CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

PLANNED INNOVATION IN THE IMPLEMENTATION
OF HEALTH PROGRAMS IN RURAL INDIA

A graduate project submitted in partial satisfaction
of the requirements for the degree

of

MASTER OF PUBLIC HEALTH

by

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Dedicated to the Ruralfolk of India
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ABSTRACT

PLANNED INNOVATION IN THE IMPLEMENTATION
OF HEALTH PROGRAMS IN RURAL INDIA

by

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Master of Public Health

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Village India lags behind in the field of health and hygiene. Diseases and deaths are very frequent. Some of the causes are ignorance, lack of health consciousness, and insanitary habits closely related to a traditional way of life and improper and inadequate diet. In order to attain the minimum standards of health, changes are needed in the villager's way of life. These changes should be planned so that they are neither revolutionary, nor of an emergency nature.

This project is an attempt to develop a planned change for improving the economy of effort and expenditure as well as the effectiveness of health programs. The project combines the experiences of researchers and practicing change agents in the field of public health in rural areas. All of the research and pilot projects referred to in this project have focused on the utilization of the knowledge of social sciences as related to the field of public health. The same approach has been utilized in this project along with the concept that health programs can only be truly effective when there is understanding, support, and participation of the public.
to be served. Consideration is given to such ideas as knowledge of the client system, establishing the client relationship, diagnosis of the clients' needs, acquiring the relevant resources, choosing a solution, gaining acceptances, and stabilizing the innovation.

Today the health educator should not be considered an expert concerned with selling a finished product of expert thinking. He must work directly with the people, helping to educate and motivate them for intelligent cooperation in planning so that a health program becomes their program, and not something imposed on them from above. This project is intended to serve as a guide for health educators working in rural areas.
Chapter I

INTRODUCTION

Health is fundamental to progress. In terms of resources for economic development, nothing can be considered higher in importance than the health of the people. The level of health in India is low due to a great incidence of preventable morbidity and mortality. This, in turn, is largely due to a lack of proper environmental sanitation, facilities for medical care, and preventive services for all members of the community. These conditions, aggravated by illiteracy, ignorance, poverty, and superstition are more acute in the rural areas where the majority of India's total population lives.

In order to solve health problems in rural India, the National Government has established a Primary Health Center and three subcenters in each Community Development Block. For administrative convenience, the country has been divided into 5,000 Blocks with each Block consisting of about 100 villages. The population of a Block is about 66,000.

Different types of health programs and services have been launched by health personnel in these Primary Health Centers, but it has been found that the public response to these services and programs has been very poor. These local health units were considered by the villagers as something established by outsiders, and people did not take much interest in them except to meet immediate needs; thus, the public health services and the programs did not become rooted in the
The success of health programs depends upon the interaction between the administrative personnel, health personnel, and the public. The failure of the health programs in India has come about because little was done to involve and encourage the participation of the people in the process of improving themselves through their own effort. People were not involved in determining what program of activities the community should take up, how these should be initiated and developed, and how the agencies of government should provide assistance in executing these programs.

This project is an attempt to delineate how the people for whom the programs are being designed should take part in initial planning, thus ensuring planning "with" rather than "for" the people.

The project has been divided into seven stages. The stages are not isolated, but are interrelated. They are arranged according to their importance and are as follows:

Stage I. Knowledge of the Client System

The members of the community share a number of common beliefs, values, and rules of behavior. The actual values attached to health and disease are of special significance to a change agent who is planning health programs for raising the health standards of the people; so an understanding of the local ways of behavior provides the potential of achieving success.

Stage II. Establishing the Relationship

In order to start a program, the change agent needs to
develop a viable relationship with the client. This relationship will work as a foundation stone. On the one hand, a friendly relationship can make the path of any program successful in spite of many difficulties. On the other hand, many promising health programs will be unsuccessful if the relationship with the client is not favorable.

Stage III. Diagnosis of the Clients' Needs

All human behavior is motivated, and humans are motivated to fulfill their needs. At first, when a need comes to the mind of a person, an initial disturbance is created, and the person tries to do something to satisfy the need. A search for solutions is made, and then a possible solution is applied to the need. Satisfaction is either obtained, or if the need remains unfulfilled, a repeat of the cycle is made. This psychological theory has application in the health field. Needs are either felt needs about which the client is aware of, or induced needs about which a change agent creates awareness.
Stage IV. Acquiring the Relevant Resources

When the need is well defined, the clients need to know the resources available in their community in terms of man, money, and materials. Stress has been given in this project to internal, rather than external, resources.

Stage V. Choosing a Solution

Information about the resources will give the client many alternatives to choose from. This stage will discuss how to help the clients choose the potential solution.

Stage VI. Gaining Acceptance

After a solution is chosen, there needs to be acceptance by a majority of the clients. This stage will discuss how the change agent can help in the acceptance. In doing so, the change agent helps clients gain awareness, develop interest, evaluate, try out, and finally adopt a solution.

Stage VII. Stabilizing the Innovation

After acceptance, the clients need to be helped to integrate the innovation in their day-to-day activities. This stage will discuss the different aspects which are needed to make the innovation a permanent thing.

Purpose of the Project

The health educator is a key member of the health team. His duties involve the effective planning and execution of the educational aspects of health programs. There are various categories of specialized workers to assist him, but he ultimately is responsible for the
results. Hence, he has to provide coordination and effective leadership for ensuring successful health education programs. To prepare him to shoulder these responsibilities, he should have knowledge of the principles and practices of the art of getting community cooperation and participation by understanding the needs of the community. By doing so, he helps clients solve their own problems. This project is an attempt to help prepare the health educator. Information is provided as to how a change agent can organize his work for stimulating successful innovation and provides examples from the health literature.

Definition of Terms

Action research--research carried out in connection with ongoing or action programs, or carried out in field projects.

Baseline data--information or facts which indicate the starting point in an activity or group of activities and which are essential for evaluation.

Behavior--different types of activities performed by the individual.

Client--the person or group being helped.

Change agent--the helper; the person or group who is attempting to effect change.

Client system--a group of people who are interrelated and at least partly interdependent.

Change process--how the change comes about.

Channels of communication--means of, or media for, transmitting information or ideas among individuals or groups, i.e., radio.
Community—a group of people living in the same area that may or may not coincide with administrative or political boundaries.

Culture—standard of judgement accepted by persons, groups, and institutions, stemming from and conditioned by their social context.

Criteria—established standards by which something is measured.

Evaluation—process of determining the value or amount of success in achieving a predetermined objective.

Goals—those ends toward which an individual’s or an agency’s motives are directed.

Habit—a usual way of action or an act performed without thinking.

Health problem—a statement of a situation or condition of people or their environment which has potentially an adverse effect on people’s health.

Innovation—any change which represents something new to the people being changed.

Instrument—a device to facilitate measurement.

Resources—persons or things which can be used to improve the innovation.

Target group—a group or section of the population selected for special attention.
Chapter II

STAGE I

KNOWLEDGE OF THE CLIENT SYSTEM

"The first principle in community organization is to start
with the people as they are and with the community as it is."

Rosen

Regardless of how the community is defined, there is universal agreement that knowledge about a community is a prerequisite before one can bring about a change, hence, "Know your community."

