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Full Length Research Paper

Public participation to minimize waterborne diseases in Yom riverside communities

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The objective of this study was to assess public participation in the implementation of simple measures taken to minimize waterborne disease in Yom riverside communities. The location of the study was the Srimsamrong district. From two sub-districts in the area, were the research team. They found that the cause of waterborne diseases in Yom riverside communities was a two step process: 1. Contamination of Yom river water with garbage and sewage from riverside communities and 2. drinking of contaminated water. The approach used to minimize waterborne disease in Yom riverside communities included: building simple sewage purification wells; providing buckets for toilets; creating garbage holes; sanctioning people who throw garbage into the river; withdrawing privilege from people who throw garbage into the river. The evaluation found that most of villagers were satisfied and expected positive changes. They thought this kind of strategy was easy to put into practice.

Key words: Participation, waterborne diseases.

INTRODUCTION

Water is essential for life. Unfortunately, few people in developing countries have access to clean water (National Center for Infectious Diseases, 1996), Drinking of water contaminated by human or animal feces, which contains pathogenic microorganisms, causes water borne diseases. The quality of drinking water could affect our health directly. In developing countries four-fifths of all the illness are caused by water-borne diseases, with diarrhea being the leading cause of childhood death (Luby et al., 2004). A number of microbial pathogens transmitted by the fecal-oral route are commonly acquired from water in developing countries where sanitation is poor but chemical poisoning of drinking water supplies causes disease in both developing and developed countries. (McGraw-Hill, 2002) Floodwaters can carry with it raw sewage, silt, oil or chemical wastes and cause diarrhea and dysentery. Infectious diseases caused by pathogenic bacteria, viruss and protozoa are the most common and wide spread health risk associated with drinking water (Shroff, 2008). Clean water is a pre-requisite for reducing the spread of water-borne diseases and can reduce incidence of diarrhea by 36% or more (Curtis, 2005). It is well recognized that the prevalence of water-borne diseases can be greatly reduced by provision of clean drinking water and safe disposal of faces (Ahmed, 2006). In most of the major cities of Thailand the water supply is well chlorinated and so the risks associated with drinking mains tap water are limited (Avenue, 2007). However water-borne diseases such as cholera and various diarrheal diseases such as giardiasis, salmonellosis and cryptosporidiosis, occur commonly with contamination of drinking water in many South Asian countries (Chansai, 2008).The Yom River in Sukhothai Province, Thailand contains mostly organic wastes contributed by domestic sewage. The river is used not only for purposes of transportation, recreation and bathing, but is also used as an open sewer for households. Presently, bathing and washing are still practiced by local people close to the Yom River. Individuals who use the water for daily consumption are a great risk for health problems. The practice of throwing waste into the river causes breeding of microorganisms and can be an important vehicle for transmitting chemical toxins, leading to water-borne diseases, such as cholera and typhoid. Chemicals and pesticides may also contaminate the water supply. Water- washed diseases of

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Yom River are due to the poor hygienic habits and sanitation of the local people. The polluted water of the Yom River can not be used for washing and bathing. The contaminated water affects the aquatic ecosystem and the food chain, which retains poisonous substances. Our research focused on formulating an approach to minimize waterborne disease by developing community participation, with problem-solving originating from the community perspective.

MATERIALS AND METHODS

This study applied a participatory approach to problem solving. Discussions Forums with villagers were conducted during each phase in order to promote the exchange of knowledge and opinions between the villagers and the researcher, leading to a systematic conclusion. The waste materials disposal process of communities living along the band of the Yom River were thoroughly examined through sociological theories to discover lifestyle factors which were related to water bond disease. This study brought the villagers together with the researcher to discover the cause of problems and to learn how to solve them by using systematic learning methods. This study consisted of three phases, which took place in a raw. It started with an investigation of the riverside people's habits of focus disposing wastes by applying Buddhist methods of Right understanding (Samma-ditthi) to investigate the cause of the problems. These methods enabled the villagers and the researcher to understand the cause of the problem in relation to their lifestyle. This allowed them to find solutions based on local wisdom, brainstorming and reliable methods. Subsequently, the villagers developed a process to assess whether the solution met the needs of the community.The researcher conducted an assessment of the process to determine if it served the purpose efficiently.

