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WOMEN, WATER AND THE DECADE

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WOMEN, WATER AND THE DECADE

Prepared for WASH
by

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Presented at the International Affairs Session
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ABSTRACT

Women, Water, and the Decade

This paper points out key roles played by women in traditional societies related to water use and management. It also examines the need for involving women in planning and implementing decade activities so that effective strategies can be developed for reaching, as effectively as possible, the goals of safe water for all.

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WOMEN, WATER AND THE DECADE

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INTRODUCTION

Over a billion people in remote rural areas and urban slums of the third world lack safe drinking water and even rudimentary sanitation facilities. By 1990 their numbers will reach two billion.

"The International Drinking Water Supply and Sanitation Decade 1981-1990" is a massive international effort to tackle what has become a top priority issue on world development agendas. Formally launched at a United Nations General Assembly meeting on November 10, 1980, the Decade involves UN agencies and private organizations, national governments, engineers, health professionals and social scientists, and most importantly, the people in the far-flung areas of the world who will become the beneficiaries of improved water supply and sanitation.

The World Bank estimates the cost at between \$100 and \$300 billion over the next ten years depending on the new facilities provided. Obviously, the answer is low-cost technology and systems which the users can help build and maintain themselves.

In this paper the key roles played by women in water use and management in traditional societies are discussed as well as the need to involve women in planning and implementing Decade activities. Strategies are suggested, for the active participation of women - at local, regional, national and even international levels which can contribute substantially to the successful achievement of water and sanitation goals and objectives.

In this same context it is also useful to consider the significance of improved water and sanitation facilities for the World Health Organization goal of health for all by the year 2000 (Ref. 1). Primary health care, which has emerged as the leading strategy for meeting health needs in developing countries, includes, among other elements community participation, universal coverage, and accessibility of appropriate technologies for improved water and sanitation. Thus the concept, and methods discussed in this paper are firmly linked to the broad aims of both the Water and Sanitation Decade and the Health for All by 2000 movement.

It has become overwhelmingly clear that the main obstacle in the use and maintenance of improved water and sanitation systems is not the quality of technology (Ref. 2, 3 & 4), but the failure "in qualified human resources and in management and organization techniques,

including a failure to capture community interest" (Ref. 5). An appalling 35 to 50 percent of such systems in developing countries became inoperable five years after installation, (Ref. 2, 6 and 7).

In 1976, the World Bank undertook a two-year research program in an attempt to identify technologies used in successful water and waste disposal projects in 26 developing countries.* Case studies of villages and urban fringe areas in Latin America, Asia and Africa brought to light some of the intricate problems encountered in water and sanitation development programs and the importance of the "software" in successful systems, especially the need for community involvement. Similar research by other international and bilateral development agencies and academic institutions confirm the need for community participation at all stages of program planning and implementation.

Engineers know how to build improved water and sanitation systems, health specialists understand the relationship between the multitude of diseases and illnesses related to water and sanitation, planners and economists know how to develop schemes and projects; but for engineers, health specialists, planners and economists to know how to build, how to plan, and how sanitation facilities should be used is not enough. The social and cultural factors influencing peoples responses to changes in water supply and excreta disposal systems must be understood and reflected in program design and implementation, because these factors determine acceptance, effective use, diffusion and ultimately the success or failure of recently introduced technologies. The problems impeding the achievement of Decade goals in water and sanitation improvement are thus not primarily in the engineering aspects but in the way in which new facilities are introduced and in the social and behavioral obstacles to their effective use. The most effective way of gaining understanding of these impediments and how to overcome them is through the participation of members of the client community in the early planning of projects (Ref. 3 and 8).

That women make up more than 50 percent of these communities is often overlooked. Also overlooked are the key roles of women in the drawing, carrying, use and management of water. Many women spend from four to eight hours a day in this burdensome task (Ref. 7, 9, 10, 11, 12 and 13). Women themselves are well aware of the time and energy spent in obtaining this basic need, and of the time and energy lost from more productive tasks.

Furthermore, it is the woman as mother and housekeeper who determines the appropriate and hygienic use of water. Women are therefore vital in efforts to halt the cycle of infection, especially for diarrhetic illnesses resulting from the fecal contamination of food and household water.

*The results of the research are currently appearing in a 12-volume series, "Appropriate Technology for Water Supply and Sanitation," available from The World Bank, Washington, D.C.

When only "community leaders" are consulted in needs assessment and women are not household water supply is rarely given priority (Ref. 5, 14 and 15). On the other hand, when needs assessments include the views of women, water for home consumption seldom fails to be among the top three felt needs (Ref. 5).

Women may not be aware of the germ theory of disease nor be able to see a direct relationship between health and improved water supply, but once they have had better access to water they quickly perceive the benefits in terms of improved health and reduced fatigue. The women of Chan Kom in Yucatan noted an increase of diarrheal disease after a pump breakdown and went to the mayor to complain that their children were becoming ill and to request repairs to the water system (Ref. 16).

Women also are well aware of the time saved from carrying water, which combined with energy savings, can lead to income-producing activities or better care and nurturing of themselves and their families; thus, contributing to improving the quality of life for the poorest of the poor (Ref. 13, 17 and 18).