So it is important for a health educator, as a change agent, to know the cultural characteristics of the community as well as the political and economic nature and the role of different social groups and the institutions existing in that community. Also, it is necessary to know the leadership pattern and the different channels of communication.

First and foremost in this process comes a knowledge of the community and its people. This knowledge must be acquired and is just as important for successful public health programs as is knowledge of epidemiology or medicine. An understanding of the community is important to ensure that the innovation being introduced does not pose a grave threat to the community, and it is consistent or congruent with the existing style of the community.

Culture

It is desirable to know as much as possible about the local
Cultural factors have an enormous impact on health behavior. Many cultural beliefs, values, and traditional practices are antithetical to health practices. Public health programs often involve the introduction of new practices into a society. If such programs are to be constructive, the cultural way of life of the community must be taken into account. A health program on D.D.T. spraying for malaria eradication in a village in the district of Orissa in India is an excellent example of the importance of studying the cultural practices and beliefs. When initial efforts were made to spray village houses, there was resistance on the part of villagers. An investigation of cultural practices revealed that villagers traditionally plastered their houses with colored clay for religious, ceremonial, and aesthetic purposes. During festivals which occur four to six times a year, all the houses are plastered. When there is a marriage in the family, the whole house is plastered; when someone dies or has recovered from a disease, all the walls are plastered. Diseases are believed to be caused primarily by the spirit of the dead or by the anger of local deities or due to black magic. Even when there is a childbirth in the family, the house is plastered to try to ensure a long life for the child. Efforts were made to encourage D.D.T. spraying along with plastering of houses. The rationale used was that this would help prevent diseases caused by the spirit of the dead or the anger of local deities. This approach succeeded. It illustrates how health educators, faced with problems of acceptance, can utilize cultural practices to make a program successful.
Leadership

The leaders are the power structure in the rural community. In order to make any program successful, participation of the leaders is important. The leaders not only help in approving a health program, but also create an effective linkage with the change agent and the clients. An analysis of successful health programs in rural areas show the importance of involving all categories of leaders. In an environmental sanitation project in India, the following types of leaders were found in the village, and all of them were involved in the program: a) the head of each caste—they are old men and are recognized as heads of several families of the village; b) the priest and the religious head of each denomination of the village—they are they higher caste (brahmin) of the society and exercise a great influence among their respective congregations; c) the teachers in the local schools—these men are always surrounded by a group of people who consult with them for most of their activities; d) the chief—he is the descendant of a king and owns a vast amount of land; e) the attendants of the chief—these people serve as a liaison between the chief and the people; and f) members of the local self-government—they are the persons who are in touch with the government agencies and the community people. They have been appointed through the vote of the villagers. By involving all of these leaders, the health educators created a working atmosphere which made the program successful.

Social Groups

The educator needs to obtain the cooperation of all social groups existing in the community in order to utilize all possible ways
of reaching total population. It is also important to know the structure and function of the various types of groups. In a study in an Indian village on the acceptance of the vasectomy operation as a means of family planning, it was found that the involvement of the different social groups was one of the first steps in the development and implementation of the program. The village had its own panchayat office (local self-government office) which was headed by a mayor with seven members from different castes including a lady. The village had a primary school, a multipurpose cooperative society, an ayurvedic dispensary, and a sub-post office. The health educators contacted these social groups and got their cooperation at different phases of the program.

Channels of Communication

A knowledge of the network of communication within the community constitutes one of the basic elements for a health education program. Such information provides essential baseline data for the promotion of community health education and for the quick effective dissemination of information. Communication takes place through personal exchanges such as face-to-face conversations between two persons or in groups. Communication also takes place through impersonal means such as radio, film, newspaper, and posters. In order to reach a chosen group of the population, the change agent needs to know the communication pattern used by the group. The change agent also needs to know what importance the group attaches to particular modes of communication. In addition, the change agent needs to know the local language and methods and media through which the individual is
most likely to receive information. The change agent should utilize these channels. In a study on mosquito control in rural India, the various channels of communication and their relative importance were determined by the health educators. It was found that no single channel of communication was effective for all the villagers, although a majority of the villagers relied chiefly upon the word of the village headman. Fellow villagers such as friends, relatives, community leaders, and technical persons also were important in disseminating information. In a dental education program in Malaysia, the change agent determined the channels of communication which the main segment and subsegments of the community traditionally used. It was found that a subsegment comprising the fisherman in a fishing village in Penang used their temple priest as their information officer. Another subsegment of the fisherman depended on the agent who bought the fish. A subsegment comprising school children depended on their teachers. A subsegment comprising teachers got their information from the head of the school. Some subsegments depended on women's institutions and some segments relied on the daily newspaper.

Education, Economic, and Religious Pattern of the Community

Since the final success of a public health program rests upon major changes taking place in the habits of the people with respect to diet, housing, latrine, and the like, knowledge of socio-economic status of the community also is important. This will help the change agent to determine what kind of innovation will be most suitable. A smallpox vaccination program was conducted in Timarpur, a slum area of old Delhi, where the change agents studied the socio-economic
status of the community. It was found that the area was predominantly inhabited by illiterate manual laborers. About 90 percent of the people were employed, including the women. Among the employed respondents, 82 percent were manual laborers. About 11 percent of the employed were self-employed in small businesses such as grocery shops. Nearly three fourths of the respondents were illiterate. Only 3 percent had education above the high school level. Almost all of the respondents were Hindus with the Sikhs and Muslims representing about 6 percent. This information helped the change agent select modes of communication for an illiterate Hindu population.

At What Places and For What Events Do People Congregate

Usually there are a variety of places in the village where people congregate. Some congregate in the temple, others gossip at tea or in general merchandise shops. Still others meet while shopping at the market places while sometimes fairs and festivals provide an opportunity for other meetings. These locations can be used as settings for dissemination of information to the community. In a family planning program in rural India, it was found that the "baithak" was the meeting place for the villagers. The "baithak" is a house or room of a very influential man of the village and is used mainly by men for gossiping and playing cards. Womenfolk generally do not visit a "baithak," coming only to replenish drinking water or sweep the floor. The "baithak" provides an opportunity for regular and active social gatherings for the villagefolk, and it was found in this study that the rural folk met at the "baithak" to discuss their everyday problems. Generally, the "baithaks" are constructed at a little
distance from the house. This location was utilized to disseminate family planning information to the villagers. (8)

Physical Facilities of the Community

The change agent should make a list of physical facilities present in the community such as road, electricity, transport, and source of supply. This information can be helpful in later planning stages. A study of midwifery practice and the utilization of domiciliary midwifery services of a health center in the semi-urban slum community of Pondicherry was conducted. The aim of this program was to find out how the domiciliary services of this center could best be utilized and to organize the midwifery training of the local indigenous dais (midwife). Here the health education staff, besides studying the socio-economic condition of the community, also studied the physical facilities present. Here they studied the water supply, electricity, road, open drain, and public latrine. During the action part of the program, some of these facilities like electricity, water, and road (9) were utilized in the program.
Chapter III

STAGE II

ESTABLISHING THE CLIENT RELATIONSHIP

"A good relationship is a complex and delicate bridge, very
difficult and expensive to build and very important to maintain."

