HYGIENE EDUCATION AND COMMUNITY PARTICIPATION: THE COMMUNICATION SOFTWARE FOR RURAL WATER SUPPLY

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While it may seem that providing water is essentially a technological task, easily solvable through engineering or other hardware inputs, the reality has proven to be more complex. Statistics have shown that 35% to 50% of pump installations in developing nations fall into disrepair three to five years later (Saunders and Warford, 1976; Imboden, 1977). A community may not use the new pump, but prefer to continue to use their old water source for reasons of convenience, cost, taste, or other personal preferences. Thus, as most people in this audience know, delivering an adequate hardware response to an inadequate and unsafe water supply is almost always necessary but hardly ever sufficient. This realization has led to the more recent recognition of the social and behavioral aspects of improving water supply: convenience and accessibility concerns, local maintenance and management capabilities, and domestic storage and use of water practices. How communities are mobilized and educated to contribute to and benefit from a water supply project has emerged as the necessary software for making the hardware useable and sustainable.

Community participation in rural water supply projects has been advanced as a software strategy for increasing project

success in terms of maintenance and use (White, 1981 and 1986; Donaldson, 1976; Wijk-Sijbesma, 1985; White and White, 1978). Advocates of community participation emphasize that involving members of the beneficiary community in decisions related to the design, construction, and operation of the water supply system being created or improved may yield a community both more aware of the need for certain behavior change, more willing to alter lifestyle or community practices accordingly, and more eager to sustain project achievements after foreign donor funding comes to an end. Such participatory water supply projects may have important secondary effects and impacts beyond their primary effect of extending the availability of safe water and reducing the incidence of diarrheal disease.

Because of the importance given by USAID, other international assistance agencies, and national governments to immunization and ORT programs, and because of the difficulties involved in increasing the coverage of such programs, this "secondary effect" may be a critical part of the overall health impact of a water supply project. As ORT and EPI programs get underway on a large scale, it becomes more and more apparent that a major problem is that of achieving high coverage. Accordingly, if it can be demonstrated that, where participatory water supply projects have taken place, immunization levels are raised or use of ORT are increased, this could be be a powerful secondary benefit of water supply projects which emphasize community

involvement. If such information were available, then planners could phase-in primary health care and child survival activities according to a more specific logic and sequence. At present, there is no documentation of this link.

THE STUDY

With a research and development grant from the USAID funded Water and Sanitation for Health (WASH) Project, faculty from the School of Public Health at the University of North Carolina conducted a field based investigation from September 1985 to November 1986 to answer the following broadly stated question:

> What is the overall relationship between a community's participation in a water supply project and that community's subsequent participation in other primary health care activities?

The study used a cross-sectional, quasi-experimental design to compare participation in primary health care activities among three groups of villages in each of two countries:

1. Villages of a participatory water supply project, in which community members are involved in making decisions related to the planning, financing, implementation, construction, and operation of the water supply systems created or improved by a project,
2. Villages of a non-participatory water supply project, in which decisions related to planning, implementation, and evaluation are controled by specialists and funders outside the community, and
3. Villages in which no water supply project had been implemented.

The hypothesis to be tested was the effect of participation in the water supply project on the subsequent use of other

primary health care services. To measure this effect it was necessary to choose as an indicator a primary health care intervention that is not influenced by the direct impact of a water supply project, and for which reliable data exist on the individual villages. Participation in an expanded program of immunization (EPI) was selected as the indicator. However, using full immunization coverage as a measure would not be valid because the coverage levels would be too low to show much variation. The study, therefore, used the percentage of children who had completed the diptheria, pertussis, tetanus (DPT) immunization series. This series of three injections requires more sustained participation over time, and therefore, demands more difficult social and behavioral changes than a one-time vaccination.

The study posed the following hypothesized relationships:

1. Communities which participate in decision-making during all phases of a water supply project will display higher completion rates of the DPT vaccination series than will similar communities where non-participatory water supply projects have taken place.

2. Communities where non-participatory water supply projects have taken place will display completion rates of the DPT vaccination series that are similar to those of communites where no water supply project has taken place.

Therefore, to include villages in the study so that the three groups would be as similar as possible with respect to certain cultural, economic and geographical conditions, the participatory and non-participatory water supply projects would need to have

been operating in the same region during a similar period. It would also be important that EPI activities be introduced into the area after the water supply projects had been implemented, and that this data on immunization coverage at the village level be available. Also, information on each village's population size and distance from the nearest fixed health post would need to be collected as possible competing explanations for differences in DPT completion rates.

THE SITES SELECTED

The West Java Province in Indonesia and the Plateau Region in Togo met the above criteria. In Togo, the participatory water supply project chosen was the USAID and EEC funded Togo Rural Water Project, begun in 1980 and scheduled to end in December 1987. The hardware component of the Project was to drill tube wells and equip them with foot pumps. The software was a "socio-health" component which was primarily a community organization effort which involved villagers in a series of organizational, technical, and human relations activities resulting in the establishment of village development committees. Togolese "social affairs agents" initiated most of these activities after receiving extensive training in community organizing and health education skills. Community participation was defined as a continuous learning process which makes possible community action for the resolution of local health problems.

The non-participatory water supply project in the Plateau

Region of Togo was the Fourth FED (Fonds Europeen de Developpement) Water Supply Project. In this Project external teams drilled tube wells and installed pumps in villages needing better water supply. No community participation was sought and no effort was made to organize a community-based system for maintaining the pumps.

In Indonesia, the participatory water supply project chosen was the CARE-USA Rural Water Supply Project begun in 1979, still on-going, and funded by USAID. In West Java Province CARE installed gravity water systems stressing community involvement. CARE employed Indonesian field workers to carry out much of the community organizing and education activities in a village with the average length of contact being one to two years from start to finish of a water supply system. These field workers often lived in the village during the construction phase of the project, participating in village life and involving local political, religious, and informal leaders in planning and building the water project.