Just as for water, the perceptions of women are essential in early planning for sanitation. As mothers caring for infants and toilet training toddlers, and as the primary users and caretakers of new latrines their preferences and opinions should be considered (Ref. 17 and 19). Latrine location and type should be planned after consultation with women to assure their most effective use.

Let us look briefly at some of the key roles of women related to improvements in water supply and sanitation and suggest ways to improve project design which hopefully will diminish failures and maximize effective use.

The four key roles I want to discuss today are:

1. Women as acceptors of existing water services and sanitation customs.
2. Women as users of new water and sanitation facilities.
3. Women as managers of household and community water resources and socializers in sanitary practices.
4. Women as change agents in breaking the fecal-oral route of infection through better use of water and sanitation facilities.

WOMEN AS ACCEPTORS OF IMPROVED WATER AND SANITATION TECHNOLOGIES

Women, just as men, acting within complex structures of traditional use and management patterns, are acceptors of the resources, including water, in their environment. Their role as household managers means that in food preparation, washing and bathing, women are the primary users, and mediate between the water source and the household. Any

planned change in water availability or excreta disposal should be based on information about their present knowledge, attitudes, and practices. Careful observation and discussion, not just standard surveys, are needed to get at their perceptions and beliefs and preferences regarding water and defecation. How and what water is used for drinking, cooking, laundry, bathing, and other household functions, is a result of women's careful decisions based on what they have learned from their mothers and grandmothers and from their observations of costs and benefits of any change.

Factors Influencing Use of New Water Supplies

Decisions about drinking water are usually based on sensory perceptions--color, taste or smell--rather than purity in the scientific sense. Everywhere macroscopic qualities are substituted for microscopic ones in the assessment of water quality. Decisions not to use improved drinking water facilities, such as tube wells or piped water, are often based on the unpleasant taste or smell such as those given off by iron sulfide, or chlorine. There is often a fear of such things as metallic tastes, and women will decide against using them rather than risking the unknown.*

Factors Influencing Acceptance of New Sanitary Facilities

The importance of understanding attitudes toward excreta cannot be overemphasized. The widespread perception that children's feces are "harmless" (Ref. 20) can generate a continuous cycle of reinfection whether the feces are thrown on a nearby garbage heap or diapers are washed with dishes in an urban home with a newly installed standpipe. In many cultures infant feces, even though not considered "harmless," are not perceived as the harmful germ carriers they so often are (Ref 17, 20 and 21). Such factors should be understood and addressed in the planning and preparation of water and sanitation education projects.

In some areas women and children use the same latrines, but in many places the children defecate just outside since they are afraid of falling through the large opening or of entering dark distant latrines. These problems have been solved in a very innovative way in Sri Lanka where specially designed low-cost small water seal latrines are available. These were installed near the house for the children. These children's latrines without any walls can be placed under the eaves of the house just outside the kitchen door, so that mothers can

*In addition, in many societies processing of water affects its perceived quality. In many cultures there are beliefs about hot and cold food and drink which influence water use. For example, in some societies, cold boiled water is acceptable for daily use, but warm boiled water is just for invalids. Boiled water, even though cool, is considered "hot" unless redefined as "cold" boiled water after which it is no longer considered medicinal. Understanding these practices makes discussion of change by redefinition possible.

easily toilet train toddlers. Water used for washing children is then used to flush the latrine.

A commonly held belief in Honduras that women should not use the same latrine as men lest they become pregnant (Ref. 22) In other cultures the fear among men of menstrual blood limits the use of even latrines in many instances to women. In Tanzania it is believed that the excreta of fathers and daughters should not be mixed. In Nicaragua, women did not like to use the new latrines because the metallic sides were ten inches off the ground so that their feet were visible. Other latrines were not used because the sides came to the ground and made an attractive shelter for snakes (Ref. 23).

These types of beliefs have great significance for planning. They explain in part why in a study of 120 villages in Bangladesh the latrines were used by only 12.8 percent of the children, while only 59.9 percent of the adults (mostly women) use them (Ref. 24). A similar study of 525 latrines in India revealed many more women using the latrines than men, whereas children's feces were thrown on garbage heaps.

"User-choice" Approach to Planning

Feachem has noted, that it is essential that planners in designing projects "take account of user preferences and of the socio-economic setting of the project" (Ref. 25). The approach which focusses on the product from the point of view of the consumer has been described as "user-choice" (Ref. 26) and has been applied in several instances in development planning. However, not enough emphasis has been given to the choices of women as users of services and facilities.

A World Bank case study of water supply and excreta disposal in Colombia revealed that families preferred brightly colored cement stools and slabs over drab gray facilities (Ref. 9 and 27). When asked about latrine preferences and practices in the Yucatan, women preferred an attractive latrine with a shiny porcelain seat or a brightly painted cement floor or stool even if the cost and labor involved were much more (Ref. 16).

One other factor to be discussed with women in early planning is the reuse of gray water for flushing of water-seal latrines. Even though this requires more labor to carry water women may prefer such facilities.

The Collection of Social and Behavioral Data for Effective Project Planning and Implementation

Socio-cultural variations among villages and between the sexes in the same area or country, as well as those of different continents and climates, are to be expected. However, amazing similarities with respect to fears and constraints surrounding water and excreta appear in cross-cultural studies. For purposes of effective project design, however, more detailed information concerning these constraints is needed.