Havelock

The collection of facts about culture, groups, leadership
structure, communication channels, and other related items about a
client system are not enough to implement a health program in a
community. A successful change agent needs to develop a viable
relationship with the client. The successful relationship is the key
to successful planned change; a bad relationship may create obstacles
for a promising health program. On the other hand, a strong, creative
relationship can carry an innovative health program through the most
difficult obstacles. The essential requirement of an innovative
program is that it should have the fullest participation of the people
and must fully involve them in the process of improving themselves
through their own effort. The people need to know what program of
activities the communities should take up and how these can be initi-
ated and developed. The significance of people's participation lies
here. "The only way to get the people involved in the program is to
build up the relationship with the people." The good relationship
continues to build as it goes along. It will be strengthened by a
successful collaborative effort in diagnosis, the acquisition of
relevant resources, the choosing of a solution, and finally in the
acceptance of the program. "The relationship with the prospective client must be carefully planned and thought through if the change agent is going to succeed with the project."

How to Establish the Relationship

For establishing a good relationship, there is no exact formula, but there are certain techniques that are helpful in establishing a good relationship.

a) Giving one's identity. Generally, the change agent is labeled by the clients as an "outsider." This type of feeling or attitude acts as a form of resistance to the establishment of the relationship. In order to clear the doubts from the mind of the client, it has been found that the successful change agents clearly identify themselves. A health program was started on food restriction in Zulu (African) women during pregnancy. The clients were the Zulu women of child-bearing age. The health educators, before administering the questionnaire on food habit, clarified their identity as staff members of the health center and as members of their culture. This was done in a very informal and friendly way, and later it was found that the health educators got full cooperation from the women. All the women responded in a friendly manner in answering the questions and later actively participated in the program.

A family planning program was started in a village near Delhi. The aim of the program was to popularize the vasectomy operation among the villagers having more than three children. The program was very successful. A major factor in the success of the program was thought to be the friendly relationships established by
the health workers. The techniques utilized in establishing the relationships were as follows:

b) Sharing the client's joys and sorrows. The villagers were celebrating the "Teej" (brother-sister relationship) festival when the health workers arrived at that village. The men were playing the games of "khabadi" and "kho" (the traditional group game of rural areas), and the women were performing the "kikali" (the traditional group dances of rural areas). The women health workers covered their heads with their "sari" (a typical dress for the women of India) like other village women and joined with the womenfolk as part of the audience. Some of the female health workers joined in the game. The male members also joined as onlookers and encouraged the players. This type of participation of the health workers was highly appreciated by the village leaders.

c) Using the local language. One of the most effective tools in establishing a good relationship is being familiar with the client's dress, language, and outward behavior. In this program just described, the health workers greeted the people in the local language, and therefore identified themselves as members of the same culture. The use of local language was found to be very positive because the villagers participated whole-heartedly in the group discussion.

d) Confronting differences. The client needs to be frank with the change agent on critical matters, otherwise their relationship will be disturbed. In the health field, suspicious and hidden motives act as a barrier to the acceptance of the program. In order
to remove fears from the minds of the clients in the Indian village program on family planning, the health educators shared meals with the villagers at their request. It was found later that the clients became more frank and discussed their personal problems and differences, a sign of a good relationship.

e) Determining objects of interest. At the beginning of a discussion in connection with establishing the relationship, it is good to start with topics which are of interest to the client even though they may not be related directly to health problems. Such topics might include weather, rainfall for the year, and production of crops. In this family planning program, it was found that the health workers started the conversation on agriculture which is a common object of interest to the villagers. Later on, the health workers started discussions on child health and its relationship to family planning. During the discussions on health matters, it was found that a friendly atmosphere was created in which the villagers showed an openness toward accepting the ideas of the health workers regarding the change. Also, the villagers shared their ideas during the discussions.

f) Rewarding. The change agent should find the earliest opportunity to do something for the client that will be perceived as helpful or useful. The point of such an act is not the help itself, but the idea that change agents can be helpful. This type of act can make the villagers feel at ease and will influence them to take a sincere interest in the discussion.

g) Developing a sense of pride in the client. This technique
also was found to be very effective in establishing a good relationship. The health workers of the Indian Family Planning program developed a sense of pride and self-esteem in the leaders by seeking their suggestions in connection with the family planning program in their village. The fact that leaders gave their suggestions is a sign of a good relationship.

h) Staying in the village. A smallpox project was carried out in the district of Birbhum, West-Bengal, India. The objective of the project was to make the villagers vaccination-minded so that the villagers would continue to take their vaccinations when needed. Here the health workers stayed in the house of a village leader who also assumed the responsibility of teaching them the local dialect used by the tribe. Bonds of mutual friendship developed gradually. This was responsible for making the program successful later on.

i) Reducing personal biases of the workers. A project was started in a village of India for the eradication of smallpox. Forms for collecting information during the interview were drawn up. The vaccinators went to interview the heads of families in different localities. The questions were so arranged as to reduce to a minimum the influence of any personal bias on the part of the health worker because the personal bias could act as a barrier to the establishment of a good relationship.

j) Being responsive. The change agent should always be a good listener. He needs to indicate verbally or nonverbally that he is interested and cares about what the client is saying. In a malaria eradication program in Surinam, Africa, the health educators contacted
the leaders of the village and expressed the aims of the program. The leaders then expressed their ideas and suggestions, which were very encouraging. During this time the health workers listened to their ideas very attentively, sympathized, and tried to provide the proper advice without conflict. Later on, the discussion was accompanied by free exchange of ideas between the health educator and the leaders, a sign of a good relationship.
Chapter IV

STAGE III

DIAGNOSIS OF THE CLIENTS' NEEDS

"Diagnosis is a systematic attempt to understand the present situation." Havelock

The change agent begins the diagnostic stage by trying to assess the clients' needs. The relationship between the change agent and the client is based on the assumption of need. If the client does not feel any need, then the change agent tries to help the client to realize the need. When the diagnosis is complete, that original need should be transformed into a defined problem stated in such a way that both the change agent and the client can work rationally on its solution.

Mechanisms for the Diagnosis of the Clients' Needs

To make an adequate diagnosis of the clients' needs, the successful health educators have developed a variety of systematic techniques.

a) Observation. Observation is a nonverbal way of diagnosing the need of the community. There are some telltale signs in every community which help show the needs of the community. A pilot project was started in a village in the district of Orissa, India, on poultry farming by the American Friends Association. In addition, a medical aid center was opened near the village to give the treatment and drugs for the ordinary diseases such as influenza and the common
cold. It was found that a large proportion of the villagers who came seeking medical aid was suffering from nutritional deficiencies. It also was found that the infant mortality rate was increasing because of the poor nutrition of mothers. In addition, the low nutritional standards of the area were causing the people to work less effectively resulting in less productivity. The villagers were unaware of these problems. Through observation by health personnel, these problems were diagnosed.

b) Survey. The survey is a very effective way to diagnose need. It can cover general health needs or focus on a specific area such as diet or sources of drinking water. Generally, surveys utilize instruments which have been prepared by the experts. The conducting of a survey is time-consuming and requires a good number of staff. Some studies done in India in the public health field utilized the survey method for diagnosing the needs of communities. In two villages in India, an attempt was made to encourage families to start growing vegetables like cauliflower, cabbage, beets, carrots, and tomatoes in the open spaces around their homes. Before initiating the program, the change agents diagnosed the need of the community through a diet survey schedule. This diet survey was conducted in two villages. Findings revealed that 97 percent of the families were getting less than half of the normal minimum daily requirements of vitamin A; 95 percent received less than half of the minimum requirements for vitamin B; and 62 percent received less than the normal minimum daily requirements of vitamin C. These deficiencies were related to lack of vegetables in the two villages. Only the few
well-to-do families imported small quantities of vegetables from the neighboring villages. The survey pointed out the need to grow vegetables locally.

