hygiene education programme after the departure of foreign help (500). However, it is questionable whether training and inter-ministerial co-operation is effective in the long-term without the support of explicit government policies (529, 541) and practical measures for policy implementation.

Project level

Project level staff may be either directly involved in the implementation of hygiene education or indirectly involved through community level workers. Project staff may work directly as hygiene educators, for example field technicians in technical programmes (63, 146, 181, 477); public health staff from the Ministry of Health (20, 27, 216, 217, 438, 464) and hygiene educators employed by the projects (21, 333, 500, 502).

Field technicians are reported to be valuable hygiene promoters, especially those who stay with the community throughout the construction period (477). However, sometimes they find it difficult to pay sufficient attention to their educational tasks in addition to their technical tasks (63, 181, 182). Public health inspectors, although very knowledgeable about water, sanitation and health, sometimes tend to act as controllers rather than educators, thus limiting their potential impact (27, 42, 115, 438). Project hygiene educators may find it difficult to bridge the geographical and social gap to the community, and often do not have sufficient time to spend in a community because of their multiple tasks and the area they have to cover (116, 502).

Project staff need to support community workers in implementing hygiene education and in training. They need to liaise for technical and financial support. Such an arrangement not only provides the necessary guidance and motivation but also enables further development of a hygiene education component through liaison with programme managers, planners and policy makers (307, 455, 500).

Several sources indicate that co-operation between various government departments is more easily achieved at project level than at ministerial level. In Zambia and Tanzania staff from technical, health and social development departments work together in water supply and sanitation (464, 577). In Togo working groups were formed to integrate the activities of the various departments for control of guinea worm disease (387).



Hygiene educator at work, Nepal (CWSS Programme Pokhara, Nepal)

Community level

Irrespective of type of approach and organizational set up community level workers are the main group of hygiene educators. Although the names may vary (village health workers, family welfare educators, health assistants, primary health care workers, hygiene promoters), community level workers can be divided into two categories. Firstly there are the volunteers or semi-volunteers,

who are selected from the community, trained for a short period and who then return to the community to promote hygiene and health along with their daily activities. The second category consists of full-time health workers from local health centres. In addition local caretakers are sometimes trained to carry out promotional and educational tasks (170, 271).

Volunteers and semi-volunteers are important hygiene promoters for two reasons. Firstly, project budgets available for hygiene education are usually insufficient to allow for a professional hygiene education team to cover the entire population involved. Secondly, a reason more often put forward, volunteers can reach the target groups more easily and actively because they are of the same socio-cultural background and live in the same neighbourhood (116, 357).

In a number of projects, volunteers have been selected and trained for educational and motivational tasks because health workers from health centres were not available, as in Nigeria (56, 490), India (264, 265), Honduras (335) and Tanzania (294). In Nigeria, project staff trained selected community members to carry out health and hygiene education in their villages (56, 570). In Tanzania, the primary role of the voluntary health promoters was to lead and guide women's discussion groups, and also to encourage women to contribute ideas to help solve hygiene problems (294, 469). In other programmes voluntary health promoters have been trained to assist occupational health workers from health centres in their hygiene education tasks (162, 326, 424).

In several programmes voluntary health workers and health workers from health centres are also actively involved in technical improvements:

In the People's Republic of China, India, Papua New Guinea, Ethiopia, and the Philippines, community health workers have organized latrine campaigns and water supply improvements (78, 87, 578). In Botswana family welfare educators are trained to construct water carts, water filters and latrines and to promote hygiene through popular theatre at health centres (117, 563). In a large-scale programme in Sri Lanka 25 000 latrines have been installed in 310 villages. Voluntary health workers selected by the communities have been involved in the village surveys, organization of application for latrines, hygiene education and follow-up (374, 448).

In other programmes, local caretakers are also supposed to educate people in safe water use (183). In Botswana, pump caretakers received a water hygiene handbook in the local language to reinforce the "keep the water clean" messages (146). In a project in India, voluntary hand pump caretakers are also health workers. They maintain medical records, motivate people to construct soak pits and to improve environmental hygiene, and serve as a link between the community and the health educator in health education programmes (13, 26, 183).

Community level workers are often supported by community committees who provide motivational, organizational and logistic assistance, including compensation for the voluntary health workers. These may be existing water or health committees or committees formed specially for the purpose (15, 56, 149, 162, 321). Provided they represent all social groups, these committees can be very effective in enhancing community based hygiene education (417, 517). Yet both committees and workers may become demotivated and inactive without regular contact with project level staff (56). Therefore, the active support and supervision of the community level committees and workers in local hygiene education is important.

6.2 Selection and recruitment of voluntary workers

Although selection criteria for voluntary hygiene educators vary from country to country, there are some widely accepted criteria:

- ability to assimilate and practice what he or she is taught;
- previous service within the community;
- acceptance by the community;
- maturity and a sense of responsibility and dedication (357).

Community acceptance of the candidate is particularly important and depends largely on the recruitment procedure and on the standing of the candidates within the community (357). In some cases, the project sets the criteria and asks for volunteers (56). In other cases, there are no set criteria, but efforts are made to ascertain users preferences. In a project in Indonesia, questionnaires were used to identify those to whom villagers would turn to for advice on community and health matters (132). In other projects, suitable candidates have been identified through direct community or group selection (162, 191, 261, 469). This method has the advantage that a more subtle choice can be made than by simply applying general selection criteria.

In Ulengule Village, Tanzania, women were asked to select among themselves those considered to be most suitable for training as environmental health educators. Evaluation showed that the opinion leaders in health and domestic health care were selected. The women chosen were on average 30 years of age and 82% were married. Almost 40% did not have any children and 50% were illiterate. Only one woman held any formal position, while four had husbands in influential positions. The project team would not have been able to choose the same women, because they could not have quantified the variables which village women felt would assist the project. Had the women health promoters been chosen by the project staff they would most likely all have been literate (294).

There is sufficient evidence to indicate that it is important to discuss the selection of candidates with communities and target groups because sometimes people have been chosen who have not remained in the community (116, 183, 254, 560), who were too closely involved in local politics (365), or who had no influence in the groups they were to work with (418).

What weight do the words of a young man carry when he tells women they should chase their chickens out of the kitchen and empty and clean their water jugs daily? What chance does he stand of convincing others when in his own home chickens roost in the yard, everyone drinks from the water jug and the calabash lands on the dirty floor every so often. How attentively and willingly will the women listen when such changes only make more work for them? (345).

Some people argue that even the decision whether to have a local worker at all should be made by the community, and not be imposed from outside (254).

In the selection and recruitment of volunteer workers, their age, sex, marital status, literacy, residence, confidence and respect and motivation are important. Young men and women are sometimes preferred because they are more mobile and generally have a higher level of education (99, 199, 345), and yet in other cases young people are not considered to be suitable.

In most villages young male caretakers do not command much respect and find it hard to get the community to co-operate in keeping the area around the pump clean. Their role has not been extended to cover the sanitation and health aspects (183).

In a number of cases preference has been given to female workers with or without children because they can make the link with other women more easily and effectively (108, 199, 463, 469, 502). Male field-workers have also been able to improve environmental hygiene together with village women, when they have been accepted by both men and women, had a favourable attitude towards women, and were skilled communicators (5, 91, 399).

Although literacy is sometimes made a condition (15, 56, 116), it is certainly not a determining factor for a successful hygiene educator (71, 335, 428, 469), especially when literacy is considered to be synonymous with mastering a foreign language.

In Mali, a basic health programme was carried out in 15 villages by village health workers. Evaluation showed that those trained for five days in their mother tongue of *Babara* gave better service to their communities than those trained after attending French schools for five or six years (46). In Guatemala,

the health communicators made little or no impact as they were selected for their knowledge of Spanish and not for their role in the community's informal health network (71).

In a project in India, illiterate health workers were among the most successful. Whether the health workers were trusted and had regular contacts with the women and men were the main factors determining their success (25).

6.3 Training of community level workers

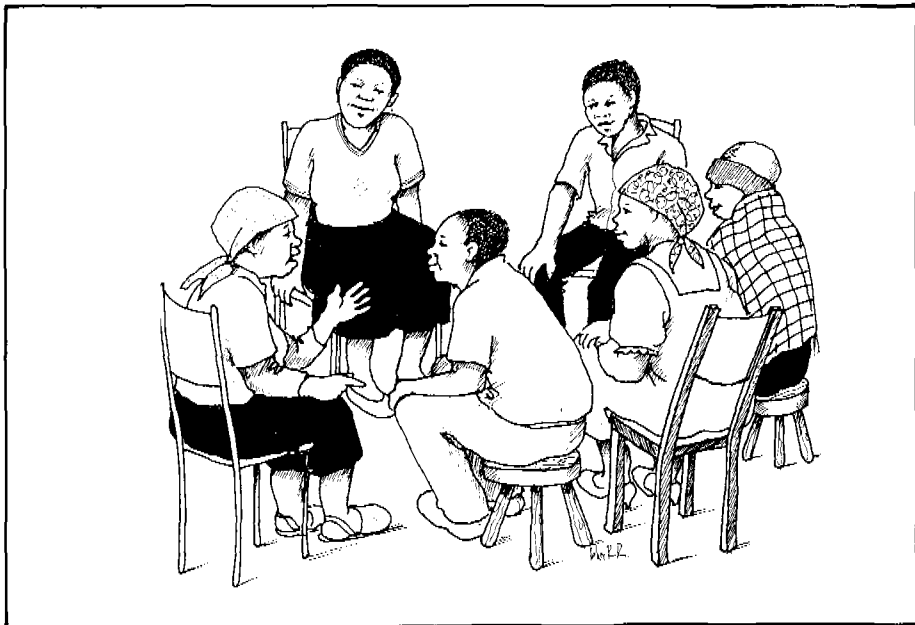
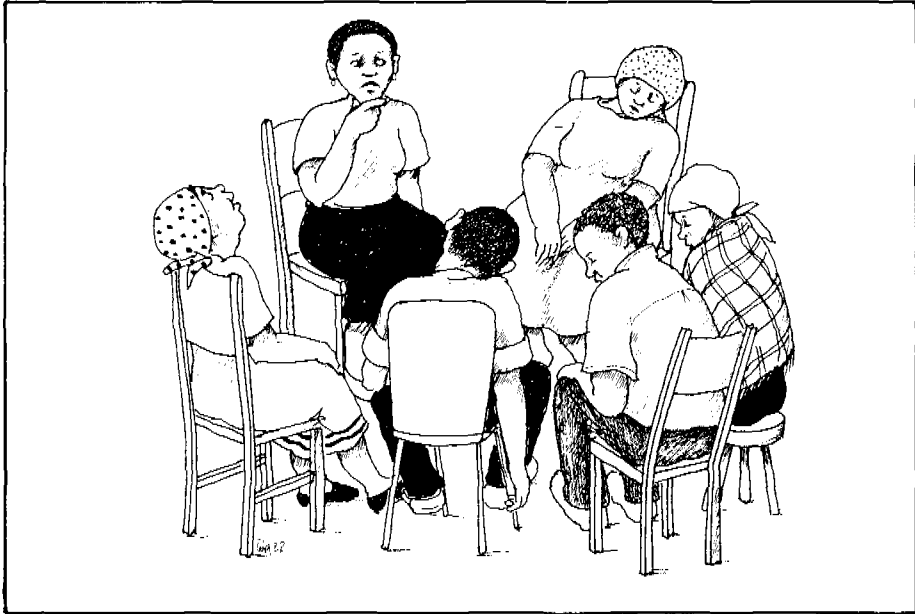
The basic training period for community hygiene educators varies considerably from three days in Burma (375) to nine months in India (382). In many countries including Nigeria (56) Nepal (307, 477), Honduras (335) and Kenya (191), training periods vary from one to two months and combine classroom work and practical experience in the community. A three-day training period was found to be too short in Burma (375). In Nepal, an additional 14 afternoon sessions were needed to supplement the original four-day training course (307).