In the same way for a better understanding of knowledge, attitudes and practices, each community does not need to be surveyed in detail. Often there are similar data from other social and cultural areas which can be used for other cultures and geographic areas, particularly if they are of similar size and with a similar physical environment. However, there are bound to be important differences. If communities or households feel that new facilities are theirs, they are much more apt to fully accept, use and maintain them. Simple adaptations to local needs also increase the chances that they will be used. Feachem noted, and various studies verify (Ref. 28), that "in general, the design issues that will be improved through user participation are minor in their engineering or financial consequences, but major in the potential effect upon acceptance and correct use of the new facilities." These minor changes, however, have major importance in meeting the perceived needs of the local community and the resulting responsibility for operating and maintaining them.

It must also be noted that effective community participation may slow down or stop a project. In one instance a Mexican community would not accept a water installation connected only to some houses nor wells accessible to clusters of huts. The community decided that everybody should have water at once or they would all continue walking to the rather distant poor well (Ref. 29).

A Maya community in Yucatan also delayed the construction of latrines until a model appropriate to their perceived needs and the specific environmental and geological characteristics of the limestone soil could be designed and demonstrated (Ref. 16). Even though some may consider these cases failures, both communities were ready to work only for what they felt they needed, and thus unwanted facilities were not installed to fall into disrepair.

Thus far, the numbers of successful rural water and sanitation projects are much fewer than those that failed or achieved only limited success. There is evidence that all successful projects had community participation and there is increasing evidence that this, combined with the user choice approach, is a viable strategy (Ref. 14, 26, 30 and 31).

WOMEN AS USERS OF IMPROVED WATER AND SANITATION TECHNOLOGIES

A central question confronting each new water and sanitation project is whether or not the new facilities once installed will, in fact, be used by those for whom they are intended. A further question concerns who uses the facilities and how they are used. In the frequent preoccupation with ultimate outcomes of water and sanitation improvements, these questions like so many others may be overlooked. Women are the primary users of water supply facilities the world over and are frequently the first to use sanitary installations. However, they may not be included in the intensive user education so critical to the success of a project.

Strategies for the Education of Women as Effective Users of Water Supply and Sanitation Facilities.

New knowledge which results from education or training must be related to local beliefs and behaviors as noted above. Linkages must be developed between the old and the new. Hygiene education, particularly personal and household hygiene should focus primarily on women and have four primary objectives:

1. Increased knowledge of the water/health and the excreta/water/food/health relationships.
2. The promotion of positive attitudes toward proper and hygienic use of the water transport vessels, and storage receptacles, and the use and care of latrines by women and their children. (It goes without saying that such vessels, receptacles and cleaning materials or supplies should be locally available at affordable prices.)
3. The promotion of practices in water handling, excreta disposal, and food preparation that contribute to better health, including the use of clean, covered transport and storage vessels, hand washing after defecation and before food preparation, the toilet training of toddlers, proper disposal of infants' stools, and covering left-over food.
4. The promotion, where possible and acceptable, of appropriate reuse of wastewater and excreta through careful planning of spatial relationship and existing practices.*

Women as Promoters of Improved Practices Related to Water and Sanitation

Women have been found to be the most effective agents in promoting family planning, nutrition, home economics programs and other programs where women are the primary targets (Ref. 32). In Ghana home extension agents have been effective in delivering combined nutrition, family planning, agricultural extension, and child health education services (Ref. 33). So in the promotion of proper use of water and sanitation facilities, women should be actively recruited as health inspectors, assistant sanitarians, agricultural extension workers, primary health care workers, and sanitation educators.

Educating Women through Support Groups

If women are to benefit from user education services, such services should focus not only on individuals as recipients of information and

*Study of two Egyptian provinces revealed that families preferred to use the same water for washing clothes, then vegetables, and finally dishes. "It is not so much the reuse of this water that is detrimental to health as the sequence of its reuse." Also significant is the fact that multiple uses were directly related to scarcity of water and to the arduous task of transporting it (Ref. 57).

motivation, but on the involvement of existing women's groups or the creation of new groups to encourage peer support for desired change. Savings and loan associations, family planning groups, religious organizations, tribal societies, and kinship and friendship networks need to be identified and invited to participate in the promotion of improved practices related to water and sanitation (Ref. 28, 34 and 35). Where feasible, efforts should be made to mobilize the general community to support such education for women, and women should participate in community organization in order to forge those supportive links.

Settings for Communicating with Women

Certain sites may also lend themselves to more effective delivery of new information than others such as markets, clinics, hospitals, and laundry and grain grinding sites, etc. (Ref. 36). Schools may well serve as an ideal place for reaching young girls who are already preparing for motherhood and housekeeping and who have had long experience in hauling water. And, in fact, school children, both boys and girls, can teach both their parents and peers about changing customs and behaviors and give further support to their mothers. The effectiveness of education in groups is based on the notion of group support.

Development of Learning Materials

When field workers from the Diarrheal Disease laboratory in Bangladesh were contemplating their hygiene education program as a part of a new water and sanitation effort at Teknaf, they tested specially prepared educational materials among the local population, mostly women, but found that most were unintelligible (Ref. 37). Objects in the designs were not even recognized for what they were. In the Cameroon (Ref. 38) testing materials, found a nearly 25 percent rate of non-comprehension of visual images.