(17) c) Group Interviewing of Leaders. When diagnosing the needs of a community, leaders are one of the most important sources of information. It is important to acquire diagnostic information from more than one source and, in a complex client system, from more than one level of leadership. For the diagnosis of the need for a health program, a genuine community consensus is usually necessary. A smallpox vaccination program was started in 26 villages of the district of Bihar in India. By group interviewing of the leaders, community needs were determined. The health workers encouraged the group of leaders to identify and rank their problems, and discuss various means of solving them. The leaders proceeded and identified the needs of their community. Through discussion, a consensus of needs was determined.

Awareness of the Need

When a change agent arrives in an assigned area and makes the diagnosis, he will almost always be able to draw up a list of needs either from the point of view of the villagers or from his own point of view. In the field of public health, needs may vary greatly. There may not be an adequate garbage disposal system in the village, or the villagers go behind bushes to defecate, or the villagers are drinking contaminated pond water. A list of needs could be made for any of the villages in India. In analyzing such a list, the most important thing to be aware of are those needs felt by the client.
A change agent should start with those needs felt by the community to be important.

Many successful health programs done in India and in other countries followed the technique of starting a health program after studying the needs felt by the community. A health program was organized in a village near New Delhi on polio vaccination. The incidence of polio among the children was very high. The health educators contacted the leaders of the community in order to diagnose the needs of the community. It was found that almost all the leaders felt the threat of polio was a problem of their village and at the same time of the need to do something to prevent the disease from spreading. Curiously enough, it also was found by the health educators that, in addition to the village leaders, many ordinary villagers with whom they met also thought that polio was a problem of their village and were interested in doing something about the disease. Both the villagers and the leaders had no idea of what to do against this disease and they, thus, looked to the change agents for assistance.

In another health program on environmental sanitation in a village in West Bengal in India, the public health administrators wanted to popularize the latrine of the water seal type. It was found that the villagers were aware of the cholera and other gastrointestinal diseases as problems in their village. It also was found that about three fourths of the respondents during a group interview were aware of hookworm disease as a problem of their community but were ignorant about the prevention of the disease. Because these
were felt needs, it was easier to establish health programs to solve
these problems.

Another interesting health program was started on the
island of Tonga. The people of that island felt the need of a pure
water supply. In spite of a fairly high rainfall, no surface water
source existed on the island. Ground water also was not readily
available, and water in the wells tasted salty due to the intrusion of
of sea water. Rain water collected from the roof tops to meet the
water requirements of the families' "a bath a day" was a luxury to
the community. There was also a high incidence of water-borne
diseases. To the health staffs, the islanders expressed the need of
not only an adequate supply of water, but also of water of desirable
quality. Because felt needs were expressed by the people, it was
possible to introduce piped water into the villages. It has been
found in many health programs done in India and other parts of the
world that the clients are not always aware of the needs of their
community. But the health workers, i.e., change agents, in connection
with their surveys or from observations can identify the needs of a
community. Sometimes there is a single need, and sometimes there are
varieties of need. These type of needs are generally called unfelt
needs. When needs are not felt, the change agent is often called
upon to create an awareness of need. A health education program in
a village in the district of Orissa in India is an excellent example
of this activity. The majority of the villagers relied entirely on
tanks for their water. This created a problem of public health. The
villagers had no understanding of the role of water in the spread of
disease by germs and parasites, and there was no felt need for pure
water. The health workers arranged a group meeting with the leaders and explained how impure water could be responsible for a variety of diseases. The health staffs also arranged a film show for the villagers, and a set of slides was made stressing the dangers of impure water and the benefit of clean water. Posters displaying the idea of the value of pure water also were displayed at suitable places in the village. In this way, the health workers were able to create an awareness of the need of pure water. As a result, the villagers accepted and utilized the tubewell fitted pump, a safer way of providing water.

Another interesting program on diphtheria immunization was carried out in a rice farming community on the central plains of Thailand where this disease was a problem among the children. A number of deaths from diphtheria had occurred. Before starting an immunization program, the local health center staff reviewed their policy regarding the concept of "felt need." In brief, they believed that no measure should be imposed on the people of a community unless they themselves requested it or were able to recognize its desirability. It was found that there was little "felt need" for diphtheria immunization. The disease did not signal danger to parents, and immunization was not seen by them as an appropriate preventive measure. The community, in general, was not very receptive to any program. Slow and careful educational methods were developed to help villagers recognize the dangers of diphtheria and the value of immunization. As a result, most parents did have their children immunized.
The change agent should be aware of pitfalls that can take place during the diagnosis stage. Otherwise, attempts at diagnosis will be unsuccessful. The change agent must give importance to the felt need of the client. Too, ignoring the interest and culture of the clients will make a program unsuccessful. A public health program which was started in two Libyan villages provides an excellent example. This program was carried out on village sanitation connected with refuse and sewage disposal and the construction of privies in two villages. The team in one village named Benina ignored people's interests and culture and wanted to impose their point of view. The other team, in the village of Gawarsha, considered the people's interest and culture. The two teams made different approaches. The value of the two approaches can be compared by the achievements of each team. In Benina, there was no favorable reaction on the part of the people. The team did not succeed in carrying out its functions. The people became uncooperative and did not take the least bit of interest in the program. After failing to secure the cooperation of the residents, the team devised a plan to carry out the program. They hired trucks and 12 laborers to do the cleaning job. It was found that in six days, the cost of the cleaning of the small village was substantial. Thus, this cleaning procedure was not practical because of the high cost of daily cleaning. Too, it cannot be called a people's program because people did not take part in any of the activities. The team at Gawarsha carried out all aspects of the program with great success. The general cleanliness campaign, as well as the refuse collection and disposal system, was developed as a part
of a fly control campaign in which the people were interested. In
addition, interest and cooperation of the villagers were found in
other areas. A pit privy was constructed in the yard of the local
mosque by the villagers. The pit privy was constructed with very
simple materials available to everyone, and cost was very low. The
interest of the villagers was the main contributing factor to the
success of the program.
Chapter V

STAGE IV

ACQUIRING RELEVANT RESOURCES

"From people to print and back to people again can yield information of any needed depth." Paisley

The fourth essential characteristic of any innovation is acquiring the full utilization of all local resources, relying as little as possible on outside help. This promotes the spirit of self-help and self-reliance and is the real strength of a health education program.

Manpower resources come in many forms: They may be available as print materials, man, money, or materials essential for a program. Before making final decisions and choices about what changes should be made and how to make them, the client and change agent should have an adequate understanding of what resources are available within the community. Many successful health programs have shown the importance of acquiring the relevant resources and utilizing them in different phases of the program. The basic objective behind the resource acquisition is to develop a program that is not so extensive as to be unattainable within the limits of the available means and proper utilization of the locally available resources.