Appropriate time scheduling is necessary to allow participants to follow training activities. In Togo a five-day workshop was organized from 9 am to 2 pm to allow participants time to attend to their duties at home and in the fields (162). A training course in Nigeria was organized on Saturday and Sunday afternoons in the regional town where all would normally be for the weekend (15).

The literature surveyed indicates that training programmes may need special provisions to allow women to participate as freely as men. In Bangladesh, group travel was organized to allow women to attend training sessions (5); in Tanzania training courses were decentralized at village level (563); and in Nigeria and Guinea Bissau child care facilities were provided at training centres (490, 502).

In India, it proved to be difficult to motivate women to be trained as village health workers because work outside the home was not considered proper. Even the project village workers did not want their wives to be health promoters at first. This attitude changed when a widow of an influential Brahmin became the first trainee. Because she was highly respected by the community the training programme gained acceptance (382).

A serious constraint felt in many countries is the shortage of trained trainers in participatory learning (4, 6, 357, 448). Hubley (216) concludes that far too many trainers use formal lecturing and classroom teaching. Many training courses are more directed to imparting knowledge than to increasing communication skills and acquiring a critical understanding of health issues (56, 321, 345).



Training is needed in group discussion methods to make hygiene education more interesting, Botswana (Stanley, Rick, and Zufferey, 1983).

In the Alternative Sanitation Project, Nepal, training included both group discussions and practical work. Although the trainers were told not to speak for longer than 20 minutes, many presentations were longer because the teachers were unaccustomed to a different method of training. The trainers too often followed the raised finger approach, lecturing instead of guiding the students through discussions (307).

One reason for this problem is that trainers themselves do not have experience with group discussion methods and practical training (216, 441). In a small survey of 38 teachers in primary health care in 15 countries, only eight (21%) had attended a course or workshop on educational methods or had received any significant training in pedagogy (4). However, there are a number of courses which use role plays, group discussions and other adult education techniques to train participants on how to help communities and specific target groups to analyse their situation and take action for problem solving (15, 117, 181, 182, 307, 354, 451, 464, 477, 502).

A humorous role play was presented by a facilitator depicting a health worker making a home visit more in the manner of a police officer, than as a friend and neighbour. The volunteers discussed what they saw in the role play and what they thought about the attitude and behaviour of the health worker, and subsequently better ways to visit and work with people (162).

The trend to training local workers in communication, problem identification and problem solving techniques can also be seen from the type of education and training materials prepared in various programmes, including general documents for field workers, region-specific guidelines and project documents. General documents cover manuals, guidelines and resource books on health and hygiene education (62, 270, 309, 341, 514, 515, 533) and a number of books on communication (2, 3, 44, 113, 141, 168, 169, 187, 195, 196, 220, 312, 327, 328, 329, 330, 432, 454, 494, 495, 556, 557).

Region-specific guidelines include a handbook introducing health issues through a series of dialogues between a doctor and villagers in Cameroon (431); books on local community health for health workers in Tanzania (555) and Kenya (353); and a training manual for extension workers on community involvement and health promotion in Papua New Guinea (210) and Burkina Faso (101). Specific project materials include training and job manuals on community participation and hygiene education usually in local languages, as in Tanzania (467), Zimbabwe (296) Burkina Faso (454) Rwanda (228), Colombia (136, 403), Zambia (576) and Nepal (487).

7. *Audio-visuals as Hygiene Education Tools*

7.1 Use of audio-visuals

Audio-visuals can be very effective tools in hygiene education. They assist educators in carrying out their tasks and may also give them confidence and credibility to perform these tasks. Target groups are often easier attracted to hygiene education activities and to remember the messages when audio-visuals are used. An evaluation of audio-visuals showed that a combination of words and visuals was remembered some six times better than words alone and three times better than pictures alone (312).



Film shows were organized in an urban fringe area to motivate the community to bring their stools for round worm testing. The main film on round worms was sandwiched between other entertainment, Nepal (Lohani and Guhr, 1985)

Hygiene education programmes everywhere have made extensive use of posters and flip charts. As well, a wide range of audio-visuals are used including models, printed illustrations and photographs, flyers, newspaper articles, radio talks, filmstrips, video and motion pictures. Other means such as drama, songs and games are also being used, as well as real objects, such as demonstration latrines and water filters.

Many reports mention the development and use of more modern media, such as films on sanitation in Ecuador (83) and Nepal (307), videos in Sri Lanka (450), and Botswana (146) and cassette listening in Guatemala (104, 105), Yemen (22) and Tanzania (453). The film *Prescription for Health*, prepared by IDRC (224) in support of the Water Decade 1981-1990 is reported to be used in many countries both in community education activities and in training programmes for technical and health field staff. It has been translated into 20 local languages mainly in Asia, as well as into English, French and Spanish. A set of modules accompanies the film to promote discussion and action on hygiene related subjects (225). A list of audio-visual materials on water supply and sanitation has been prepared by WHO. This includes films, videos, slides, filmstrips, posters, flash cards, and flip charts (80, 521).

In Honduras (499), India (579), Zaire (227) and Costa Rica (476), comic books and novels on aspects of hygiene education have been produced. In Zaire a novel about the construction and use of latrines has been written for adults (227). Reports also show the use of popular theatre in Botswana (279, 280), India (231) and Zimbabwe (297); songs and story telling in Paraguay (76), India (124), Ghana (248), and Bangladesh (370); sermons on personal and community hygiene based on lessons in the Koran in Sudan (568); puppet shows in Tanzania (464), India, and Mexico; and several child-to-child programmes (184, 370).

Experience suggest that more indigenous media such as stories, songs, dramas and puppet shows may have significant advantages over more modern media in that they are familiar, credible and accessible to large parts of the population. Sometimes both types of media can be integrated successfully, but this requires careful assessment of the available media and their compatibility (303, 370, 376).

In Liberia a multinational team of health and sanitation workers identified several community health problems. After discussion with a Village Health Committee live performance was seen as the most appropriate medium to change water related behaviour. This show, which combined music and drama, became so popular that the performers travelled to neighbouring villages and ultimately their show was recorded for broadcast (370).

Often, people acquire knowledge and understanding more easily by showing and handling real objects. Therefore, hygiene education programmes may benefit

from using the real thing, or if not, then models (62, 151). Latrine projects especially have made imaginative use of models and real objects. In Zimbabwe (508) and the Maldives (346), simple working models made from cardboard and other materials were prepared for discussions on various types of toilets with the community. In Nigeria water filters were set up in a marketplace and clean drinking water provided free of charge in order to promote their use (293). In Nepal and the Philippines, the projects exhibited round worms excreted by children in the target group, to stimulate discussions about the problem and possible solutions (155, 307).

Demonstrations have proven to be particularly valuable for teaching people new skills, for example the right mixing of an oral rehydration solution, cleaning of milk bottles, protection of water sources and use of water filters. Smith and Yacoob (439) emphasized that for demonstrations to have an impact they need to be realistic, using local materials in familiar settings.

7.2 Pitfalls in the use of audio-visuals

The effectiveness of audio-visuals depends largely on how they are used. They can be very helpful in motivating and activating an audience but they are not a substitute for group processes in which people exchange views and experience, make action plans and convince one another to change existing conditions and practices. Audio-visual aids are no substitute for a good hygiene promoter (62, 151). Some general points for using audio-visual aids are:

- plan activities carefully: the better you are prepared the better you can work;
- adapt activities to the group you are working with: you cannot conduct activities in the same way for children as for local caretakers;
- make sure that everybody can see the audio-visual aids before you use them;
- keep activities clear and simple: complicated activities will fail to have impact;
- do not try to do too much at a time: otherwise the points you wish to make are missed by your audience;
- repeat the key points in different ways;
- use the same audio-visual aids several times: at the first showing people are often more interested in the aid itself than in the point you want to make;
- stimulate open discussions with and amongst the people involved whenever you can;
- evaluate activities every now and then with the help of the community;

- share experiences with other hygiene promoters and discuss problems and possibilities (62).

The use of audio-visuals in the participatory approach to development is largely based on the work of Paulo Freire who used photographs and local drawings as a tool in problem identification and solving (166). This approach has since been applied in many development projects including public and environmental hygiene in Nepal (451), Peru (41, 359), Yemen (22), Tanzania (466) and Burkina Faso (187).

In Kenya, peasants, pastoralists and peri-urban women were asked to imagine stories based on the situations depicted by a set of photographs of Kenyans doing everyday things. Two of the photographs related to water. From the stories told the project team gained insight not only into the needs and priorities of three specific groups of women, but also about their views on solutions to their problems (53).

However, more often audio-visuals are used as an end in themselves. This is largely due to the widespread misunderstanding that hygiene education is synonymous with the use of audio-visuals, whereas in fact they are merely a tool in the process of changing hygiene related behaviour (268). Yet their production and distribution often claim a large proportion of project time and budget for hygiene education (151, 268). This tendency is compounded by the fact that their development and use leads to visual outputs which give the impression that something has been accomplished (268).

A number of conditions govern the effective use of audio-visuals, however these are not always met. The literature shows that as a first problem, materials do not always reach those for whom they are intended. No matter how well-produced, an audio-visual aid is not effective unless it is seen or heard by the intended audience. In Tanzania posters on water-related diseases and hand pump maintenance put up on walls of public buildings and restaurants were seldom seen by the women to whom they were addressed, simply because they did not frequent these places (282). In Indonesia, a number of attractive booklets and posters to promote change in community behaviour were prepared at national and provincial level. However, as the educational activities were limited to demonstrations in annual exhibitions, communities had little access to these booklets and posters (126). Priority groups may not have access to radios (6, 16) or may be working when the hygiene education programmes are broadcasted. This demonstrates the importance of research into audience listening and reading habits, as has been done in Yemen and Guatemala.

In Yemen the Rural Water Supply Project selected audio cassettes because of the listening tradition of the target audience (22). In Guatemala the content of the tapes and the hours of operation were adapted to coincide with times of visits of women to the community laundry place, where the cassettes were played in public. The health information programme had to be oral to allow women to continue to work while listening to the messages on nutrition, hygiene and medical care (104, 105).

Audio-visuals must not only reach their target audience, but also be of interest and relate to felt needs. Evaluation of poster contents in Tanzania showed that those best recalled and understood refer to well-known situations and daily behaviour, while those transferring abstract concepts on disease transmission were only partly understood (561). Evaluation of sanitation and health modules in Africa showed that the audience identified themselves more readily with the poor family who could do nothing right, than with the "educated" family (107).