The results in each phase were evaluated to determine if they answered the questions and solved the waterborne diseases problem. The researcher chose Wangyai and Tawet communities in Srisamrong, Sukhothai Province as the location of the study, because that community lives by the Yom river and is representative of the problem. The quality of the water in the Yom river is below standards. The people were eager to participate in the study. Four hundred and thirty houses participated in for this study. Sixty of them (stakeholders) were the research team. Data were collected through observation, focus group, group discussions, note-taking and tape-recording. The data analysis was done by indexing, typology and taxonomy comparisons and interpretation.

RESULTS

Investigate the cause of the problems

Environmental hygiene in Yom riverside communities was found that drain water is wastewater. The water from cleaning dishes, washing clothes, bathing, sewage, cooking (such as cleaning fruit, fish and beef), farming materials, such as insecticide tanks, cleaning of the farm truck and wastewater from other activities, such as motorbike cleaning, kitchen cleaning and water from the Toilet all drained directly into the Yom River. In addition, the garbage from households, shops and schools was left on the riverbank and was found in many places. It was observed that families liked to use tap-water for washing clothes, dishwashing and bathing. Water from these activities would drain directly from the houses into the river. Farmers usually washed their clothes after they came back from the farm; these clothes were usually contaminated with mud and insecticide solvent. They usually began washing these contaminated clothes in the Yom River before returning home to bathe. The tap-water system was pumped from the Yom River and contained chemical such as pesticide. During the rainy season, higher water levels in the Yom River caused flooding of houses and farms and destroyed a large area. The water treatment plant located on the Yom riverbank was inoperable and unable to distribute water to the communities. Sometimes it was not able to operate for nearly a month. People had turn to the Yom river for water. "When tap-water did not work, we would put water from the Yom river into the jars and stir with potash alum, let it sediment and then the water would be clear and drinkable" one resident said. People in the Tawet community believed that clear water was usually clean and potable without boiling.

Community involvement process

The villagers learned together in this research process. They learned about waste disposal behavior, exchanged information and experiences by emphasizing listening to other ideas equally and democratically. Most important for the project were thinking and discussing deliberating in a friendly atmosphere. By providing opportunities to express ideas without criticism and without feeling embarrassed, they helped each other to achieve the appropriate solution for the community. The problem solving process began by studying the lifestyle. Subsequently the solution of the waterborne disease problem was accomplished by digging a seepage hole, making a disposal pit and making compost were the villagers' ideas. They thought that they were farmers and that making compost was useful for them. Moreover, the villagers thought that making a disposal pit was suitable for them because they could dig it in their backyards and dump the waste there and when there was too much they could burn it. Other approaches were building simple waste water treatment wells; providing buckets for toilets; building earthen dykes to prevent the wasted water; digging garbage holes; sanctioning people who throw garbage into the river; with-drawing privilege from people who throw garbage into the river; use of reactive chemical agent (chlorine) and boil water for drink. Sharing ideas and experiences among the villager initiated problem solving from the community (Figure 1).

Originating network and result extension

Four (4) groups of people were the components of the

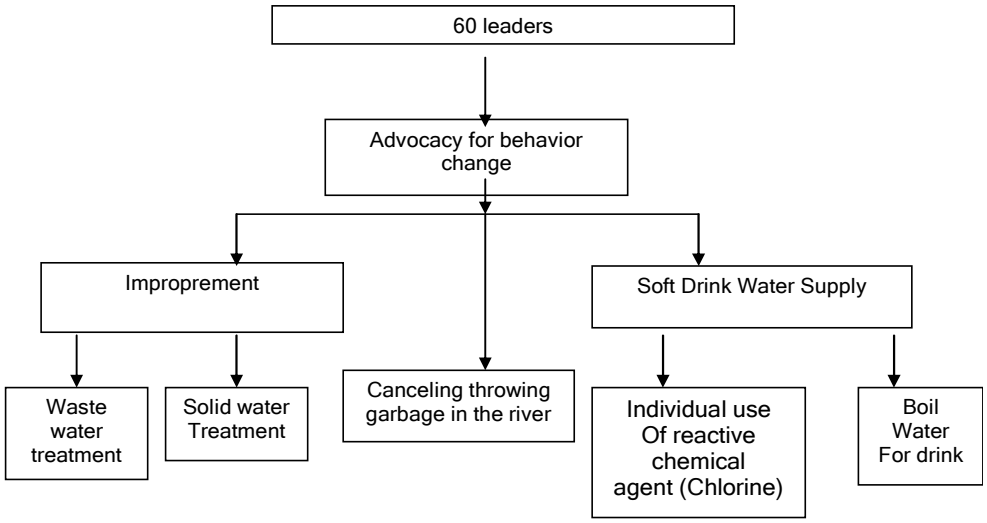

Figure 1. Participatory for reduction waterborne disease.