At present, it is not known what proportion of rural populations, and particularly women in developing countries do not perceive the meaning of visual representations but it is known that there are cultural differences in visual perceptions of printed materials. The implications for water and sanitation user education are extremely important. Rather than heavy investment in materials prepared without client participation or use of existing educational materials, locally developed and pre-tested materials should be used together with demonstration models of the new facilities and the training of field workers in verbal communication skills (Ref. 39 and 40). Mass media campaigns can be used as reinforcements if they are repeated and locally relevant (Ref. 41).

WOMEN AS MANAGERS OF WATER AND SANITATION FACILITIES

Although men are often perceived as the "prime movers" in the development context, the central role that women play in raising children and maintaining the fabric of society, as well as in health education and health care, and their permanence within the household and the

community gives them great potential as effective managers and trainers for community water and sanitation projects.

Women are, of course, managers of household water supplies, but whether recognized or not, women also have a strong potential role as managers of community water supplies as well, especially in the growing number of places in developing countries where there are more women than men. Women are, for one, bound more tightly to the household and to the community than their male counterparts who must often seek work elsewhere. Women are usually responsible for either obtaining water or seeing that it is available for daily use and deciding how and where it is to be used and for what. In many diverse geographic areas, in addition, women select water sources and some play key roles in seeing that funds and/or labor are available to maintain them.

It has been suggested that when people participate in planning and/or implementation of a project, they will collectively consider the project theirs and have a sense of responsibility for its care and maintenance. This has been challenged by Feacham, who suggests that some villagers feel they have made their contribution at the construction stage, so that it is more than ever the responsibility of the government to maintain the project (Ref. 21). Alastair White notes that outsiders' expectations about community participation are based on how they themselves would, or think they would, respond. But communities are not individuals. To speak of a community having a commitment to a project can only be a metaphor for a range of attitudes among individuals, none of whom may value the project highly in relation to his or her own private affairs (Ref. 42). If we accept this concept, however, and recognize at the same time that a large proportion of the participants are women, for whom the importance of a water and sanitation project has understood value, the chances for collective approval and continued support is much greater.

Several tasks in the maintenance and repair of new water supply and sanitation facilities must be learned by someone in the community. Among these tasks are monitoring for leakage and other defects, keeping stocks of spare parts, overseeing a small budget, doing routine maintenance and minor repairs, maintaining liaison with local authorities and district and regional technical services, and training other community and household members in maintenance and repair techniques. All these tasks require training. Women, as those who already exercise considerable influence over water sources and uses, should be in a good position to benefit from such training.

These latter considerations have implications for both the substance and the form of training. In the first place, improved facilities, while they should be appropriate, need not be crude or even simple. The idea that the technology is too complex for "simple rural folk" of developing countries is a myth and a rather unconvincing myth at that. Broken and inoperative water supply schemes and abandoned latrines are to be seen in environments where village skills extend to maintaining and repairing bicycles, transistor sets, irrigation pumps, ceiling fans, air conditioners and a variety of small industrial machines and

tools (Ref. 25). We could add sewing machines, ancient pedal models and electric ones, that are kept running by women.

Of course, the new skills required for the effective management of improved technologies must be added to these existing skills, but most women are eager learners of any information or skill that promises to make life better for themselves and their families.

In Angola where women have been recruited as water source monitors, the breakdown rate has declined decidedly (Ref. 43). As an adjunct to an agricultural development project in Bolivia bi-lingual indigenous women, 17 to 25 years of age, were trained to administer immunizations, provide information on child nutrition and lecture on the proper maintenance of water and sanitation facilities. A number of these young women are now in complete charge of repair and maintenance of the facilities (Ref. 44). Armed with these skills and with information about alternative water sources, women can improve their ability to plan for more accessible and more reliable sources of water for their households and communities.

Women as Trainers, Trainees, and Trainers of Trainers

The implications for women as users of new or improved systems of water and sanitation are multiple. Women can become important as trainers, trainees, promoters, and managers of the systems. In fact, women already are the mediators between the home and the environment.

Training in the technical skills mentioned above, but also in those related to training and liaison work, will be more effective if it is "on-the-job" rather than didactic (Ref. 45). Training should be used as an opportunity to acquire needed skills in a working context with the supervision and support of technical staff with a minimum of time spent in the classroom. This approach has proved to be effective in a number of programs for training community development workers (Ref. 19 and 46). Considerations of formal training are several. In many cultures women as trainers and as trainers of trainers are more effective, and sometimes required if female participation is desired. Every effort should be expended to recruit women for these roles.

Since 1972, some communities in Paraguay have selected local literate people, many of them women, for special training to carry out basic surveys including assessment of attitudes toward water excreta and garbage. The communities participate in the selection of the kinds of services and education they want, as well as the actual construction of the water supply systems. After special training, the responsibility for management and maintenance of the system is assumed by an elected Water Board (Ref. 47). In Upper Volta, female community workers will be the major collectors of data for evaluating a rural water supply project (Ref. 35). It would be quite feasible to include in the training of these "trainers", the necessary knowledge and skills to improve water and sanitation practices among their clients especially women. This type of integration in training can lead to reduced costs, more nearly integrated field programs, and can focus on

priority areas as defined by communities: health, education, nutrition and water supply... areas which often cut across disciplinary boundaries (Ref. 48).