Another problem in using audio-visuals is that they may distract people from the message or create confusion (213). In Sri Lanka, for example, films on safe water and sanitation were viewed for entertainment and did not provide stimulus for change (7). A film on the dangers of mosquito breeding places did alert community members. But as they explained to the health worker "Luckily we don't have this problem, because the mosquitoes in this area are a lot smaller than those in the film". The film featured diagrams of mosquitoes enlarged to several times their normal size (312).

Audio-visuals are frequently misunderstood, particularly by audiences unaccustomed to printed or visual materials. Understanding visual materials is an acquired skill which varies from culture to culture. Picture comprehension, pictorial depth perception and the meaning of the techniques employed in printed illustrations must be learned. Effective communication through visual aids is as complex and difficult, and even more so, than communication through language (62, 168, 549).

The heavy emphasis in post-colonial health education on visual aids was largely due to the influence of expatriate health educators coming from media sophisticated societies in the West where oral traditions have largely disappeared. There has been a healthy resurgence in the idea of building on existing visual and oral traditions within developing countries (213).

Sometimes visual aids are assumed to have served their purpose if the intended audience can name the items displayed, or describe the condition or activity portrayed. Yet, the audience may well be able to describe the scene but not understand the messages (549). These difficulties are more likely to occur when the cultural background of the artists, producers or designers differs greatly from

A draft poster showing a person washing hands with soap greatly benefited from pretesting. Only three out of 30 women immediately identified the image. Many women thought the bar of soap was a box or a book. When another person pouring water from a cup onto the washing hands was added to the drawing, 19 of 30 women immediately identified the drawing correctly (395).

Pretesting of materials for one type of user category does not make them automatically useful in other groups and areas, as was found in projects in Ghana (248) and Nepal.

In Nepal, rural people without formal education were questioned about different types of drawings. A picture of a house produced vastly different responses. While 91% in the Eastern Region and 78% in the Central Region recognized it as a building, only 26% in the Far West Region gave this response. The reason for this variation may well be that houses in several parts of the Far West of Nepal have flat roofs and not sloping roofs as in the drawing (481).

Pretesting has demonstrated that colour and form are important elements in understanding and appreciating visual materials. Colour illustrations have greater cultural identifications and psychological impact when used in association with certain emotions, objects, or times of the year. These associations may be local specific, for example red is associated with happiness in one area and with danger in another. Colours therefore must be carefully considered in design and pretesting of educational materials.

Experiments in Zambia with four picture styles (line drawings, silhouettes, full photographs and photographs without background), found that photographs without background were the most effective (167). Findings of a study in North-East Thailand were similar (481).

A recent review of hygiene education materials showed that most materials are neither carefully pretested nor evaluated (268). Failure to evaluate audio-visuals is largely due to lack of resources, disagreement over evaluation methods, difficulties in measuring behavioural changes, and imprecise project goals and objectives (370). But as audio-visuals claim a large proportion of project inputs, there is a clear need to pay more attention to evaluation in order to determine strengths and weaknesses of the media used and to assess their impact. The importance of evaluation was underlined in a sanitation project in Nepal which showed that of the many educational materials developed, only the latrine construction cards were essential (307).

8. *School Hygiene Education*

8.1 Why school hygiene education

With increasing numbers of children enrolled in pre-schools and primary schools, the school has an important role to play not only in imparting health knowledge but also in altering basic hygiene habits. Schools offer a controlled environment for introducing new forms of social behaviour and for establishing new social norms in matters such as what water to drink, how to dispose of human waste, and standards of bodily hygiene. Schools can reaffirm or help to modify attitudes and habits established at home (215, 352). They can also introduce pupils to new facilities, such as protected water supplies and sanitary latrines, and help to establish policies for proper use and maintenance (237).

A favourable condition for school hygiene education is that in developing countries the budget for primary education is often three to four times higher than that for health services (407). In Indonesia, for example, the health budget for 1980/1981 was US\$ 1.60 per head, while education received US\$ 8.00 per head. There is also a wider distribution of schools and teachers in proportion to the population than most health services. Thus schools may provide the necessary infrastructure for hygiene education, otherwise lacking (407).

School hygiene education is important because children attending school are often more vulnerable to disease. Inadequate school hygiene education, coupled with unused, inadequate, or unsanitary facilities, constitutes a health hazard. A study in Burkina Faso found that 37% of children not in school were infested with intestinal worms. Yet in those attending school the rate was much higher, 68% (332). In Micronesia, school hand washing facilities were found to promote the spread of trachoma via contaminated common towels and handkerchiefs (415). Similarly, a study in Colombia revealed that levels of cleanliness of school toilets were directly associated with the frequency of diarrhoea in children (288). Classroom crowding has been associated with vomiting, head lice and a higher frequency of colds (237).

A further reason to pay more attention to school hygiene education is that disease and malnutrition resulting from inadequate diet, diarrhoea and worm infestation is often cited to explain underachievement at school (218, 246).

Several studies, mostly conducted in Nigeria, have shown that rates of absenteeism due to guinea worm may peak at 60% in some schools. Affected children miss on average nine weeks of schooling while in some areas more than 5% drop out of school altogether. Some children attending school in spite of their infections do so in great discomfort (211).

However, worldwide school hygiene education is still far from being a regular and integrated component of primary school curricula. In the mid-term evaluation of the International Drinking Water Supply and Sanitation Decade in 1985, 29 of the 86 participating countries reported that primary schoolchildren were receiving hygiene education (526). Also within countries, the attention given to school hygiene education may vary widely.

Of the 10 044 primary schools on the mainland of Tanzania, only 200 include health activities in their programme. The 138 416 students reached represent about 4.5% of the national student population (465).

The type of hygiene education in schools, if given at all, differs widely from country to country and also between communities within a country (538). Some school hygiene education is merely classroom learning, often as part of a broader health education curriculum (121, 137, 199). In other cases, classroom learning is combined with improving school hygiene facilities and practices (24, 114, 131, 212, 215, 218). Some schools have out-reach programmes whereby pupils participate in community environmental sanitation programmes, and are encouraged to influence hygiene practices of siblings and parents (218, 407, 501).

Alternatively, water supply and sanitation programmes sometimes include school hygiene education as part of their total activities, as in Nepal (63), Colombia (83), Tanzania (199), and Paraguay (76, 77).

Ideally, school hygiene education should be carried out within the broader context of hygiene education programmes and integrated into other school subjects and activities in order to increase its impact (218, 237, 397, 537). This approach is currently being pursued in the Eastern Mediterranean by WHO (543, 544, 545).

It can be difficult to find space in the school timetable for health education. A challenging solution to this problem is to develop ways in which health issues are built into other subjects. Vernacular and language classes can be used for reading and writing about health, art classes can include painting on health topics, and mathematics lessons provide many opportunities for exercises, counting malaria breeding sites, for example (215).

8.2 From classroom learning to out-reach activities

Classroom learning

Classroom learning is the most common form of school hygiene education. However, few studies have been conducted to measure the impact of classroom learning on knowledge and practices (360), mainly because primary schools do not usually set hygiene behaviour goals. School hygiene and health education is often treated as being "co-curriculum" and thus not reported or tested (24). However in India, Bangladesh and Colombia evaluation of hygiene education programmes has shown encouraging results, although the long-term effects are not known:

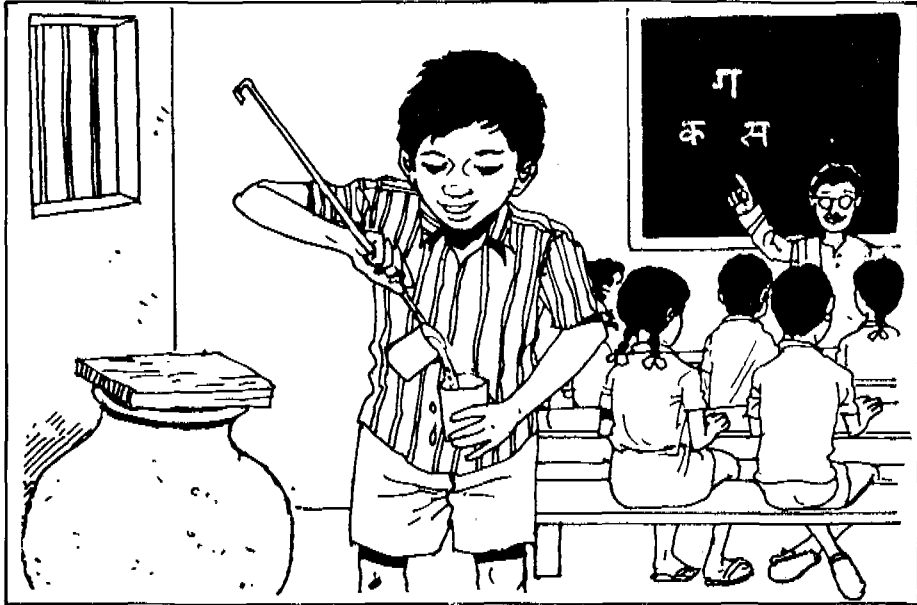
In India, the impact of a hygiene education programme was studied by assessing the knowledge acquired, attitudes changed and practices adopted. Desirable water use practices increased from 30 to 60% in 600 primary school children in Coimbatore district. They were exposed to a health education programme for a period of six months as part of the school curriculum organized with the assistance of the National Council of Educational Research and Training/UNICEF (124). In Colombia a continuing and substantial decline in river contacts by school children was reported after six months of health education focusing on the control of schistosomiasis (83).

Lack of priority has sometimes led to school hygiene education achieving less than might be expected. In Nigeria, for example, there has been a comprehensive syllabus for health education in primary schools since 1969. Yet in practice only very limited time is spent on subjects such as hygiene education:

The aspect stressed most in our primary schools is instruction in sanitation and hygiene. But lessons are infrequent and irregular and often compete with physical education, so that the syllabus is never fully covered. Pupils are rarely taken for demonstrations of community health and little or no equipment is provided for teachers (121).

Another constraint to classroom learning alone is a possible conflict of values between school and home (397):

In an isolated and poor area of Tanzania, young girls have been frustrated by school health education, because their parents and later their husbands have not accepted what they had learned at school and would not support their efforts to introduce new practices at home (255).



Hygiene behaviour promoted at school, India (UNICEF Regional Office for South Central Asia).

Classroom learning and hygiene facilities

In a number of countries school hygiene education has been combined with the implementation of school hygiene facilities. In Lesotho hygiene facilities have been improved as part of an ongoing water and sanitation programme at primary schools (131).

In Lesotho a primary school sanitation project undertaken with UN assistance met with very little success. Only 15-20% of the children in case-study schools used the latrine because of inappropriate technical design, lack of handwashing facilities and absence of an educational component. As a result the Government started a 10-point educational programme which emphasized use of toilets, handwashing and informing parents about the importance of improved latrines. Teachers were trained and involved in school and community hygiene. Close co-ordination of governmental agencies has helped establish sanitation facility standards and construction policies (114, 214, 216).

School hygiene education coupled with the provision of essential facilities and services has been highly successful in Yap in the South Pacific:

In Yap, the Departments of Education and Health co-operated to involve both parents and students in hygiene education. As a result, communities are now accepting responsibility for operation and maintenance of school facilities, levels of repairs have improved, vandalism has declined, and local pride has increased. With these improvements in the school environment, hygiene education curricula were revised and expanded to include communal sanitation and garden projects. Students learn by doing and are helped to apply these lessons through case study techniques (237, 405).