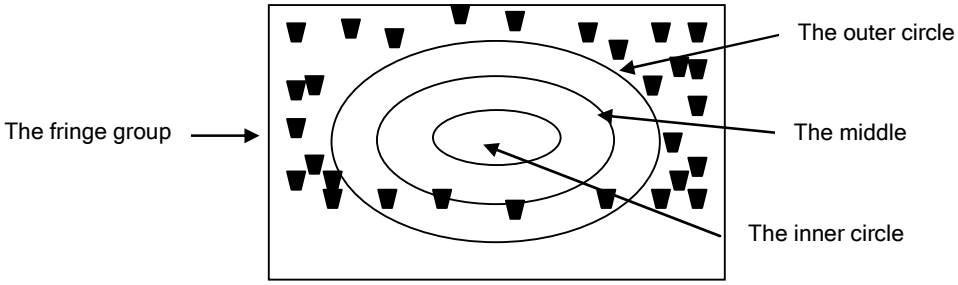

Figure 2. Originating network and result extension.

work and were classified as follows (Figure 2):

1. The inner circle group: The research team was the core of the movement.
2. The middle circle group: The people who were not able to provide extensive help, but when they had time, they were willing to help.
3. The outer circle group: The people who would come to help when support was needed.
4. The fringe group: The people whose actions were not clear. They were only interested to know and see the movement of the project.

Sixty leaders had applied the solution to put into practice as an example for the community. Those activities were, for instance, waste separation, building a seepage hole, building a waste disposal pit and not dumping waste into the river. Those activities had excited the people who had just experienced propagation of the result from the research team. This was successful in making the people in the community to understand and care about their residential area. The success was a key, heartening the team to work together again. The practices of the leaders were regarded as the changes to the society that affected their behaviors and at the same time, they could use it to affect other people's behaviors.

Evaluation

The evaluation team developed a checklist questionnaire to gather personal opinions, which asked the villagers if they felt satisfied with the final solution methods or not. It was found that most of them felt very satisfied and expected to see the changes in a positive way. They thought that this kind of solution for the waterborne disease problem was easy for them to put into practice. When the villagers saw that the research team was starting to find ways to solve the problem, they felt the urge to see positive changes in the environment of their community. They realized that everyone in the community was responsible for the problem because everyone took part in polluting it. The residents felt satisfied with their own way of solving the problem without imposition, but for the love

of their community. The evaluation team also noticed that when the relatives and neighbors of the research team came across an example of appropriate waste disposal by the group, they became aware that they were all willing to follow the given guidelines to solve the problem of disease. The evaluation team could observe the extension of the results, beginning with the relatives and neighbors who followed the research team to manage waste dis-posal. They always attended their meetings, which might be called a social movement, because they proved that the people in the community could handle their own problem without waiting for the government.

DISCUSSION

The solution to the waterborne disease problem used representatives who had an interest, most of whom were community leaders, to study and apply problem-solving. The hypothesis tested was that residents in the community taking a model role would persuade other the residents in the group to accept an idea or new knowledge. Human nature tends to maintain behaviors and practices according to the norms of the group. If the leader of a community, or people they admired accepted what was good or suitable, then they dared to follow. Participation in the process used to minimize waterborne disease was, therefore, arranged for residents in the community. It was the establishment of a learning process for the community.

Currently, government authorities alone cannot solve the waste problem. The best solution is to give the community a chance to take the principal part in processing the problem, from data collection to, active education to solve the problem. This approach can motivate the community to participate in solving the problem. Ideas for solving the problem reasonably and systematically can be created by adhering to the Right understanding (Samma-ditthi), which is a Buddhist way of solving problems that is in accord with the Buddhist way of life. The creative power of the communities can be used to help the community to cope with various problems in ways that correspond to the needs of the residents of the community.

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