WOMEN AS AGENTS OF CHANGE IN WATER AND SANITATION

This section is based on the assumption that the role of women as diffusers of improved water and sanitation technology and associated behavior change must be taken into account in evaluating projects. This assumption holds true whether one is concerned with households or communities and needs to be incorporated into both external and self or participatory evaluation design (Ref. 34, 49 and 50).

Effects on the Household

To a large extent the health and social benefits within the household of improved water and sanitation facilities are dependent on the ability of women to diffuse information leading to changed attitudes and practices among other household members. As carriers of water women influence directly the volume consumed, (Ref. 7) and thus, the health status of the household for illnesses which are directly related to the volume of water consumed, such as diarrhea, skin infections, trachoma, etc. As the selectors of water sources, women determine the quality of water delivered to the house based on their perceptions of what is a good and acceptable source. As those who select the transport and storage vessels, wash them, and cover them, women influence both the volume of water consumed (Ref. 7) and the quality. Finally, as those who give their infants and small children liquids they determine the cleanliness of the cup, spoon and water and thus, in part, health status of the infant or toddler (Ref. 41).

All potential health benefits will be influenced by the woman's behavioural change related to excreta, unclean hands, left over food, uncovered water, and flies (Ref. 41). It is she who forms a constant link in the chain of contamination from feces to fingers to food, and she who in turn can break the chain by latrine use, hand-washing, and protection of left-over food.

From this change in the woman's perceptions and resultant behavior, efforts to alter the behavior of other family members will stem. For instance, women have a major role to play in the adaptation of small children to latrine use (Ref. 9 and 19) through promoting the construction of child-sized latrines, through showing a model of appropriate behavior, and through nurturing the child through the process of training. Experience in the above mentioned case in Sri Lanka since the 1950's with child latrines needs careful evaluation. Users, such as the staff of Sarvodaya, a private agency, feel this is an effective innovation (Ref. 51). These changes in behavior may become permanent and persist into adulthood. They can also influence the behavior of older siblings, particularly girls, who care for younger children, carry water, and perform other household tasks.

Effects on the Community

In the vast majority of communities where a single water source serves from 30-200 or more persons, the health and socio-economic benefits of the water supply will also depend a great deal on women. Women as the drawers of water also control to a great extent the possibility of contamination of the water through the manner in which they use the installation. For example, in the case of open wells, which are by no means advocated in this paper, the use of a clean bucket, and the prevention of spilt water running back into the well depends upon the actions of women. In the prevention of Guinea worm transmission, care must be taken that water does not run back into the well after coming into contact with infected hands and feet. Women also are among the first to notice defects in the structure of wells or pump breakdowns and are therefore, in a good position to call attention to problems, make simple repairs or arrange for more extensive repairs.

In these and other ways the roles of women must be accounted for when one attempts to evaluate the community level outcomes of introducing improved water technologies.

Regarding sanitation, although most installations for excreta disposal are at a household rather than a communal level, the crucial role of women as the most frequent users of such facilities (Ref. 28 and 52) must be recalled in those instances where communal sanitation blocks and other forms of public sanitation installations are the prevailing pattern. The installation of handwashing facilities and the provision of soap may depend for their effectiveness on focussing user education on women (Ref. 9).

Implications for Evaluation

Warner has suggested that evaluation of water and sanitation improvements should be viewed in three stages: project operation, project performance, and project impact (Ref. 58).

At each stage of the evaluation, whether one is describing the function of a pump or its use by villagers, if one is to effectively evaluate results one must account for the role of women as diffusers of knowledge, attitudes, and behavior associated with new water and sanitation technologies. In effect, if one has not included the role of women as a key moderating variable one is likely to miss many of the reasons for the results of a given project.

Externally administered evaluations of water and sanitation projects have the obvious advantages of expert design, use of valid measures, and access to facilities for data management. Achieving interpretable results, however, in the case of water and sanitation projects may involve sharing a part of the responsibility for carrying out the design, execution, and interpretation of the evaluation with the participants/beneficiaries of the project themselves (Ref. 53 and 54). The inclusion of a focus on the role of women in order to explain results, in particular, demands that women in the communities where water and sanitation facilities are installed be entrusted with the

responsibility for identifying criteria for each stage of the evaluation, for the collection and recording of data, and for a share in the interpretation of results. Only thus will reliable collection of evaluation data be achieved. With a stake in the outcome of the evaluation, women will be more likely to see that the necessary care is taken to select feasible data items and to collect them reliably. At the same time they will feel responsible for suggesting modifications or changes in the facilities themselves based on interpretation of the data gathered. In Honduras, the women not only collected the survey data but organized a workshop analyzing it and preparing a final evaluator document (Ref. 47 and 50).

SUMMARY AND CONCLUSIONS

Ineffective or modestly effective water and sanitation programs in the past are primarily the result of non-use and misuse of new facilities, not to the engineering aspects. Until women participate in project design and implementation, including user education and management of such facilities, limited acceptance and impact can be anticipated. It is obvious to neither peasants nor scientists that interventions in water supply and sanitation alone bring about better health. In seeking an explanation for this paradox, one must look beyond technology to the roles and attitudes of the potential beneficiaries of new water and sanitation facilities, particularly the women, who are the primary users of water and the socializers of their children in matters of personal hygiene.