There is the risk that school policies on the use and cleaning of the latrines will reinforce social class distinctions, because only children from "lower" classes are expected to clean school latrines. This risk was recognized in India (566). Elsewhere, school hygiene facilities have been reported to be inadequate or lacking (209, 288). Under such circumstances, hygiene education can have little effect on the behaviour of pupils at school.

Out-reach activities

There is a growing number of examples of successful involvement of pupils in community out-reach activities. In Indonesia for example, action-oriented health lessons about the cause and prevention of diarrhoea resulted in extensive community clean-up campaigns, including composting in several villages (407). In Tamil Nadu, India, almost 10 000 primary school children participated in a programme to impart information, to incorporate hygiene practices, and to help parents learn about hygiene (413). School children in Bombay were reported to be very effective in influencing health related behaviour of their parents (52). Aware that adult men in some parts of Africa are unwilling to discuss their beliefs and hygienic practices with outsiders, health staff have successfully involved children in communicating health issues with older male relatives (352).

In Thailand, public health and education officials are working closely to co-ordinate school and community hygiene programmes. In Korat Province of North East Thailand, teachers and primary school pupils have been trained to cast concrete jars (1 m³) to store rainwater. Profits from sales to villagers are used to support school health programmes (267).

It is encouraging to find that governments and particularly non-governmental organizations are placing more emphasis on active pupil involvement. With greater emphasis being given to hygiene behaviour and not simply to hygiene information, aid from donor agencies and resource groups with special interest in primary school hygiene education is likely to increase. School out-reach programmes are particularly important in areas in need of environmental improvements.

8.3 Teachers and teacher training

School hygiene education is usually the task of primary school teachers, occasionally for ministry of health officials, as for example environmental inspectors in Costa Rica and health assistants in Zambia. School hygiene education may also be given by other outside educators, such as staff of water supply and sanitation programmes, but their involvement is often limited to special activities and campaigns. Lack of trained teachers is reported to be a serious constraint to effective school hygiene education (9, 121, 146, 237).

In an Indonesian school health education programme the lack of trained teachers and absence of materials for use in the classroom were identified as the main restraints to effective hygiene education. Under the influence and guidance of rural teachers, a new school health manual was developed because existing manuals were more first-aid manuals than guides for teachers (407).

Teacher training in hygiene and health education is often not regular and does not cover all teachers. Lack of finance, difficulties of access and lack of an adequate service infrastructure are some of the reasons (24).

Over the last few years much more attention is being given to training in health and hygiene education of primary school teachers. Teacher training has been strengthened by linking training institutions to water, sanitation and primary health care agencies, for example in Bangladesh, Lesotho, Nepal, the Philippines, Uganda and Zimbabwe, often with United Nations agencies support (24, 237, 461). Further inputs include assistance in preparing suitable local curricula, syllabi, and reference materials for use both in training institutions and in classrooms, as for example in Botswana (146) and Paraguay (47, 48, 423).

In Bhutan, national workshops were organized for representatives of the Education and Health Department to review and modify the school health education curricula in the teachers and trainers colleges and primary and secondary schools and to identify areas that require improvement (461).

A number of Eastern Mediterranean countries will receive intensive support to school hygiene education being provided by WHO/EMRO, in co-operation with UNESCO (276). A four-phase project is well underway to assess needs, to plan interventions, to develop model action-oriented curricula and to promote new materials and approaches throughout the region (543, 544, 545).

Primary school teachers have sometimes provided leadership for environmental improvements and behavioural changes at community level. It has been suggested that teachers establish family and community relationships through parent-teacher associations and by school participation in surveys and

socio-dramas (381). In Nigeria, existing parent-teacher-associations have been suggested as possible channels for extension of school health education activities to the community and to create community goodwill and support for the construction of school water supply and sanitation facilities (9, 121). However, the co-operation of teachers may be difficult to gain because they are almost universally underpaid, overloaded and may not be highly motivated for such activities (407, 469). Lack of organization and inexperience with the type of work may also make it difficult to involve teachers.

Uganda Primary School Health Kit on Diarrhoeal Diseases

THE MANGO STORY INFORMATION SHEET

Teacher's Information- The following "Mango Story" is in Flip Chart form. This means you tell a part of the story while flipping to each chart in order of the part told. Here are ideas on how to give a successful flip chart story to your students.

1. Read the story ahead of time to yourself. Memorise the story, picture by picture so that you do not have to read the story from this paper.
2. Change the names of the people in the story so that they suit the people of your area. Add other details about the character's background to make them more personal.
3. Have students sit near you or walk slowly around with each card so everyone can see the pictures.
4. Hold the cards up high enough so that everyone can see. Hide your fingers as much as you can point the pictures to the students not towards yourself.
5. Point out details in the pictures and ask students questions such as "Do you see the boy in the picture?" "What is happening in the classroom here?"

1

Teacher's information sheet from a primary school health kit on diarrhoeal diseases, Uganda (Ministry of Health and Education, UNICEF, Uganda).

During planning discussions for a water hygiene campaign in Botswana, teachers were identified as the most effective group of professionals for the dissemination of information. Yet the regional health teams were found to be more effective, because they were more experienced with hygiene education as result of a recent oral rehydration therapy campaign and they were better organized (146).

8.4 Higher level support

Co-operation and co-ordination between national ministries of health and education and their regional and local offices can give strong support to school health education programmes (24, 537). Policy makers must give this due priority to achieve this. During the First Subregional Consultation on School Health Education in Bangui, Central African Republic in 1983, the need for clearly defined policy and inter-sectoral co-operation was stressed (542). Efforts to establish effective links between organizations have been made in Burma (461), Zimbabwe and Uganda:

One of the more ambitious efforts to implement hygiene education aspects of the IDWSS Decade is being undertaken in Zimbabwe. Representatives of the Ministries of Education and Health participate in a committee to advise on the development of hygiene education booklets for students and teachers reference materials. These were produced by the Curriculum Development Unit of the Ministry of Education in conjunction with the National Action Committee of the IDWSS Decade (237, 297, 580). In Uganda, an active inter-ministerial panel has been created, composed of representatives of health, education and agriculture ministries. This panel recently approved a new health syllabus with specific hygiene education units. It is to be used in all 6000 schools, together with guides for teachers which are currently being developed (237).

Higher level support in a number of countries also include the development and distribution of teaching aids such as posters, flip charts, flash cards, leaflets, flyers, calendars, songs, games, comic books and magazines on the prevention of communicable diseases and accidents (237). In Kenya, a 16-page magazine in colour is sent to all Kenyan primary schools and is also distributed in Uganda (18, 319, 458). In Honduras, comic books carry messages to rural children with the objective to change attitudes and behaviour of community members with regard to water consumption and use, and maintenance of latrines, wells and aqueducts (499, 500). Songs are being used in Jamaica and Nicaragua (284), and snakes and ladder games, card games, board games silk screened on cloth, hand puppets and other materials are being used in many countries (370).

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Ansell, C. and Burrowes, R. (1981). Communicating hygiene/sanitation messages to villages: an experience in Wade Aygan, Yemen, Westport, Connecticut, USA, Save the Children Fund. (22)

Simultaneously with the construction of a piped water supply an eight-week hygiene education campaign was executed in eight villages in a remote area of the Yemen Arab Republic. At the start of the campaign, formal approval and support was obtained from both the Local Development Association and the local village leaders. The foreign health educator worked with and through female local assistants, who had been selected informally, one from each community. These local assistants were crucial to the success of the campaign because of their ease of communication with the village women.

Each village was visited approximately six times. The campaign focused on a few relatively simple hygiene and sanitation principles and practices, selected by the educator on the basis of an evaluation of health attitudes and practices. Contact with the women, and to a lesser extent with men, was through both group meetings and home visits.

The educational tools used included a tape cassette, coloured drawings and two sets of black and white photographs. During the earlier visits, they were used primarily to capture attention and to introduce the campaign. In the later visits, they were used increasingly as reminders and reference points for longer, more open-ended discussions. The tape, which was seven minutes in length, was most readily accepted. It was most effective in focussing attention and providing reference points for subsequent discussions. Women proved to be more attentive to women speakers, men to men speakers. As it is difficult to hold people's attention for longer periods, series of sequential tapes were used to present the same message in different ways. The drawn pictures proved to be very effective in introducing a subject. However, the pictures, the pictures, and even more the photographs did have serious drawbacks. One problem was that visual representation is less acceptable in Islam cultures. Further, pictures and photographs were open to misinterpretation and lacked apparent relevance to daily life. Spoken hygiene education seems to be far more effective in communities where history and news are passed on primarily by word-of-mouth.

Aziz, K.M.A., Hasan, K.Z., Patwary, Y. and Rahaman M.M. (1985). Acceptability of water sealed latrines in Mirzapur, a rural area of Bangladesh. in A.S. Islam et al (eds.), *Proceedings of the Regional Seminar on Protecting the Environment from Degradation. South East Asian Regional Co-operation Seminar, Bangladesh, 13-15 May 1985. Dhaka, Bangladesh, Ministry of Education, Science and Technology Division.* (33)

The International Centre for Diarrhoeal Disease Research, Bangladesh, has been trying to introduce double-pit water-sealed latrines since 1975. In 1985 a study of 800

households in two villages was undertaken to investigate the level of acceptance. For two months community health workers and supervisors participated in informal discussions with village men and women to promote this type of sanitary facilities. Primary reasons for latrine acceptance included status and convenience but not health. Acceptance proved to be slow, especially for illiterate groups and day labourers. Multiple contacts by several persons was found to be more effective than single contacts. The paper concludes that long-term motivational activities are required to get the latrines accepted and even more inputs are needed to encourage their use.

Bertrand, J.T. (1978). *Communications pretesting. (Media Monograph, no.6), Chicago, USA, University of Chicago, The Community and Family Study Center. (50)*

This "how-to" manual is written for those working in development programmes who wish to improve the effectiveness of communications through pretesting. The manual includes pretesting design models for radio spot announcements, posters, pamphlets, television spot announcements and films which can be carried out at low cost with few personnel and which will provide rapid feed-back.

Pretesting may be defined as measuring the reaction of a group of individuals to a communication or set of communications prior to their widespread use. The purpose is to identify communications which are potentially most effective. This means most attractive, best understood, most acceptable, best at stimulating the feeling of self-involvement in the topic and most persuasive.

While pretesting cannot guarantee effectiveness, it can increase the chance of the message attracting attention, being understood, making a favourable impression, and convincing the target audience to undertake the advocated behaviour. Moreover, pretesting helps to eliminate messages that may lead to a negative reaction.

The manual includes practical information which is based on experience in Latin America. It deals with how to design, conduct and analyse a pretest and how to use the results to improve communication programmes.

Chinemana, F.A. (1986). *The need for health education in Zimbabwe: findings from a household survey. Hygie, V, 1, 50-55. (98)*

Since independence in 1980, the Government of Zimbabwe has been committed to providing primary health care with emphasis on promotional and preventive measures, principally through village health workers (VHWs). By January 1982, 341 VHWs had been trained to serve about four million people. In the period September 1981 to March 1983, a household survey was conducted of 575 men and 1029 women. Standardized household interviews were supplemented with community discussion meetings. The aims of the survey were to find out about community attitudes to health problems and ideas about their prevention.