Types of Resources

(a) Personnel

One of the most important resources is manpower.
fullest utilization has to be one of the principle objectives. (28) Every program requires personnel. How many and the type of personnel needed depends upon the nature of the program. Different health programs completed in India and abroad have showed the importance of personnel as a resource in making the program successful.

(1) Official and Nonofficial Leaders

All persons whose words and actions have an influence on the thoughts and behavior of the people have played major roles in different phases of a program, and they have been used in a variety of ways. A great deal of work was done in the Gandhigram Rural Health Unit and Family Planning Training Center in India in the utilization of leaders, both formal and informal, in rural health programs, especially those dealing with family planning. In a successful family planning program, the leaders were given short term training on family planning for seven days at the District Headquarters and sent back to their respective villages to educate the villagers about family planning. Also, they were given the responsibility of keeping the stock of family planning appliances so that the villagers, instead of going to a health center, could take delivery from them. It was found that in many rural areas of India, the health centers were far from the villages, and the villagers were not willing to spend time and energy to make the trip to acquire the necessary appliances.

This system helped make many family planning programs successful. (29) In another public health program dealing with the development of a compost pit in rural areas, the health workers first motivated the headman of different families and the leaders of the
community to accept the latrine. A large number of villagers then accepted the latrine because of the influence of these people. Here, the leaders worked as facilitators.

A study conducted in the Republic of Congo provides an excellent example of the influence of school teachers. Helminthes represented a major problem in a rural community. An effort was made to integrate health teaching about this disease into the school curriculum. Naturally, the school teachers were selected to conduct the teaching. The helminthes control teaching was developed so that it could take place through different subjects such as arithmetic and civics. In arithmetic courses, instead of adding, multiplying, and subtracting the cost of apples and pears, the health educators encouraged teachers to develop problems on such questions as the percent of family budget spent on feeding the worms harbored by the various members of the family. Likewise, in civic courses, it was possible to promote a practical approach to the development of a civic sense among the youth by presenting with problems of direct concern to them and the community.

(2) The Physician as a Resource Person

A malaria eradication program carried out in Surinam illustrates the value of a physician as a resource person. Here, the object of the health workers was to introduce medicated salt to the villagers. Contact was made with a missionary doctor who was serving in this area. After hearing about the program, she took salt and explained its quality to the villagers. Because the physician was accepted by the villagers, a great demand for the salt was created.
(3) The Local Merchants as Resource Persons

The malaria eradication team of Surinam also used local merchants in making their program successful. Before launching the program, the health education specialists undertook a survey of local merchants who sold plain salt to the villagers. The health educators wanted to introduce medicated salt into the village. Before launching the program, the health educators determined from the merchants the quantity of common salt usually purchased by the villagers, how it was transferred from town to interior, and the frequency of such purchase. By working with the merchants, it was possible to develop policies for distribution and storage that contributed to the smooth acceptance of medicated salt.

(4) The Local Newspaper Proprietor as the Resource Person

An educational program designed to alter the attitude towards the mentally ill was carried out in a small Canadian community. The people of that community tended to reject the mentally ill because of fear, ignorance, and guilt. The average layman thought that most persons who become mentally ill were violent. This was believed not only by those who had no contact with the mentally ill, but also by many who did have contact. During the action part of the program, the health educators contacted the local newspaper proprietor and discussed the program with him. He provided maximum cooperation in printing information about mental diseases. News stories and articles were published in his paper almost every week, in addition to paid advertising. The proprietor also gave editorial support on several occasions.
Indigenous Community Members as Resource Persons

Arbor Hill is a residential core area in one of the African countries. This community became a storehouse of diseases related to malnutrition and poor sanitation. Though there was a health center near the village, the people were not utilizing the services. During periods of illness, people went to untrained doctors. A program was started to motivate the people to use the facilities of the health center. The health team looked for some indigenous community members who would motivate their own relatives, friends, and neighbors. They selected ten young men of that community and designated them as "health guides." They were given a two-week training program that included orientation to available health services and a review of major health problems of the community. These health guides made the program successful because they were able to motivate their relatives, (34) friends, and neighbors.

(b) The School as a Resource

A serious epidemic of cholera broke out in a village in China. The community lacked neither the facilities nor the trained persons to fight the disease with best techniques known to western medical science. But hardly a villager took advantage of the modern services freely offered by the local hospital. The first and more important measure the people undertook was to stage prayer meetings. In order to motivate people to accept inoculations and other hospital services, the local school provided help in a dramatic way. Large posters were exhibited everywhere in the town. One poster displayed a picture on how foods were contaminated by cholera germs.
Another poster illustrated open defecation and contamination food. Still, another poster showed symptoms of this disease. Besides posters, the school prepared other informational materials to educate the villagers about cholera.

A family planning program on tubectomy camps was arranged in Tarikere in the state of Mysore, India. Three school building in Tarikere, (a high school, a primary school, and a girls' middle school), were made camp premises. The camp had two operating theatres, several wards, and a kitchen. A local club arranged cultural programs including dramas, music, and dances on all evenings when the camps were in operation. This provided entertainment for the tubectomy adopters and also created an awareness of the camps. The program was successful in that 204 tubal operations were performed. An air of pride in the health staff was developed because the efforts broke the Mysore State record.

(c) The Temple and Mosque as Resources

Because diphtheria broke out in a village in Thailand, the government of Thailand started a health program on diphtheria immunization. It was found that the Buddhists come to the local temple for offerings to the Lord. The program organizers selected the temple for disseminating health information to the villagers. The health workers also selected the mosque as a center for spreading information. It was found that the mosque was more effective as a center for health education because during most of the year the priests left the village to collect alms, and the people came to the temple only for holiday offerings. In the mosque, the Moslems took time off to attend services throughout the year.
(d) Money as a Resource

Every act of promotion of public health involves the use of money, whether it is for supplies, transport, or purchasing of the materials. Though public health activities are usually performed by the government agencies, the expenditures involved to carry out a program cannot come solely from the government. There must be community participation. "The very nature and extent of the public health program is determined in the final analysis of the economic structure of the community."

A study was done in a village of West-Bengal, India, on the acceptance of oral contraceptives with hormonal tablets. Because of the advantages of oral tablets, the health administrators wanted to popularize the oral pill to make the clients "pill minded." In this study, the oral pills were given to 870 women. Soon it was found that 44.8 percent of the women did not continue to take the pills. On further survey, it was found that 85 percent of the women commented that the expense of the pill was a barrier to their acceptance. The Government of India was unable to provide a free supply of pills except in those cases where an experiment was taking place. In this study, it was found that the cost of the pills came to approximately between 0.33 to 0.68 rupees per day. This called for an annual budgetary allotment of nearly 80 to 165 rupees, an amount that families could not afford because of their poor economic status. This program was not successful because of an economic barrier that was not removed prior to beginning the program.