Inculcating the benefits of improved hygiene practices is not a simple process, however, particularly in the area of human defecation--a taboo subject in many cultures, with overtones of magic, witchcraft, or just Victorian prudishness. Information about taboo subjects then does not flow easily or rapidly through a community. When new water and sanitation programs are introduced by and to men, who are usually the decision-makers on public policies, women are not likely to be part of the information network. There is a dearth of information on the roles of women in this field. More research is needed to obtain relevant sociocultural data on their problems and constraints, and more attention needs to be given to ensuring their participation in decision making.

Village mothers, whose roles make them the keys to change, will not know how to break the fecal/oral route of infection--without which we cannot expect much improvement in health--until they have some important bits of additional equipment and understanding of how to use them. They need soap and hand basins, and adequate carrying and storage containers, along with conveniently located, non-odorous safe latrines. Is it possible to talk with the women with respect to where they wash clothes, dishes, hands, their children, and themselves? If water is made available for laundry and bathing, can it be reused in an aqua-privy? Do we think of planning bathrooms only for urban areas?

The fecal/oral/reinfection route is well known, but there has been very little designing of facilities to help break this vicious cycle. If there is only one pail and no money to buy another, of course it

will be used for everything. If there is no top for the pail, a covering with leaves is a poor substitute. Inexpensive, even subsidized, kitchen, laundry, and bathroom equipment and soap will make it possible for villagers to take advantage of improvements in water supplies and sanitation. In several countries, brightly colored, lightweight plastic water jugs and tubs have had ready acceptance. In Guatemala, as an incentive in promoting personal hygiene, a simple package containing a wash basin, soap dish, pails and shelf to attach to the latrines was given as a reward to each household following inspection of their new privy (Ref. 55). A mirror and soap could be added to such a kit, and a dipper for ease in transferring water. With these improvements, instructions for the women on how to use and manage the new equipment are needed. Audiovisual messages and health education should be related specifically to the effective use of the new equipment--both community and household--so that it can be used efficiently with pride and pleasure. The messages must be directed primarily to women, for they are the key to the realization of the goals of water and health for all.

During the 1977 Water Conference in Mar del Plata, thirty nongovernmental organizations issued a statement on "The Special Situation of Women in Regard to Water" (Ref. 56) recommended that developing countries:

- include strategies to develop human resources at the community level to meet local needs;
- ensure equal access for women to training with regard to the maintenance, management and technology of water sources and supplies;
- ensure that women be included in any educational programs on the use of water and its protection from contamination;
- ensure the participation of women in local councils and planning boards responsible for making decisions on community water supply; and
- recognize the increasingly effective role that women, nongovernmental organizations, and other women's organizations can play in the education of public opinion for needed change.

The importance of community participation has come to be recognized, even if the active involvement of women is seldom practiced.

As increased recognition is given to women's participation in the home and community, similar attention needs to be paid to women as members of national planning boards, regional councils and advisory committees at all levels, as recommended at the Mar de Plata Conference.

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REFERENCES

1. Primary Health Care, Report of the Conference on Primary Health Care, Alma-Ata, USSR. World Health Organization, Geneva (1978).
2. WARFORD, R.J. & SAUNDERS, J.J. Village Water Supply. The Johns Hopkins University Press, Baltimore, MD (1976).
3. ELMENDORF, M. Public Participation and Acceptance, Environmental Impacts of International Civil Engineering Projects and Practices, American Society for Civil Engineers Publications, New York (1978).
4. BURTON, I. Policy Directions for Rural Water Supply in Developing Countries, Program Evaluation Discussion Paper No. 4, Agency for International Development, Washington, DC (1979).
5. NIEVES, I. Beyond Survival Skills: Providing Basic Services to Satisfy the Needs of Poor Women (mimeo). International Center for Research on Women under contract to the Agency for International Development, Washington, DC (1980).
6. IMBODEN, N. Planning and Design of Rural Drinking Water Projects, Experiences in Rural Development, Occasional Paper No. 2, Organization for Economic Cooperation and Development Centre, Paris (1977).
7. WHITE, G.F.; BRADELY, D.J.; & WHITE, A.U. Drawers of Water: Domestic Water Use in East Africa. University of Chicago Press. Chicago, IL (1972).
8. KALBERMATTEN, J. Guidelines for Project Monitoring and Reappraisal. Proceedings of the annual meeting of the American Society of Civil Engineers, May 11-15, 1981, New York.
9. ELMENDORF, M. Women, Water and Waste: Beyond Access. Paper presented at the Forum of the Mid-Decade Conference of Women, Copenhagen, July (1980c).
10. O'KELLY, E. Rural Women. Intermediate Technology Development Group, London (1978).
11. RUSSELL, A. Report on the Situation of Women in the Target Villages of the UNICEF Domestic Water Supply Project in Shar El Ghazal Province, Sudan (mimeo). (1979).
12. UNICEF. Alleviating Women's Burdens. Assignment Children, 34:pp. UNICEF, New York (1976).