The survey showed that health education was just as important for men as women, yet little recognition was given to this in health training and educational programmes. In total 49% of the male respondents thought that health education for men was needed.

Advice and information on improvements of water and sanitation facilities was the most frequently suggested topic for health education. They preferred male educators and stressed that health education should be made compulsory.

Both male and female respondents indicated that the most important functions of the VHW are to help improve general cleanliness of water supply and sanitation facilities. Respondents were well aware of serious community health problems and had constructive ideas for the solution of these problems. Health education was considered to be important for problem solving, and topics mentioned included diet and nutrition, personal hygiene, general health information and advice on water and sanitation. The survey results indicated that health education should be extended to both men and women, taking into account their perceived life realities.

Clemens, J.D., and Stanton, B.F. (1987): An educational intervention for altering water-sanitation behaviours to reduce childhood diarrhoea in urban Bangladesh I: application of the case-control method for development of an intervention. *American Journal of Epidemiology*, **125**, 2, 284-291. (103)

Stanton, B.F. and Clemens, J.D. (1987): An educational intervention for altering water-sanitation behaviours to reduce childhood diarrhoea in urban Bangladesh II: a randomized trial to assess the impact of the intervention on hygiene behaviours and rates of diarrhea. *American Journal of Epidemiology*, **125**, 2, 292-301. (455)

Stanton, B.F. et al (1987). An educational intervention for altering water-sanitation behaviours to reduce childhood diarrhoea in urban Bangladesh: formulation, preparation and delivery of educational intervention. *Social Science Medicine*, **24**, 3, 275-283. (456)

A case-control study was carried out in 25 slum communities in Bangladesh in order to detect behaviour on which to base interventions for improving water-sanitation practices and reducing rates of childhood diarrhoea. At two-week intervals for a period of three months the history of diarrhoea was recorded in all children under six years of age in 1350 families. A total of 247 randomly sampled families were visited once during the study for extended observation of water-sanitation practices. Behaviour potentially affecting the incidence of diarrhoea was compared in the case group with the highest ratio of diarrhoea and the control group with a zero ratio of diarrhoea. Three water-sanitation behaviours were shown to be associated empirically with high rates of childhood diarrhoea: mothers not washing their hands before preparing food; young children defecating in the family living area; and inattention to proper disposal of garbage and faeces, thus increasing the opportunity for young children to place waste products in their mouths. From these observations three educational messages were developed. The educational intervention included small group discussions with women or children only, larger demonstrations to mixed audiences, and community-wide planning and action meetings which also included husbands.

Three categories of personnel were involved in the educational invention. Firstly,

seven salaried and university educated women were recruited. In addition to developing materials and training, they were responsible for scheduling community visits, aiding the community to procure technical support, liaising between the community and project organizers and maintaining daily records in a logbook detailing the process. Secondly, a group of 25 semi-literate women from the area were involved. They had previously delivered health services after a two-week training period in another programme. These volunteers helped to develop educational materials, and functioned as community educators. They were also mediators between the community and programme organizers. For services they received a small monthly stipend. Thirdly, community leaders were involved to conduct community meetings, lead community decisions, and assist in solving community disputes and motivating members.

After eight weeks of intensive educational efforts, the messages were reinforced with new stories, games and community organization for a further four months. After the educational intervention, improvement in hand-washing practices before food preparation was noted, although no improvement was observed in defaecation and waste disposal practices. The rate of diarrhoea in children under six years of age was 26% lower in the educational intervention areas than in the non-intervention areas. The authors conclude that these results suggest that a simple educational message designed to alter behaviour associated with childhood diarrhoea can modify practices and reduce rates of diarrhoeal disease.

The costs of the educational intervention was approximately US\$ 8400, including salaries and materials. The annual cost for the research was approximately US\$ 70 000.

Cronc, C.D., and Hunter, C.S.J. (1980). From the field: tested participatory activities for trainers. New York, USA, World Education. (113)

This resource book for trainers of trainers describes a number of learning activities on how to work effectively with adult learners. The activities selected had been used in the field, and are participatory, emphasizing mutual learning rather than teaching. They are grouped as follows: becoming a learning group (Section 1); discovering needs (Section 2); choosing and using methods and materials (Section 3); evaluating impact and results (Section 4); and planning and field-testing participatory learning activities (Section 5). At the beginning of each exercise, the particular occasion and reason for using the specific activity are given. Each exercise includes a time estimate and a section on "what happened" describing the experience gained using the exercise.

Enge, M. (1983). Water hygiene campaign in Botswana: draft final report. Stockholm, Sweden, Swedish International Development Authority. (145)

Enge, M. (1985). Water hygiene in Botswana: "From water hygiene campaign to educational Programme". final report. Stockholm, Sweden, Swedish International Development Authority. (146)

The Village Piped Water Supply Programme was started in 1971 with the long-term objective to improve the health status of the rural population by improving the quality and quantity of water. By the end of 1982 some 190 schemes serving 333 000 people had

been completed. As water consumption for domestic purposes did not seem to increase, and diarrhoea as well as other water related diseases remained as common as ever in the unserved villages, it was decided to combine the provision of piped water with a community hygiene education programme.

A Water Hygiene Campaign was initiated in 1983 by the Ministry of Mineral Resources and Water Affairs with inputs from other ministries involved in various aspects of water development. At the start an investigation was carried out to determine the target groups, hygiene messages, communication channels and candidates to be trained as motivators. The investigation included a short literature review; an attitude survey in the villages; a water quality survey; and a qualitative assessment of the functioning and use of the piped water supplies. Based on this investigation the specific objectives selected were to increase water consumption; to decrease water contamination between collection and use; and to reduce occasional consumption of contaminated water, for example, during working in the field.

To meet these objectives the following educational messages were selected:

- use more water for personal hygiene;
- clean your bucket and clean your storage container;
- cover the container;
- promote suitable plastic containers;
- dig a soakway at the tap site and plant trees at the end of the ditch.

It was decided to work through existing communication channels, the most important being the school system (teachers, children, adult literacy classes) and the health education infrastructure (health workers at regional and village level). An inter-ministerial water hygiene workshop was held to promote co-operation and co-ordination of efforts.

Workshops were organized at regional level for health personnel, teachers, community workers and water department staff to discuss co-operation in water hygiene education. In some villages with newly provided piped supplies, workshops were held to train key persons in water hygiene and discuss methods and ways of disseminating the messages to the villagers. The campaign was supported by radio programmes and educational material, such as a hygiene handbook, workbooks, literacy booklets, posters and pamphlets. Although planned, a slide show was never finished because of lack of time and facilities including projectors, generators, and dark rooms. In one village 30 plastic water containers with small openings were distributed free of charge. The first results showed that piped water stored in a plastic container was not easily contaminated.

After seven months of preparation, the campaign was launched in August 1984, and after the first year became an ongoing hygiene education programme within the Ministry of Health.

Favin, M., Cebula, D., Said, R., and Pryor, D. (1986). Health education. (Information for action issue paper), Geneva, Switzerland, World Federation of Public Health Associations. (151)

Two major approaches to changing health-related behaviour are examined: the promotional approach aimed at changing a limited number of specified behaviour; and

the educational approach, aimed at developing understanding and gaining control over factors affecting community health. In many circumstances programmes combine appropriate elements of both approaches.

The educational approach concentrates on fostering behavioural change, self-confidence, and problem solving capabilities to enable a community to change conditions necessary to improve health, either independently or in co-operation with government or other programmes. This approach depends on a cadre of well-trained, stable community organizers and demands flexible planning and management. Thus this approach is less suitable for large-scale programmes. A tolerant political climate is also required because often this approach stimulates political awareness.

The promotional approach is best illustrated by social marketing which aims to promote the use of specific products and the adoption of certain behaviour. In social marketing, people are considered to be consumers of services and behaviour, rather than people to be educated. Although no effort is made to shepherd the community through a process of learning and selection of priorities, social marketing is quite sensitive to community knowledge, attitudes and behaviour. Throughout programme planning and implementation continuous effort is made to incorporate community information. Social marketing programmes have demonstrated that changes in individual behaviour can, to a certain point, have measurable and at least short-term effects on community health. However, this approach requires heavy financial investment and ignores the political and economic conditions underlying health programmes.

School health education is emphasized as an important component of the overall health education strategy where a substantial proportion of school-aged children attend school and where health and education authorities can collaborate effectively.

Educational channels are grouped into person-to-person and mass media.

Person-to-person is particularly effective because of the immediate relevance for the target groups, but places heavy demands on manpower, time and finance. Mass media are rapid means to reach a very large audience and to make effective use of scarce manpower. In addition the cost per person reached is relatively low. However, mass media alone often fail to persuade people to change attitudes and behaviour. A combination of both channels may provide the best solution.

The paper also discusses educational materials; planning and organizing health education programmes; and changing health-related behaviour. There are a number of appendices including recommended further reading and references; project summaries; resource institutions and organizations for health education; and design and evaluation of educational materials.

Feachem, R.G. (1984). Interventions for the control of diarrhoeal diseases among young children: promotion of personal and domestic hygiene. *Bulletin of the World Health Organization*, **62**, 3, 467-476. (152)

The effects of improving personal and domestic hygiene on diarrhoeal morbidity are reviewed using data from studies done in hospitals, day-care centres, and local communities. There is evidence that low educational attainment and certain religious customs predispose to diarrhoea, presumably because of behavioural factors. The specific

hygiene related behaviour most studied is hand-washing. Hospital studies suggest that enteric infections can spread by hand contact and that hands can be decontaminated by washing with soap and water. Studies from Bangladesh, USA, and Guatemala on the impact of hygiene education programmes on diarrhoea are reviewed in detail. Reductions in the incidence of diarrhoea between 14 and 48% are reported in these studies. Information is lacking on the optimal design of hygiene education programmes, the cost, and dependence on pre-existing levels of sanitary facilities. The evidence suggests that hygiene education programmes may be a cost-effective intervention for reduction in diarrhoeal morbidity. However, additional studies need to be carried out to fill the gaps in understanding and to clarify the operational aspects of these programmes.

Green, E. (1982). A knowledge, attitudes and practices survey of water and sanitation in Swaziland. Washington DC, USA, Academy for Educational Development; Mbabane, Swaziland, Ministry of Health, Health Education Unit, Rural Water-borne Diseases Control Project. (189)

The study aimed to provide baseline data for the design of a national health education strategy to reduce the incidence of water related diseases; guidance for the sanitation and public health engineering components of the Rural Water-Borne Disease Control Project; and baseline data for future evaluations and related research. The baseline survey, using a stratified random sample of 455 homesteads, was considered to be representative of rural Swaziland. The homestead survey was accompanied by a knowledge and behaviour study using rural health motivators as informants.

Both studies showed that health-related knowledge, attitudes and behaviour in rural Swaziland vary according to the characteristics of the area, homestead and personal situation of the respondent. Drawing a composite profile from the research findings, a person most in need of health education (as well as a latrine) would be the male head of a small homestead situated in a Non-Rural Development Area and Non-Rural Health Motivators-visited Area in the Southern region. Neither he nor anyone else in the homestead would have had any formal education. A person least in need of health education would be a younger, educated female living in a larger homestead, situated in an Rural Health Motivator-visited Rural Development Area of the western region. However, the author raises the fundamental question whether health education should be primarily directed to those most in need, when this group may be most resistant to changes in behaviour and attitude. They ask if efforts should be directed to those who have already exhibited behaviour and attitude change and who are presumably more receptive to health education.