(e) Materials as a Resource
Materials are equally important resources as are personnel and money. The selection of the program depends to a great extent on the availability of the materials in the community. A program which depends upon expensive and outside material cannot be successful in the long run. "So the full utilization of locally available resources is very important." A good example of how a public health program met with success by using locally available resources was a water well program organized by the American Friends Association in Barapalli in the district of Orissa in India. In this village, cholera and other gastro-intestinal diseases were serious public health problems. The villagers used pond water for all purposes such as bathing, drinking, cleaning the utensils, watering the animals, and laundering. The change agent selected the construction of a water well as a way to solve the problem. The availability of local resources was a major criterion in selecting this approach. The construction of the well required digging a hole fifteen to twenty feet in depth and three to five feet in diameter. In addition, approximately forty to fifty earthen rings for lining the hole were needed. Organization of digging was put in charge of a five-member well committee. The committees assigned work teams of four and later seven men from each of the families of the section. The preparation of earthen rings was assigned to the potter families of the village. The cost of making these rings was met by the collection of money from different families. It was found that a large number of wells were constructed in the village within a year. And it also was found that the villagers gradually developed the habit of using well water, probably because they had a great personal investment in the program.
Another health program was organized in Kulu valley of India where venereal diseases were present in epidemic form among the people. The W.H.O. and UNICEF gave assistance to control the diseases. The initial plan was to motivate the patients to go for treatment and to make the public aware of the seriousness of the diseases. W.H.O. and UNICEF provided a free supply of antibiotics for treatment. After a period of time, these drugs were used up, and the program was postponed. The people lost confidence in the government program. This illustrates how a public health program is less successful when the materials are not locally available.
Chapter VI

STAGE V

CHOOSING THE SOLUTION

After the determination of the problem and the collection of information from a variety of sources, the change agent and the client should choose a potential solution. It requires careful and systematic planning. This is a very critical stage. The success and failure of the program depends to a great extent upon the selection of the solution. Three ways have been found from the different studies in the field of public health to be very effective in choosing a solution:

(a) Deriving implications from research
(b) Generating a range of ideas
(c) Feasibility testing

(a) Deriving implication from research

The Khanna studies on family planning in the village of Punjab in India are good examples of choosing a potential solution from the results of research. Research reports are generally very reliable sources in choosing a solution because the research very often is carried out in conjunction with ongoing or action programs or carried out in field projects to test the extent to which a program is reproducible. The Khanna studies have been recognized as a research endeavor, not as action programs. Much of the work was built around the field trial of contraceptive methods with an ultimate objective of determining the facts for developing a practical program.
from the result of the field trials. This research was conducted in 16 villages of Punjab in India for more than four years. These Punjabi villages previously had had no contact with any organized effort toward population control. It was found that the foam tablet was a very satisfactory method for contraception as compared to four other simple contraceptive methods. The efficiency rate was 63 percent, when pregnancy rates with its use were compared with a control population. Side effects were few and did not act as a barrier to continued use. In this study, proper attention was given to biological, psychological, sociological, and economic factors that might affect the acceptance of this contraceptive method. Two goals for the application of contraceptive measures were stated in the beginning of the field trials. One goal was concerned with achieving a prescribed spacing of births during child-bearing ages. A second goal was the enlisting of young married couples and older couples in a program to limit their families. Besides proving that foam tablets were efficient as a technical means for contraception, it was found that good support could be obtained for spacing of births, i.e., a three-year interval. In family planning programs in Punjabi villages in India, the results of these field trials can provide the direction for choosing potential solutions for population control.

The R.C.A. Project, Research cum Action, in environmental sanitation with emphasis on latrines in rural areas of India, was initiated by the Ministry of Health, Government of India, in 1956, in association with the Ford Foundation. The change agents constructed latrines giving due consideration to the cultural, psychological,
I economical, and sociological factors of the village people. This latrine constructed consisted of water seal squatting plates (a pan and a trap) which could be connected to wells by means of an earthen pipe. Experiments with this type of latrine construction had been going on for a long time in different states of India. The results were very satisfactory. Experience gained in this research project was useful in establishing similar projects in other parts of India.

(b) Generating a range of solutions

Another method which has been followed by health workers is to generate a range of solutions for a particular problem. This has two advantages. First, it will give the change agent and the client a freedom of choice, and, second, it will give them an opportunity to make a rational and meaningful decision in selecting a solution for a particular problem.

Various studies have been done in India on public health which followed the pattern of generating a range of solutions. One such study involved a nutrition program in a village in India. After identifying the problems of the village, it was felt that a nutrition program should be started first because most of the identifiable diseases were connected with nutritional deficiencies. The change agents, in a group discussion with the leaders of the village, generated a range of ideas as to possible solutions for the problems. The ideas included: (a) Poultry farming -- the plan on poultry farming was to start a community poultry farming on the cooperative basis. (b) Vegetable garden -- the idea was that each and every family would
make a vegetable garden in its own courtyard to grow vegetables such as cauliflower, cabbage, and tomatoes. (c) To have tanks with fish -- the plan was to have community tanks, or tanks for different castes for rinsing fish which could be shared by different families. (d) To improve the quality of local milk cattle -- the plan was to improve the quality of the cattle by replacing the low milk-producing cows. Having a range of solutions permitted the villagers to select those ideas they felt could be put into operation.

In another program in a village in the district of Bihar in India, communicable diseases such as smallpox and cholera posed problems for the village. The health workers conducted group discussions with the members of the community. The suggested solutions included: (a) a complete vaccination program -- The idea was to motivate the villagers to take vaccinations to control the current diseases and to develop a habit of taking vaccinations every year to eradicate the diseases, and (b) disinfection of village wells -- Here the idea was to develop the practice of disinfecting the village wells so as to prevent the disease from spreading. The villagers decided that even though both of the ideas were important, it was not possible to carry them out at the same time. They ranked the two ideas and developed a plan of action for the first one.

Feasibility Testing

Though the change agent and the client have several possible courses of action after generating a range of solutions, they still cannot begin their program. It is necessary to select a starting point, and this requires some selection criteria. Generally, three main
factors are: (a) potential benefit, (b) workability, and (c) diffusibility. All three factors need not be answered positively since choosing a solution is a compromise between advantages and disadvantages.

(a) Potential benefit
How many people will it help?
How long will it help?
How much will it help?

The selection of the oral attenuated vaccine over the killed virus vaccine as a preventive measure against the poliomyelitis is an example of considering potential benefit. In 1954, field trials of the Salk vaccine were done in U.S.A. The vaccine was shown to be safe and effective. Approximately 500,000 children were vaccinated without ill effect. Though the vaccine was very effective and safe, some disadvantages were found that could act as barriers in making the program successful. The disadvantages were that the immunity was not durable, it was costly, and it took much time and personnel to cover a community. During this time, Koprowski, Sabin, and Cox developed the oral vaccine. Field trials were completed in U.S.A., India, (in Andhra Pradesh) and in other countries. As a result of these trials, it was found that the incidence of poliomyelitis was reduced in areas where mass immunization had been conducted. The advantages of this vaccine were the ease of administration, the lasting immunity, and the lower cost.

In a study conducted in a rural area in India, gastrointestinal and other communicable diseases were shown to be a problem.
The use of contaminated pond water was a contributing cause. The local health workers felt that a well fitted with a hand pump could help solve the problem. The selection criteria was based upon the knowledge that the well was long lasting and could be protected from the environment. Too, one well could serve the entire community until others were installed.