The non-participatory water supply project in West Java were drawn from those that had been part of the government's INPRES water supply program. INPRES water supply projects begin at the puskesmas (community health center) where hygiene and sanitation projects are among the primary health care activities, and a sanitarian is on staff to work with local government officials. Typically, a community leader approaches the

sanitarian for assistance in improving the community's water supply. Funds may be solicited from the government Department of Health, and the sanitarian distributes these to the village leaders. The sanitarian supervises the water supply project and recruits local labor for construction. Villagers receive a small fee for their work. A community participation approach is not taken.

FIELD PROCEDURES

In both countries our field collaborators verified a list of CARE, USAID, and Fourth FED Project villages and then randomly selected 10 villages from each list, which had been stratified by district or prefecture prior to selection of sample villages. For Togo this resulted in a stratified random sample of 10 participatory and 10 non-participatory water supply project villages representing all of the prefectures in the Plateau Region. An accurate list of villages not served by any water supply project in the Plateau Region did not exist, and thus, a non-random sample of control villages for Togo was drawn. In Indonesia the control villages and the INPRES Project villages were matched to the CARE villages along population size, socioeconomic status, and distance from the puskesmas. This resulted in a stratified sample of 10 participatory and 10 non-participatory water supply project villages, and 10 control villages not served by any water supply project representing all of the subdistricts in West Java Province. In sum, 60 villages were included in the study.

Field data were collected from three sources. First, a 16 item Community Leader interview was conducted with the village chief and one male and one female village leader in the participatory and non-participatory villages. Questions probed the general experience of the community in terms of collective activities, including community groups in existence and community projects undertaken before and after the water supply project. A series of questions was also asked to determine the level and nature of the involvement of the community in specific phases of the project. Leaders were also asked to describe the project itself, the length of time it took to complete the project, the contributions of villagers to system maintenance, and the interest of villagers in development projects that followed the water source installation.

A second source of data came from the field workers involved with the participatory water supply project. They were interviewed using essentially the same questions addressed to community leaders.

Data on the DPT vaccination series were collected from all villages in the study. In Indonesia immunization records kept in each puskesmas for each village within its catchment area were reviewed and DPT information was extracted. In Togo similar records were not available for each village in the study. Thus, data were collected in each village by interviewing mothers and extracting information from their child's vaccination cards.

FINDINGS

In both Indonesia and Togo, villages in the participatory water supply project groups had consistently higher DPT series completion rates than villages in the non-participatory groups. In Indonesia, 60% of the children aged 3-14 months in the CARE project villages had completed DPT series, in contrast to only 49% in the INPRES villages. Results were similar in Togo where 55% of the children aged 12-36 months in the USAID project villages had completed DPT series, in contrast to only 40% of children in the Fourth FED villages. These findings confirm the first hypothesis.

In Indonesia INPRES villages had essentially the same DPT completion rates (49%) as did the control villages, which supports the second hypothesis. However, in Togo where the control villages turned out to be smaller in population, closer to a health post, and to have smaller percentage of vaccination cards on which to base DPT completion rates, it was concluded that no further analysis of the control villages in Togo was warranted.

These findings constitute important evidence that a community's participation in a water supply project does influence that community's subsequent participation in primary health care services. The fact that similar findings emerge from not just one but two countries strengthens their reliability. The results from this single study do not constitute definitive proof, but the trend is clear.

Is it not possible, however, that the villages in the participatory groups were more participatory to begin with, and thus, would have had higher immunization rates independent of the water supply project? The data do not support this speculation.

The community leader interviews assessed the extent to which villages had community projects before the water supply project. Both participatory and non-participatory project villages had had some involvement in planning, decision-making, construction, and maintenance for a number of community projects (including school construction, clinic construction, bridge construction, road construction, food growing, and village clean-up). The data show that the study villages in Togo and Indonesia did not differ appreciably in the amount of community project activity that was either on-going before the water projects had begun or after the water system had been completed.

One might also ask, in Indonesia, about the influence of the family planning program, which is widely renowned for eliciting highly effective community participation. Was it not this family planning program, rather than participatory water supply projects, that paved the way for the higher levels of DPT series completion? In fact, villages in which there had been not only participatory family planning activities but also a participatory water supply project showed higher levels of DPT series completion than did the villages that had been involved only in family planning but had no participatory water supply project.

Further interesting comparisons between the participatory and non-participatory villages derive from the responses of field workers and community leaders to a matrix of questions designed to assess WHO was involved in planning the water supply system, determining the need for it, building the system, and maintaining the system. One might expect that, in participatory projects, more community members would take part in decision-making than in non-participatory projects, while more outside personnel would be involved in decision-making in the non-participatory projects. The data did not confirm this expectation.

Rather, it appears that the two participatory water supply projects elicited a partnership type of community action in which the involvment of community members and outside agency workers were about equal. Moreover, the kind of involvement by outside workers wasmore evely distributed over the kinds of decisions to be make along with the community. In other words, the WHO, WHAT, and HOW of participation were almost the same for outsiders as it was for insiders. Specialization and separation of roles between community and agency were minimal.

Water supply projects which require community participation may facilitate entry into the community for future development activities. That is, a water supply project that meets a community wide felt need and that is participatory can create and strengthen decision-making and communication patterns that may pave the way for the introduction of other innovations which will

require community initiative and action. A participatory water supply project might, thus, improve health not only by reducing the incidence of water and sanitation related diseases, but also by increasing the acceptance and use of other primary health care and child survival activities.

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