The survey helped to specify changes required to reduce the incidence of water-related diseases. Avoidance of contaminated water would probably yield the most dramatic health benefits, yet unsafe water sources were often not recognized as such. Changes in sanitation practices would also help to reduce the incidence of faecal-oral diseases and bilharzia. Approximately 21% of the population have access to latrines, but children, and those working in the field and old people do not use them. Also, latrines are often not used for urination, an important factor in tackling haematobium bilharzia. Therefore, it was recommended that the Government promote the construction of

low-cost latrines from local materials and ensure that they are as safe, durable and hygienic as possible. Hygiene education strategies and materials should promote the use of latrines by all. Other recommendations included reducing the incidence of water related diseases by promoting hand washing, food protection, safe food and water handling before use, and encouragement of breast-feeding, together with legally backed opportunities for working mothers to breast feed during working hours.

National socio-cultural characteristics have to be taken into account in selecting a hygiene education strategy. These include the relative lack of community organization; the pattern of relatively isolated, autonomous family groups; and centralized planning and decision-making. Therefore, approaches other than those which are community based including participatory planning and self-help may need to be considered. These could include radio campaigns (85% of the homesteads have a working radio), co-ordination of health education efforts with extension work of other ministries as well as with traditional healers and local chiefs; and school hygiene education. Hygiene education messages should be designed to accommodate prevailing health beliefs and to take into account the priorities of the target groups.

Hoff, W., and Galowa, K. (1987). Community involvement and health promotion: a training manual for extension workers. Boroko, Papua New Guinea, Department of Health, Environmental Health Section. (210)

This manual has been designed to train health extension workers and community leaders to involve communities in promoting their own health, primarily in water and sanitation programmes. The manual comprises six training units for a five-day workshop. The first unit is introductory and gives participants an opportunity to express their learning needs and the difficulties they have experienced. Unit 2 covers the health workers' role in promoting community involvement, health and independence. Unit 3 deals with basic communication skills, and unit 4 focusses on helping communities to solve their own problems. Unit 5 demonstrates how to stimulate community action to promote health and unit 6 concludes the series by developing a community action plan based on knowledge gained during the workshop. The training units include teachers' guides and hand-outs for the participants. Training is based on learning by doing and includes role playing, demonstrations, practice between participants and in communities.

Hubley, J. (1986). Barriers to health education in developing countries. Health Education Research, 1, 4, 233-245. (213)

Barriers to effective health education are discussed and research to find ways to overcome these identified. Barriers are presented in four broad areas: planning, communication, organization and evaluation. In the planning process, barriers arise because realistic and appropriate messages and behaviour for change are not selected. Community participation can prevent these type of mistakes being made but there is a problem of reconciling the need for planning large-scale health education programmes with the grass-roots process of community participation. Communication is only effective when it holds the attention of the target audience; when the message communicated is

understood and accepted; and when a desired behavioural change is achieved. Careful selection of target audiences, pretesting of means of communication and adequate training and supervision of the communicators can help to overcome communication barriers.

Problems in the organization of health education relate to lack of government commitment to preventive health care and health education, lack of inter-sectoral co-operation, no clear national policy for the development of health education and low status of the specialist health educator. Little research has been done on the organization of health education services and health education policy.

Failure to evaluate health education and to build up experience and knowledge is also a major barrier to effective health education. It is a tragic loss that many interesting and innovative programmes have not been evaluated. Suitable indicators for monitoring and evaluation need to be developed and participatory evaluation methods need to be formulated so that experience from ongoing and new innovative health education programmes can be shared.

Hubley, J., Jackson, B., and Khaketla, T. (1987). The role of health education and communication in sanitation programmes: a case study of the urban sanitation improvement programme in Lesotho. Leeds, UK, Leeds Polytechnic, Health Education Teaching Unit. (221)

The Urban Sanitation Improvement Team (USIT) of the Ministry of the Interior is a small group of engineers and field workers, working to introduce improved sanitation and community health in the rapidly growing urban centre. One of the first priorities was to design a latrine that was affordable and culturally acceptable. The design adopted was a modification of the ventilated improved pit (VIP) latrine originally developed in Zimbabwe. Monitoring and evaluation have shown that the programme would have to extend well beyond merely promoting construction of latrines. The following aims for health education and communication were identified: motivation of householders, landlords and local authorities to build and/or upgrade latrines; encouragement of full use of latrines; cleaning and maintenance of latrines; and encouragement of hygiene practices and promotion of child health practices. The strategy adopted consisted of the following:

- continual technical development of latrine design and pit emptying technology to produce even more affordable and acceptable options;
- promotion of sanitation and hygiene through agencies and community field workers, such as primary health care workers, VIP latrine builders, local urban council officials and teachers;
- promotion of sanitation in schools by supporting upgrading of facilities and hygiene education sessions;
- use of radio to increase awareness of VIP latrines and availability of builders trained in their construction;
- promotion of a network of demonstration latrines;
- promotion of a range of educational materials to support these activities.

Audio-visuals used in health education included radio spot announcements and short dramas; articles in newspapers; tape-slide programmes to introduce the sanitation programme to town officials, school health officials, and the general public, and to train health workers in water, sanitation and hygiene; and a wall-chart for use in school classrooms to summarize key points in use of latrines and hygiene.

Isely, R.B., and Parker, K.A. (1982). Application of health education to water supply and sanitation projects in Africa. (WASH technical report, no.15), Arlington, USA, WASH. (244)

Ways to improve the application of health education theory and practice in water supply and sanitation projects in Africa are identified in this paper. The concept of health education as the dissemination of health and health related information is challenged in favour of the concept of Green (1980) of health education being any combination of learning experiences facilitating voluntary adaptation of behaviour conducive to health. The distinguishing characteristic of health education is the voluntary participation of consumers in determining their own health practices, because their involvement is the only way to ensure lasting change. There are two types of "learners" or "target groups": those at risk to one or more health problems (school children, mothers, etc.); and those who control the resources affecting those at risk (for example, parents, health personnel, water authority staff). "Educators" may be anyone who endeavours to bring about voluntary change in behaviour aimed at improving health and well-being (for example, water supply technicians, school teachers, extension workers, health workers). The role of the health education specialist is to give technical guidance in programme planning and implementation. The specialist also has a co-ordinating function to overcome barriers to inter-sectoral co-operation.

The goal of health education in water supply and sanitation projects is defined as facilitating behavioural change for the acceptance, installation, use and maintenance of facilities in order to achieve the potential health benefits from those facilities. Because of the nature of the health problems resulting from poor water and sanitation, and because new facilities are usually in the public as well as the private domain, health education programmes must focus on collective as well as individual behaviour change. Three types of activities are conducive to this process of change: organizational activities (community development, community organization, social action, organizational development); training activities (skill development, problem-solving, simulations, small group discussions) and communication activities including mass media, audio-visual instruction, demonstrations, educational television and radio, lecture-discussion.

A three-pronged strategy is proposed to improve health education in water supply and sanitation projects in Africa: improvement of current health education projects or project components related to water and sanitation programmes; strengthening of institutional and individual capability in health education within Africa; and development of a health education capability within the Africa Bureau of AID. An overview of resources available (documentation, organizations, individual expertise and health education programme components of existing projects) is included.

Lindskog, P.A., and Lindskog, R.U.M. (1985). Evaluation of the health and social impact of a water supply and sanitation project in Malawi. in V. de Kosinsky and M. de Somer (eds.), *Water resources for rural areas and their communities*. proceedings vol. I of the 5th World Congress on Water Resources, Brussels, Belgium, 9-15 June 1985. Ghent, Belgium, Chrystal Drop Publications 413-421. (301)

This report reviews the initial results of a baseline study carried out as part of a three-year evaluation of the health and social impact of a water supply and sanitation project in Malawi. The study covered three areas: one receiving a water supply, sanitation and health education programme, one a water supply programme only, and one remaining without intervention until after the evaluation. The health indicators used were incidence of diarrhoeal disease and of skin and eye infections, and nutritional status in children under five years of age. The baseline study included 542 households including about 800 children under five years of age. For a period of a year morbidity data were collected during fortnightly home visits for a 24-hour recall of symptoms. In all three areas there was a marked seasonal variation in the incidence of diarrhoeal disease and skin and eye infections. Prevalence of diarrhoea and frequency of skin infections were higher in children from households further from the water source. No relationship was found between eye infections and distance to water source, and that between social factors and diseases was generally not very strong. There was a slight tendency for a lower prevalence of diarrhoea where one or both of the parents had some education. In some places a relationship was found between religion and diarrhoea and between the availability of a latrine and diarrhoea, but further investigation is required. Water quality was also assessed by sampling the rivers, springs and wells and water stored in households. In the dry season, the mean total coliform count for all water sources was 1930 per 100 ml, for faecal coliform, 820 per 100 ml; and for faecal streptococci, 470 per 100 ml. The coliform count in water stored in households was twice as high and in the rainy season many times higher. The after-intervention evaluation will indicate what effect water supply, sanitation and health education have had.

Lohani, K. and Guhr, I. (1985). *Alternative sanitation in Bhaktapur, Nepal: an exercise in community participation*. Germany, Eschborn, Deutsche Gesellschaft für Technische Zusammenarbeit. (307)

Between 1974 and 1986 a development project was carried out in Bhaktapur, Nepal, to improve living conditions including water supply and sanitation. For geographical reasons the planned sewerage works could not be constructed in Bhelukhel, the poorest area of the town. An alternative sanitation scheme was proposed starting with a mass meeting of the 522 inhabitants. At the meeting a users committee was selected who subsequently selected twelve community workers. They received training for four days per month, and then practiced what they had learned for the remainder of the month.

A deworming campaign was organized to stimulate awareness of the link between sanitation and health. A film was shown on roundworms, and the people asked to bring their stools for examination. Of the 467 samples, 445 contained one to three types of

parasites. The result of the campaign was that people were convinced something had to be done about their health and a clean up of the neighbourhood was organized. During a six-week competition, each family received points for personal cleanliness, cleaning the house, using the public latrine instead of open places, and removing garbage. Various types of latrine designs were discussed at group meetings and during household visits. All except three families selected the pour flush double vault composting latrine. Because of lack of space or land ownership problems, some households could not have their own latrine. Trench latrines were selected as the best intermediate solution for public latrines.

After the initial clean-up campaign, teen-age boys and girls organized themselves for regular cleaning of their neighbourhood. The project gave moral support through activity afternoons held once a month (games and quiz competitions). Another follow-up activity requested by the mothers, was child-cleanliness. A programme organized once a month rewarded all children found to be clean after surprise checks on cleanliness with a visit to the circus, zoo and video show. UNICEF took over with a day-care centre. Motivated by the success of the programme, other actions started including literacy classes, English lessons, knitting classes, boys and girls scout groups.

The evaluation included interviews with the residents of Bhelukhel, project staff, and the users committee. As two-thirds of the allocated budget was still available, a new project phase was started by the people themselves. Firstly each family was asked by the community workers what further improvements they wanted in their neighborhood. The 18 improvement proposals within the scope of the project were illustrated through pictures and rough cost estimates made. The users committee made a final selection of activities within the framework of the budget available. Water supply, street pavement and surface water drainage were given priority, as was health education.