A study on the acceptance of a sanitary composting pit in a village of Lucknow showed that additional positive side effects also could be a strong motivating factor in the acceptance of a program. It was found that when human and animal wastes were not properly disposed of, flies were a major factor in the spread of gastrointestinal diseases. Sanitary composting of fly breeding organic waste can help reduce this problem. It was found that most of the villagers accepted the proposal because not only were the diseases reduced, but also the villagers were obtaining manure as a side benefit.

It has been found that negative side effects can hamper the success of a program. The use of "norethynodrel" as an oral method of contraception control has met resistance because of the negative side effects in individuals taking the drug. In studies conducted in the U.S. and Mexico, negative side effects such as nausea, vomiting, headache, and disorders of menstruation were found. In Humacao, Mexico, and Los Angeles, 25 percent and 37 percent, respectively, of the women went off the program because of the negative side effects.

(b) Workability

Concrete evidence that a proposed innovation actually works is most helpful when solutions to problems are being sought.
A good example is a program started to improve sanitation in a village of India. The village, Ghusgon in M.P. (India), was a backward village with mud-walled huts and poor sanitation. The Block Development Officer was responsible for community development in that area. In a mass meeting in the village, the Block Development Officer listed different ways to solve the sanitation problem. He also pointed out that one of the methods was being used successfully in a nearby village and requested the villagers to visit and observe the results with their own eyes. The son of the village chief, with a party of ten, went on a visit to the village. The party returned wide-eyed at what they had seen. The son of the village chief described to the people how their neighbors had improved their sanitation. As a result, the villagers agreed to cooperate in solving local sanitation problems.

A study was conducted in India in which non-clinical contraceptives like the condom, jelly, oral pill, and diaphragm were used to facilitate a family planning program. After a few months' effort, it was found that only 16.3 percent of the target group were purchasing the commodities necessary for family planning. Most of these people belonged to the higher income group. The program was unsuccessful because almost all the prospective clients (83.7 percent) could not meet the cost of purchasing the contraceptives. Thus, a program was not workable because of the financial cost to the prospective user.

Besides looking at expenditures required for a program, a change agent should determine if the costs are reasonable in proportion
to the expected benefit. A midday meal program started in some
schools in India is a good example of this situation. In order to
improve the health status of the school children, school authorities
started to give meals to the students during lunch hours without any
help from the government. To enlist the cooperation of the community,
a parent’s committee was formed. The committee was composed of parents
and local community leaders. It was found that the average monthly
income of the parents was less than Rs. 200 (approximately $25) with
more than 80 percent of them having incomes less than Rs. 100 (approx-
imately $12). The parents were mostly skilled and unskilled workers.
In order to make the program successful, special attention was given
at the beginning regarding the cost and whether that cost was in
proportion with the expected benefit. The authorities of the school
collected from each beneficiary a nominal sum varying from 15 paisa
(approximately two cents) to 28 paisa (approximately four cents).
This was just sufficient to give the children a nutritious meal. The
program was successful because the parents found that there was a good
proportion between cost and the benefit.

In a study in Portugal dealing with community development,
the usefulness of human resources was demonstrated. It was found that
many diseases were due to faulty health habits of the villagers. The
objective of the program was to educate the villagers about health
matters. It was started in the Baiao community in North Portugal.
The health team trained village girls to provide health education.
After training, these girls conducted health education programs for the
women of the village. The program was a success.
Almost every program requires materials. Materials are generally a part and parcel of any innovation. It has been found that successful program organizers select those programs for which the locally available materials are available. The locally available materials generally have two advantages. First, they do not cost as much, and second, there is less dependency on outside help, thus making the client self-sufficient.

The R.C.A. type of latrine which is now popular in Indian villages is a good example of this type of reasoning. It was developed by the Singur Health Center under the All India Institute of Hygiene and Public Health, Calcutta, India. The latrine consisted of a pit, 30 inches in diameter dug in earth to a depth of 8 feet by 12 feet with water seal squatting plates placed before it. A superstructure was built to give the necessary privacy required in the use of the latrine. The water seal squatting plate, consisting of a pan and a trap could be connected to a well with an earthen pipe. The materials used for the construction of the pan and trap are sand, cement, and marble chips. Local villagers with a nominal training can cast the pan and traps from these materials. All of these materials are usually available in most villages. After making the pan and trap, the villager can fit them in the correct position. So the cost of the pan and trap comes to approximately Rs. 15 (about $1.50) which is within the financial means of the villagers. Also, local materials can be used for the construction of the superstructure. This type of latrine has found wide acceptance in many parts of India because of the availability of materials at the local level.
(c) Diffusibility

If a program is not compatible with the values of the community, there is great difficulty in initiating change. On the other hand, if the innovation is congruent with the culture of the community, it has a better chance of being accepted.

The success or lack of success in initiating a water boiling program in a Peruvian town is an excellent example of attempting to integrate new health habits. A regional health department in Peru attempted to induce people to boil their contaminated drinking water. Before the initiation of the program, the incidence of typhoid and other water borne diseases was high. After two years of effort in Los Molinos, a town in Peru with two hundred families, the health educators persuaded some housewives to boil their drinking water, and they continued the practice after the educational program was over. A majority of people did not boil water because the action did not fit in with their customs. For the success of a program, people should not be asked to make radical changes in their way of life or to abandon deeply held beliefs. The study suggests that detailed knowledge of social and cultural factors of the community is vital to the efficiency of any health education program.

When a possible solution to a problem is decided upon, the change agent should make an inquiry to determine if the idea is clear to all involved. To have the clear idea effective in the success of the program, a topical fluoride demonstration program in the U.S.A. provided a good example of this need. The program was developed to improve the dental health of American children by the application of
a sodium fluoride solution to teeth. One of the educational methods used was the encouraging of the community leaders to establish a continuing topical fluoride program in the schools. Some of the leaders did set up a continuing program, but others did not. An inquiry was carried out to determine the causes of success and failure of various programs. It was found that in the successful programs, most of the community leaders clearly understood that the long range purpose of the demonstration program was to improve the dental health. In programs that failed, the leaders regarded the program as a short term experiment to get more data on the effectiveness of topical fluoride applications. The school officials in these communities seemed to look upon the program as little more than a bothersome disruption of school program.
The success of a program depends to a large extent upon the acceptance by the client. The failure of a program is connected with the rejection by the client. When the potential solution has been chosen, a movement must be made toward the acceptance of the solution by the client. This is a very dynamic stage because it relates to the transformation of ideas into action.

The decision to adopt is a complex process and depends on more than learning about a health matter. Here lies the difference between a health educator and a propagandist. If the health educator's job is just a matter of transmitting the information effectively, then the problem would be relatively straightforward. But insofar as the health educator wishes to foster changes in attitude and behavior, his job is far more complex. A health education program cannot be said to be successful if it fails to foster changes in the behavior of the individual. So the change in the individual's behavior comes only with his decision to adopt an innovation on health.

Several strategies developed by psychologists in respect to decision-making are now being applied in the health field. One strategy involves six phases: 1) awareness, 2) interest, 3) evaluation, 4) trial, 5) adoption, and 6) integration. But adoption does not take place in a vacuum. It is the change agent who has the responsibility of developing an atmosphere that is conducive to the adoption...
of these various stages. There is no single formula which can be applied to this process. From awareness to integration, all the stages are different in nature. So the activity of the change agent also must differ.