13. WHITING, M. & KRYSTALL A. The Impact of Rural Water Supply Projects on Women (mimeo). CARE. Nairobi (1977).
14. MILLER, F.C. & CONE, C.A. Latrines in Valuc: A Twenty Year Perspective (draft), Appropriate Technology for Water Supply and Sanitation, Vol. 8. World Bank, Washington, DC (1981).
15. ELMENDORF, M., ed. Seven Case Studies of Rural and Urban Fringe Areas in Latin America, Volume 8, Appropriate Technology for Water Supply and Sanitation. World Bank, Washington, DC (1981a).
16. McGARRY, M.G. & ELMENDORF, M. What is Appropriate Technology? A Maya Village Asks, Appropriate Technology for Water Supply and Sanitation (draft), Vol 8. World Bank, Washington, DC (1981).
17. ELMENDORF, M. Field notes from Sri Lanka - excerpts in Decade Plan for Water Supply and Sanitation. American Public Health Association under contract to the Agency for International Development, Washington, DC (1980b)
18. ISELY, R.B. The Relationship of Accessible Safe Water and Adequate Sanitation to Maternal and Child Health. Water and Management (in press). (1980).
19. ISELY, R.B. Targeting Sanitation Programs where it Counts: Mothers of Small Children. Proceedings of the Congress of the World Federation of Public Health Association, Calcutta (1981).
20. Induced Change in Health Behavior: a Study of a Pilot Environmental Sanitation Project in Uttar Pradesh. Publication No. 356, Planning Research and Action Institute. Lucknow (1968).
21. FEACHEM, R. G. et al. Water, Health and Development, an Interdisciplinary Evaluation. Tri-Med Books, London (1978).
22. EOFF, G. Las Catanas: A Case Study of a Traditional Subsistence Oriented Peasant Community (mimeo). Agency for International Development, Honduras (1977).
23. RODRIGUEZ, R.I.; PINEO, C.; & ELMENDORF, M. Nicaragua: Country Report in Appropriate Technology for Water Supply and Sanitation, Vol. 8. The World Bank, Washington, DC (1981).
24. SKODA, J.D.; MEDIS, J.; BERTRAND, J.; & CHIA, M. A Survey in Rural Bangladesh on Diarrhoeal Morbidity, Water Usage, and Related Factors. UNICEF/World Health Organization, Geneva (1980).

25. FEACHEM, R. Rural Water and Sanitation, Proceedings of the Royal Society. B 209: 15:24. London (1980a).
26. KIRKBY, A.U. The Development of a User-choice Approach in Rural Water Supply. Working Paper 7, Rural Water Supply and Sanitation. International Development Research Center, Lausanne (1973).
27. RODRIGUEZ, R.I. A Rural Health System as the Basic Component of Rural Development in Villa Rica, Colombia: Case Study. Appropriate Technology for Water Supply and Sanitation. The World Bank, Washington, DC (1981).
28. ELMENDORF, M. & BUCKLES, P.K. Sociocultural Aspects of Water Supply and Excreta Disposal, Appropriate Technology for Water supply and Sanitation, Vol. 5. World Bank, Washington, DC (1980).
29. IWANSKA, ALICJA. Water Supply Problems in Rural Africa: The Implication for Women. Centre for Development Research, Copenhagen. (1980).
30. BUCKLES, P.K. The Introduction of Potable Water and Latrines: a Case Study of Two Rural Communities in Guatemala, Appropriate Technology for Water Supply and Sanitation, Vol. 8, The World Bank, Washington, D.C. (1981).
31. JORGENSEN, K. Water Supply Problems in Rural Africa; The Implications for Women. Centre for Development Research, Copenhagen (1980).
32. STORMS, D. Training and Use of Auxiliary Health Workers: Lessons from Developing Countries. American Public Health Association under contract to the Agency for International Development, Washington, DC (1979).
33. BRABBLE, E. Training program for rural home extension agents in Ghana, personal communication. American Home Economics Association, Washington (1978).
34. DIXON, RUTH B. Assessing the Impact of Development on Women, Program Evaluation Discussion Paper No. 8, Agency for International Development, Washington, DC (1980).
35. ROARK, P. The Role of Women in Successful Water Supply Projects. Office of Women in Development, Agency for International Development, Washington, DC (1981).
36. COLLE, R. & DE COLLE, FERNANDEZ. The Communication Factor in Health and Nutrition Programs: a Case Study from Guatemala. World Health Organization, Geneva (1977).

37. KHAN, M. Personal communication. International Centre for Diarrhoeal Disease Research, Dacca (1981).
38. ISELY, R.B., et al. L'image en tant qu'auxiliaire éducatif: comment l'adapter au milieu desiré. Africa Health (in press). (1980).
39. SRINIVASAN, L. Perspectives on Non-formal Adult Learning. World Education. New York, NY (1977).
40. CLARK, N. Tracing the Learning Approach, World Education Reports, New York, November, 1979.
41. SMITH, W.A. Media and Health Practices Results of Honduras Field Investigation, Report No. 14. Academy for Educational Development under contract to the Agency for International Development, Washington, DC (1980).
42. WHITE, ALASTAIR. Community Participation and Education in Community Water and Sanitation Programmes: Methods and Strategies (draft). World Health Organization, International Reference Center. The Hague (1981).
43. NIMI, D.A. Personal communication. Directorate of Maternal and Child Health Services. Ministry of Health, Luanda, Angola (1981).
44. STEIN, J. Water: Life or Death. International Institute for Environment and Development. Washington, DC, (1977).
45. STEUART, G.W. & RULL, C. Training of Rural Development Workers in Health Education, Technical Report No. 1, Water and Sanitation for Health Project, supported by the Agency for International Development, Washington, DC (1981).
46. AUSTIN, J.H. How Will Developing Nations Train Their Manpower for Quality Water Management? Proceeding of the Dialogue in Development: towards the 21st Century, Tel Aviv, Israel (1979).
47. CARDENAS, M. Community Participation and Sanitation Education in Water Supply and Sanitation Programmes in Rural Areas of Paraguay. UNICEF/World Health Organization, Joint Committee on Health Policy (1978).
48. Plan for the Drinking Water Supply and Sanitation Sector in Sri Lanka for the Decade (1981-1990). Ministry of Local Government Housing and Construction, Colombo (1980).
49. ELLIOTT, VERONICA & SORSBY, VICTORIA. An Investigation into Evaluations of Projects Designed to Benefit Women. (mimeo) Agency for International Development, Washington, DC (1979).