Manoff, R.K. (1985). Social marketing: new imperative for public health. New York, USA, Praeger. (316)

Social marketing is defined as "a strategy for translating scientific findings about health and nutrition into education and action programmes adopted from methodologies of commercial marketing" (p.36). The essence of marketing is a vast and special communications system to and from the target groups. This is also clear from the steps involved in the social marketing process:

1. identify the health problems and the marketing and message actions required for their solution;
2. establish priorities, select affordable efforts, and set up a deferred schedule for all others;
3. analyse the distinct marketing and message activities needed for each problem and solution;
4. pinpoint the target audience for each marketing and message action;
5. conduct the necessary research on each marketing and message concept to determine current target audience attitudes and uncover potential resistance points;
6. establish objectives for each target group and each marketing and message action;
7. design the marketing and message actions;

8. test the marketing and message actions for acceptability, implementation, comprehension, believability, motivation and conviction;
9. revise and retest the marketing and message actions, as necessary;
10. construct the marketing, distribution, message and media patterns to achieve maximum target audience reach and message frequency;
11. co-ordinate and harmonize with all ongoing related programmes;
12. track the impacts of each marketing and message action and modify according to findings.

All steps are equally important and require an interdisciplinary approach with sufficient time for planning. A chapter is devoted to the development of a social marketing plan. Special attention is also given to the use of mass media, the social marketing's primary tool and the design of social marketing messages. The book is not a "how to" manual but rather a procedural background and theory of social marketing and includes four case histories and a discussion of when social marketing is not suitable. Social marketing is directed largely to changing individual behaviour which affects health, and not to changing structural problems, such as poverty, which may predetermine individual behaviour and health.

Ofori-Amaah, V. (1983). National experiences in the use of community health workers: a review of current issues and problems. (WHO offset publication no. 71). Geneva, Switzerland, WHO. (357)

Experience with community health workers (CHWs) in 46 countries is summarized. Their tasks show a range of curative care and preventive and promotive activities. As they are the link between the community and the formal health system, their tasks should be determined jointly by health authorities and communities.

A CHW can effectively serve approximately 500 to 1000 people. The persons selected should be mature and have displayed commitment to community service. Main selection criteria are age, sex, literacy, residence in the community and ability to command respect and to gain community acceptance and confidence. They are remunerated by either the government or the community. When paid by the government, they may feel less committed to their communities. To avoid a lack of interest and a high drop-out rate remuneration by the community needs to be regular and sustainable. In most countries training of CHWs varies from three weeks to six months, with a critical shortage of trained trainers. After initial training, regular supervision, in-service training and refresher courses are essential to provide continuous back-up and to strengthen their credibility in the communities and their status as a health worker. Supervision by professional health workers often is not effective because of their other responsibilities, and the general shortage of health manpower. Supervision by trained health auxiliaries on a full-time basis and by community committees can reduce these problems but cannot relieve professional health staff of their ultimate responsibility.

Reorientation of health personnel regarding the role and functions of the CHW is necessary. As health care alone is not sufficient for community development, more attention needs to be paid to inter-sectoral co-operation which may be facilitated by decentralization to district and local level. Monitoring and evaluation of CHW

programmes is lagging behind, thus hampering the systematic sharing of experience necessary to improve ongoing programmes and for planning of new programmes.

Rody, N., Raymond, J.; Evans, D. and Pottenger, F. (1985). The YAP school health programme: towards community competence in PHC. *Education for Health*, no.2, pp 19-25. (405)

In Yap, a part of the Federated States of Micronesia, (approximately 9000 inhabitants in remote rural areas) a school health education programme began in 1974 and had minimal success. This was mainly because what was taught in the classroom was not reflected in the child's environment. For example, lessons were given on washing hands after going to the toilet, yet schools had no water or toilets. Therefore, the programme was reoriented in 1982 towards specific health services with increasing parent involvement. This was followed by collective efforts to improve the school environment and subsequently by specific health education activities.

The health services included annual treatment of school children for intestinal parasite, not so much to eradicate worms, but to prevent a general decline in health. As a result children visually gained weight and appeared to be more active and attentive in school. Parents were involved in scabies control. Based on a feature of Yap culture, village competition was used to construct and upgrade school hygiene facilities through community effort. Subsequently the school health education programme was revised. Through activities, students now observe, collect and organize information, experiment, and apply new information to various situations at school and at home. Parents and other community members participate in discussions on specific health problems, coupled with demonstrations on simple treatment and suggestions for future prevention.

Three reasons are put forward for this apparent success of primary health care through the school health programme. Firstly, the programme was developed by the Department of Education which was identified more easily with preventive services than the Department of Health, primarily known for its curative services. Secondly, school buildings were located in every village, thus allowing for low-cost delivery of medical and educational services. Also, school teachers could more easily take care of follow-up activities. Thirdly, the project started with action and visual improvements in children's health, thus establishing confidence in the school health programme in the community.

Sillonville, F. (1985). *Guide de la Santé au village: Docteur Maimouma parle avec les villageois*. Douala, Cameroon, Institute Panafricain pour le Developpement. (431)

This book presents an example of participatory health education. Central figure is "Doctor Maimouma", a respected member of the community and village health worker. Her approach to solving child health problems is described in such a way that village health workers can adapt her participatory approach to their own situation. Thus, each chapter presents a short story dealing with a particular health problem and possible solutions. At the end of each chapter a number of questions are presented for the village health worker to use to generate active participation in village meetings. Subjects covered

include nutrition, drinking water, personal hygiene and cleanliness, common diseases and fever, common accidents, and pregnancy and birth. The book is written for village health workers and their trainers and is based on the principle that village health workers will carry out health education activities in the way they are trained to do so.

Simpson-Hcbert, M. (1987). Hygiene education strategies for region I for the Ministry of Public Health in Thailand. (WASH field report, no. 210), Arlington, Virginia, USA, WASH. (434)

The hygiene education strategies of the Ministry of Public Health (MOPH) have been reviewed and revised in Region I of Thailand. It was concluded that the ongoing hygiene education programme have been successful in promoting facilities such as latrines, rainwater storage jars and slow sand filters, but have been less successful in bringing about behavioural changes. Many villagers continued not washing their hands after defaecation and before food handling and eating, and not using latrines for defaecation. They did not always cover water jars, and continued to dip water out of the jars even if a container had a spout, thereby contaminating the drinking water. The main weaknesses of the programme identified were lack of a clear strategy for changing behaviour; no system to measure behavioural change; too much focus on men only as target group; and too much reliance on educational materials and mass media messages produced centrally by the Ministry of Public Health. Also the current Government policy emphasizing construction of facilities was identified as hindrance.

Recommendations for the new hygiene education programme included a change from constructing to using facilities properly; from top-down and passive mass media approaches to bottom-up and more active person-to-person approaches by village educators; and from educating household heads to educating wider target groups. More importance was to be placed on reporting and evaluation. Incentive messages (emphasizing the potential socio-economic, religious and health gains) and hygiene education messages were also suggested.

Based on these recommendations, a model hygiene education programme was designed for pilot testing. The model programme should not require more budget, more government personnel or much extra work. Therefore, responsibility for the programme was to be divided among the members of a village hygiene education team comprising those already working in the village: midwife, sanitarian, sanitation craftsmen and women, health volunteers, health communicators, school teachers, monks, community development agents and agricultural extension agents. Each of them will convey a few hygiene education messages to specific target groups, thus weaving a network of information flow which will reach every villager. The scope of work for each community worker is included in the document together with two proposed evaluation methods. The first method is to conduct surveys at the beginning of the project and after six and twelve months to measure progress towards ten set targets. Special survey forms will be developed for this purpose. The second method is to invite representatives of the community workers and the village target groups to discuss the project with district officers six and twelve months after the surveys. The paper also includes a training workshop outline for the pilot project.

Tanzania, Prime Ministers Office and IRC (1984). Water, sanitation and village health: a community organization and participation approach in Tanzania. Paper presented at the interregional seminar on Women and the International Drinking Water and Sanitation Decade (IDWSSD) Cairo, Egypt, 12-16 March 1984. Santa Domingo, Dominican Republic, INSTRAW. (466)

A project was carried out to determine (a) the need for an additional community participation component in a Tanzanian rural water supply programme, and (b) the national organizational set-up and general framework for such a programme. The project included a study of environmental health conditions and behaviour in eight villages. This study showed that with the existing technical and health education procedures only a limited impact on village health could be expected. Subsequently a follow-up programme was implemented with greater community involvement in planning and maintenance of the village water supplies and a more participatory approach to health education. Special emphasis was put on active women's involvement both as managers and as target groups. Small group discussions were particularly successful in achieving hygiene improvements. However, too much emphasis was still placed on typical women's issues at household level. In future programmes, women would be made more aware of village-level issues for joint community action. Health education with men should emphasize the importance of water supply maintenance and household improvements customarily the responsibility of men. An important condition for further experiments with this new approach is the establishment of a national policy for greater village self-reliance in water management and the creation of feedback channels from the field to policy makers.

Tanzania, United Republic of, Community Participation and Health Education Project (1986). Progress reports and seminar reports. Dar es Salaam, Tanzania, Community Participation and Health Education Programme. (464)

A community participation and hygiene education pilot programme was planned and implemented in five villages to find out whether such a programme would improve village participation in water and sanitation programmes. Baseline surveys consisted of interviews with 10% of the households, latrine surveys, clinical examination of all children under five years, observation and KAP studies. Results showed that the villagers felt a greater need for an available water source than for water of better quality. About 75% of the villagers had a latrine, 65% were too shallow. Therefore the health education programme aimed to create a felt need for safe water and to mobilize the community to build and use latrines; to improve home and personal hygiene as well as nutrition and disease prevention. It was anticipated that after about six months that 30% of households would have:

- improved water storage habits;
- increased the use of rack for utensils, bath shelter and rubbish pits;
- better understanding of the value of VIP latrines;
- be familiar with the oral rehydration therapy.

Also, about 10% would have started brickmaking in preparation for a VIP latrine. Participatory health education through village workshops and home visits was considered the best way to achieve these objectives.

Each village programme started with a one to two-day workshop attended by local leaders, traditional healers, village water committee members and one woman from each "balozi". Workshop activities included presentations, story telling, singing songs, listening to cassettes, making flipcharts, and group discussions, with the participants composing the content of the programme.

In Mlanda village, for example, 76 villagers (56 men and 20 women) participated in a workshop, including two traditional healers and a village music group. After an introduction, participants were divided into five groups (two women and three men) to identify felt needs and set priorities. In a plenary session each group presented five chosen needs together with possible solutions. Of the 25 problems six were chosen, ranked and their possible relationship with the project was discussed. A 15-minute puppet show emphasizing the importance of clean water storage, was followed by discussion. Seven messages were identified. Five mixed groups were formed to produce means and tools to relay the messages to the villagers on the following day. The participants could choose songs, drama, story telling, cassette production or flip-chart production. The groups performed their programmes next day to about 500-600 villagers in a public meeting. The workshop was evaluated by both participants and non-participants right after the closing session. Evaluation showed that traditional media like stories, songs and dramas are better media to convey messages than slides and a puppet show. Follow-up workshops on child care were arranged three months later, this time mainly for women.

After the first workshop in each village the three women on the village water committee are given additional training in using the various media and to provide equipment needed for home visits. These village health workers must be paid by the community. The community participation and health education programme is staffed by Tanzanian project staff and expatriates. A Health Officer from the Regional Health Department and a female Community Development Officer from the Community Development Department were seconded to the project to strengthen co-operation between the departments involved in water and sanitation development.

Tonon, M.A. (1980). Concepts of community participation: a case of sanitary change in a Guatemalan village. *International Journal of Health Education*, 23, 4 (supplement), 1-15. (479)

The impact of potable water on health was studied in two rural villages. One served as a control community, the other received water, sanitation and health education. Statistically significant results after 18 months included reduction in the quantities human and animal waste in and around the home; construction of barriers for domestic animals; construction, maintenance and use of latrines; improved food and water handling and storage; increased use of water for personal hygiene.

The education programme aimed to stimulate new social norms including hygiene behaviour. This implies a development process rather than an isolated educational event.

Therefore, both small and large group activities focusing on community participation in programme planning were emphasized.

After a number of planning sessions, the male opinion leaders established a Community Betterment Committee. The group helped the project staff to understand community beliefs and perceptions about health, water, and sanitation. Guidelines for the distribution and sale of latrines were developed, acceptable methods for controlling domestic animals in houses identified, and approval for a women's education programme received. When the need for community-wide education emerged, household discussion forums were organized in their own houses. For about two months, two training sessions per week were held to prepare the committee members for their task. After completion, teams of three committee members worked as a unit. Each unit invited between 5-10 families of their choice to participate in a six-week series of discussions, one per week. Each week the discussion was devoted to a specific hygiene subject, the same for all forums. A sanitary package consisting of a wash basin, a bar of soap, a soap holder and a towel, was handed out to families showing interest in trying new sanitation practices. The six week forum series was repeated after four months with other interested families.

The main factor contributing to the success of the programme was the participatory approach. This also led to other community initiatives, for example, food distribution after a poor harvest, the setting up of a village co-operative and extension of the piped water supply. This approach made certain demands on the project. It requires considerable often long-term commitments of manpower. It also requires open communication as the education team has to maintain a dual perspective: on the one hand they must understand community perspectives and needs including non-health issues, and on the other hand they must comply with the perspective and concerns of the project agency. The project education team consisted of a field physician, two field educators, a sanitary inspector and a health education project consultant.

Vigano, O. (1985). Communication, community and health: final report Honduras Water and Sanitation Program 1981-1985. Tecuigalpa, Honduras, Academy of Educational Development. (500)

Health communication started in 1981 in the Honduras Water and Sanitation Programme (PRASAR) with technical and financial assistance from US AID. The specific objectives were to change at least four sanitary behaviours, to train all in-service health promoters; to develop community participation methods and the use of educational materials; to introduce health communication in at least one school in each community in the project area; and to co-ordinate activities with the Ministry of Health. Approximately 300 000 people were reached through radio broadcasts and posters, and 80 000 people face-to-face by health promoters. The radio broadcast included 60 fifteen-minutes episodes of a comedy series featuring community members analysing water and sanitation problems. In addition 120 one-minute radio spots were created and broadcast six days a week, 20 times a day. After initial training, the in-service health promoters organized group sessions in the project communities. They used flip-charts, wall-charts and photo novels developed especially to stimulate dialogue and to generate community participation to solve local water and sanitation problems.

A series of modules were designed for primary schools on the effect of water supply and sanitation on health. These modules were closely related to the overall health communication effort. What was taught in school was repeated in group meetings, on the radio and in the printed media. Each module included a teacher's guide and a comic booklet for students. As a result of the programme, some 75% of the target groups were observing two or more of the four behavioural objectives. Training positively affected the health promoters, approach to the community. This training system was adopted by the Ministry of Health for its own health promoters, and also by other projects. The main lessons of the health communication programme are the fundamental importance of detailed and repeated audience research; the importance of close co-ordination of broadcasts, printed materials and face-to-face activities; and the need for creative solutions to break out of the traditional mold.

WHO (1988). Education for health: a manual on health education in primary health care. Geneva, Switzerland, World Health Organization. (533)

This manual is designed to help community health workers provide appropriate health education that uses local resources and involves local people. It covers the relationship between behaviour and health, and the role of health education in helping people to adapt healthier life-styles. Practical explanations and advice are complemented by numerous examples, case histories, stories, exercises, checklists and illustrations that encourage readers to understand principles in terms of real situations.

Based on eight years of field-testing and revision, the book contains seven chapters. The first relates to health behaviour and health education. Ways of working with people to establish good relationships, to encourage clear communication, to stimulate participation, and to avoid prejudice are discussed in the second chapter. The main elements in health education planning are outlined in Chapter 3. The subsequent chapters cover health education with individuals, groups and communities. The final chapter describes various methods, media and techniques to be used to communicate health messages. Examples include the use of local proverbs and fables, and drafting of press releases to newspapers, radio and television.

Zacher, W (1982). The significance of water and sanitation for primary health care workers in developing countries. International Journal of Hygiene Education, 2, 1, 21-30. (574)

To determine the extent to which Primary Health Care (PHC) workers deal with the problem of water and sanitation, 22 job descriptions were compared from a number of countries in Africa, Asia and Latin America. In 16 (75%) of these job descriptions water and/or sanitation are mentioned as one of the main activities. As the training curricula were not available, four widely distributed handbooks were examined to obtain an idea of the type of advice the PHC will give their communities. In the WHO "Primary Health Worker" manual, the Latin American "Saneamiento" and "Where there is no doctor" only about 5% of the text concerns water and sanitation. In the Chinese "A barefoot doctor's manual" the percentage is even less. The use of more water for personal and domestic

the PHC training is so limited PHC workers are unlikely to influence morbidity and mortality from water and sanitation related diseases. This is compounded by the economic constraints to water supply and sanitation improvements. Also, PHC workers have many duties so they are more inclined to turn to curative work because this provides direct and observable short-term results.

Appendix I:

Resource Institutions and Organizations

The organizations are listed according to the location of home office

AFRICA

Groupe de Recherche et d'Appui pour l'Autopromotion Paysanne (GRAAP)
B.P. 305, Bobo-Dioulasso, Burkina Faso

Institut Africain Pour le Développement Economique et Social-Centre Africain de
Formation (INADES-Formation)
15, Ave. Jean Mermoz Cocody 08, B.P. 9, Abidjan, Ivory Coast

African Medical and Research Foundation (AMREF)
Wilson Airport, P.O. Box 30125, Nairobi, Kenya

Mazingira Institute
P.O. Box 14550, Nairobi, Kenya

ASIA

International Centre for Diarrhoeal Disease Research Bangladesh
GPO Box 128, Dhaka-2, Bangladesh

Voluntary Health Association of India (VHAI)
C-14 Community Center, Safdarjung Development Area
New Delhi, 110-016, India

WHO South-East Asia Regional Office
World Health House, Indraprastha Estate, Ring Road
New Delhi, 110 001, India

Yayasan Indonesia Sejahtera (YIS) (Indonesian Sejahtera Foundation)
Jalan Kimat VI/II, Kotak Pos 3028, Jakarta, PUSAT, Indonesia

EUROPE

Appropriate Health Resources and Technologies Action Group (AHRTAG)
85 Marylebone High Street, London W1M 3DE, UK

British Life Assurance Trust (BLAT), Centre for Health and Medical Education
BMA House, Tavistock Square, London WC1CH 9JP, UK

Collier Macmillan Ltd., Visual Learning Division
Suite 18, 91 St. Martin's Lane, London WC3N ODL, UK

IRC International Water and Sanitation Centre
P.O. Box 93190, 2509 AD The Hague, The Netherlands

Leeds Polytechnic Health Education Unit
Calverly Street, Leeds LS1 3HE, UK

Ross Institute, London School of Hygiene and Tropical Medicine
Publications Secretary, Keppel Street, London WC1E 7HT, UK

Teaching Aids at Low Cost (TALC)
30 Guilford Street, London WC1N 1EH, UK
Mail Order Address:, P.O. Box 49, St Albans, Herts, AL1 4AX, UK

World Health Organization (WHO)
Division of Public Information and Education for Health
Avenue Appia, 1211 Geneva, 27 Switzerland

NORTH AND SOUTH AMERICA

Academy for Educational Development (AED)
Clearinghouse on Development Communication
1255 23rd Street, NW, Washington DC 20037, USA

American Public Health Association (APHA)
1015 15th Street, NW, Washington DC 20005, USA

Educacion Popular en Salud (EPES), Iglesia Evangélica Luterana en Chile
Casilla 167-11, Santiago, Chile

Hesperian Foundation
P.O. Box 1692, Palo Alto, Ca. 94302, USA

Manoff International
Suite 420, 2001 S St., NW, Washington DC 20009, USA

Pan American Health Organization (PAHO)
525 23th Street, NW, Washington DC 20037, USA

Peace Corps Information Collection and Exchange Office of Program Development,
806 Connecticut Avenue, NW, Washington DC 20526, USA

Save the Children Federation
54 Wilton Road, Westport, CT 06880, USA

United Nations Children's Fund (UNICEF)
866 United Nations Plaza, New York, NY 10017, USA

Water and Sanitation for Health Project (WASH)
1611 N. Kent Street, Room 1002, Arlington, VA 22209, USA

World Neighbors
5116 North Portland Ave., Oklahoma City, OK 73112, USA

Appendix 2:

Journals and Newsletters

Journals

Contact

Geneva, Switzerland, Christian Medical Commission World Council of Churches

US\$ 10.00 (industrial countries)

Bi-monthly

Also published in English, French, Spanish, Portuguese and Swahili

Education for Health

In support of health for all Geneva, Switzerland, World Health Organization, Division of Public Information and Education for Health

Free of charge

Bi-yearly

Also published in French and Spanish

Hygie

International Journal of Health Education

Paris, France, International Union for Health Education

FF 135.00

Quarterly

Trilingual, English, Spanish and French

Waterlines

Journal of Appropriate Water Supply and Sanitation Technologies

London, UK, Intermediate Technology Publications

US\$ 14.00 (individuals), US\$ 18.00 (institutions)

Quarterly

World Health

Magazine of the World Health Organization

Geneva, Switzerland, WHO

US\$ 17.00

Ten times a year

Also published in French, Portuguese, Russian, Spanish, Arabic and Farsi.

World Health Forum

International Journal of Health Development

Geneva, Switzerland, World Health Organization

US\$ 35.00

Quarterly

Also published in Arabic, Chinese, French, Russian and Spanish

Newsletters

Dialogue on Diarrhoea

International Newsletter on the Control of Diarrhoeal Diseases
London, UK, Appropriate Health Resources & Technologies
Action Group (AHRTAG)
Free of charge
Quarterly
Also published in French

IRC Newsletter

The Hague, The Netherlands, IRC
Free of charge
8-10 issues per year
Also published in French

Salubritas

Washington DC, USA, American Public Health Association
Free of charge
Monthly

TALC-Newsletter

St Albans, UK, Teaching Aids at Low Cost (TALC)
Free of charge
Annually

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Community Water Supply and Sanitation Programme, Pokhara, Western Development Region, Nepal.

Prepared by M. Boot and H. Heijnen

(TP26) 116 pages 1988

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