50. FEUERSTEIN, M. Participatory Evaluation: An Appropriate Technology for Health Education Programmes. 10th International Conference on Health Education, London, September (1979).
51. JAYASEKERA, LEILA. Comments on "Women, Water and Waste: Beyond Access." Proceedings of Seminar on Women and Health, Mid-Decade Forum, World Conference of the United Nations, Decade for Women, Copenhagen (1980).
52. BELCHER, J.C. & VAZQUEZ-CALCERRADA, P.B. Cross-cultural Aspects of Sanitation Norms. Proceedings of the Third World Congress of Rural Sociology, Baton Rouge, La. (1972).
53. COLE-KING, S. Health and Development: Anatomy of Decision Making. Proceedings given at the International Health Conference of the National Council for International Health, Washington, DC (1980).
54. ALLER-ATUCHA, L.M. & CRONE, C. A Participatory Methodology for Literacy and Health Education: the IPREFA Integrated Project in Choloma, Honduras, Assignment Children. 51/52: 141-162 (1980).
55. University of North Carolina at Chapel Hill and Institute of Nutrition of Central America and Panama, Guatemala, C.A. "Food Wastage/Sanitation Cost-Benefit Methodology project, AID/CSD-2959," methodology report submitted to the U.S. Agency for International Development (1977).
56. UNICEF. "Situation of Women in Regard to Water" (mimeo), Statement prepared by the Non-Governmental Organizations Committee on UNICEF for the Preparatory Committee, United Nations Water Conference, N.Y. January 1977.
57. SIMPSON-HEBERT, M. Sociocultural Factors: Implications for Project Design (draft). United Nations Development Program Global Project, Egypt (1979).
58. WARNER, D.B. & DAJANI, J.S. Water and Sewer Development in Rural America. Health, Lexington, MA (1975).

BIBLIOGRAPHY

1. Blair, Patricia
1980 Programming for Women and Health. Agency for International Development/Office of Technical Resources (mimeo)
2. Elmendorf, M.
1981 Community Participation: a human dimension with promise and problems, Safe Water and Waste Disposal for Health: A Reference Manual. National Demonstration Water Project, Washington, DC.
3. Feachem, R.
1980 Sanitation and disease: health aspects of excreta and wastewater management. The Johns Hopkins University Press, Baltimore.
4. Foster, G. M.
1973 Traditional cultures and technological change. Harper, New York.
5. Freire, P.
1970 Pedagogy of the oppressed. Seabury, New York.
6. Hall, B.L.
1978 Mtuni Afya: Tanzania's Health Campaign, Publication 9. Clearinghouse on Development Communication, Washington, D.C.
7. Isely, R. B.
1980 The relationship of accessible safe water and adequate sanitation to maternal and child health. Water and Management. (in press)
8. Krug, R.E. et al.
1976 Measuring village commitment to development in Values and development: appraising Asian experience, MIT Press, Cambridge, 104-132.
9. Nieves, I. and W.T. Farrell
1978 Behavioral and social aspects of technology diffusion and decisionmaking in marginal urban communities in San Salvador (draft).
10. Paul, B.D. and W.J. Demarest
1979 Intercultural health programs: the problem of community participation, Stanford University (mimeo), Palo Alto.
11. Pillsbury, B.
1978 Reaching the Rural Poor: Indigeneous Health Practitioners are there already - Agency for International Development Program Evaluation Paper No. 1, Washington, D.C.
12. Pineo, C. and M. Elmendorf
1978 Observations of rural water supply and sanitation programs in eight developing countries. World Bank, Washington, D.C.

13. Warren, Deunis
1980 Primary health care training for indigeneous healers in Ghana, Proceedings of the meeting of the Society for Applied Anthropology, Denver, (mimeo).
14. White, A.U. and G.F. White
1978 Behavioral factors in selection of technologies. American Society of Civil Engineers. Reprint 3453.
15. Whyte, A.
1979 Extension of community participation in water and sanitation in developing countries, Institute for Environmental Studies, Toronto.

1980 Draft guide for the design of a national support programme for community education and participation in water supply and sanitation. World Health Organization/International Reference Centre, The Hague.
16. Whyte, Anne and Ian Burton
1977 Water supply and community choice. Feacham, R., M. McGarry and D. Mara (editors), Water, Waste and Health in Hot Climates. Wiley, London.