(a) Awareness

The first stage in the adoption process is awareness. Here the individual is exposed to innovation but lacks complete information about it. The individual is a passive receiver at this stage. The success of any health program depends to a great extent upon the degree of awareness. In this stage, the main activity of the change agent is to expose the client to the innovation. Knowledge of the different communication channels utilized by the clients will be helpful.

A fly control program was started in a village near Lucknow in India in which the compost pit was introduced. At the awareness stage, information was given on composting as well as fly breeding and diseases conveyed by the flies. This was done by individual contact with each head of the household. Mass meetings and group discussions were held in different localities of the village. Charts, folder flannelgraphs were specially prepared. Demonstrations about the life cycle of the fly were given by breeding the larvae in cattle dung in a specially prepared large box. All of these activities increased awareness about fly breeding and its relationship to manure.

A triple antigen program was carried out in Singur, a rural area near Calcutta, for the prevention of diphtheria, tetanus, and
whooping cough. The object was to influence the parents to accept immunizations for their children. After collecting baseline information about the level of immunity, an educational program was planned. A house-to-house visitation program was arranged to reach parents or guardians through a personal approach. 

Educational efforts in a comprehensive health program among the South African Zulus provides another example of creating awareness. Severe malnutrition was a major community health problem. A program was undertaken to change the food habits of the people. It was found that the diet was not balanced. So attempts were made to improve the diet by the introduction of home-grown vegetables and a greater use of eggs and milk. The health educators attempted to make people aware of these facts through group discussions at informal gatherings at various places in the area. Later on, as "key homes" came to be recognized, additional group discussions were increasingly held there. 

Another program was conducted in Surinum in Africa in connection with malaria eradication. To promote the consumption of medicated salt, the team at first created awareness by putting up posters showing people using medicated salt to cook their meals and preserve fish. These were displayed at various places in the community. Missionary doctors and nurses held group discussions in their areas where the different aspects of the medicated salt were discussed. 

A different method of creating awareness took place during a pilot project conducted in Africa on B.C.G. vaccination. The main objective of the program was to obtain the orderly participation of the
population and to encourage a positive attitude towards the fight against tuberculosis. In order to create awareness, mass meetings were arranged in the evenings in each of the six districts and reached 200 to 300 persons at a time. A 16mm. color film, "What Is Disease?," was shown. The meetings lasted for an hour and a quarter. They involved one-way didactic methods with no discussion but were successful in reaching a large number of people.

Leaders also can be used to help create awareness. In a family planning program in a rural area, the objective was to make villagers aware of different methods of family planning. In this program, the leaders were effectively used as channels of inter-personnel communication. Leaders were utilized to disseminate information about various methods. It was also found that the information communicated by leaders carried more weight and authenticity than the information conveyed by official workers.

(b) Interest

In this stage, the purpose is to help the client develop an interest in the new thing that he has learned about. Hopefully, he is not satisfied with mere knowledge. He wants more detailed information about what it is, how it will work, and what it will do. He is willing to learn more about it and is inclined to actively seek the information desired. With the increase in his learning, an unfavorable or a favorable attitude will begin to emerge. A favorable attitude moves the client to the next stage, and an unfavorable attitude moves the client against the acceptance of the innovation. Here the function of the change agent is to supply the client with more
information, preferably by group discussion. Group discussion generally helps provide information that will remove doubts from the mind of the client. Thus, organizing group discussions can facilitate the development of interest.

A South African health program utilized this approach in creating interest. Nutritional deficiency diseases were the health problems in that area. It was found that the present diet was not the traditional diet of the community. The traditional diet was more balanced than the present one. In a series of group discussions, the facts about the diet of the olden days were presented together with the prescribed diet by the health educators. After this, it was found that many of the older people remembered that their grandmother/father used to say the same things about the diet. This coincided with what the health educators were saying. Due to this anomaly, a certain measure of interest was created. This was of great importance in gaining the acceptance of the program. It is interesting to note that the older people of the community generally were the resisters to the introduction of new ways. Interest in the subject of food was further created by discussions about digestion of food. It was found that most of them had the idea that food entered the blood stream. Great interest was aroused during the group discussion when the role of food during pregnancy was discussed. Some of the women remarked that there should be a breast in the uterus. In order to overcome these ideas, posters and models showing the functions of umbilical cord and placenta were developed and displayed. Some of the posters were found to have remarkably stimulating power. After this, dis-
Discussions were directed to the function of different types of food. It was found that many of them had the idea that the function of food was to fill the stomach and relieve the hunger. So, discussions were directed to the real functions of different types of food (milk, eggs, green vegetables, and meat). All of these efforts produced increased interest.

A pilot project on infant feeding was started in Morocco to improve the status of children from 6 months to 3 years of age. In order to create interest, a demonstration center was set up. A fairly large room was equipped with long tables in the form of a "V." Cooking demonstrations were provided for the mothers. Toys and other play things were provided for the children so the mothers could be free to try out new cooking ideas at the Center. These efforts helped increase interest.

(c) Evaluation

Information and evidence accumulated in the previous stages, in order to decide whether the new idea, product, or practice is good or bad, is evaluated in this stage. In a sense, the client reasons through the pros and cons and mentally applies them to his own situation. This is a mental trial stage. In this stage, the client will seek suggestions and advice from persons who have had the requisite experience and whose opinions are respected. Here the change agent's job is to give demonstrations in the client's own setting to show live examples of success. Various studies, done in the field of public health, have illustrated various techniques pursued by change agents to facilitate evaluation.
In an applied nutrition program in a village in India, vegetable gardens were started because of the many diseases connected with malnutrition. The change agent rented a big house in the village. A small vegetable garden was within the compound of the big house. In this garden, vegetables like carrots, cauliflower, and beets were grown. The purpose of the vegetable garden was to show the villagers that these vegetables could be grown in their village. In addition, the products of the garden were displayed at the local market. These efforts helped the clients evaluate the innovative methods.

In a community improvement program in a village in Brazil, demonstrations of a pit privy and well were arranged to show the villagers how these might be used in their village. Once the villagers observed how the privy and well worked, they became more interested in considering the privy and well for their families.

In a program encouraging the use of a new type of rice in a village in India, the change agents took the farmers to a new plot in the neighboring village where the new type of rice had been successfully cultivated by the villagers. As a result of this live example, the farmers started to use the new rice in their own village.

Persons with experience related to the selected innovation can play an important role in the evaluation stage. A study done on the vasectomy operation was carried out by the Demographic Training and Research Center, Bombay, India. In this study, the clients were mostly middle-aged persons already having a sufficient number of children. After seeing the advantages and disadvantages of different methods of contraception, the vasectomy was found to be the most
suitable for the group. On the day of operation, the clients waiting in the clinic to be operated on were interviewed and asked with whom they had conversed prior to the operation. The persons mentioned most often were men who already had a successful vasectomy. These conversations helped those considering a vasectomy to make a good evaluation of the procedure.

(d) Trial

During this stage, the client will give a tentative try-out to the practice or idea. This is generally done on a small scale in order to determine the utility and possibility in his situation. This is a practice stage. Here the main function for the change agent is to give training to the client on how to apply the idea or the technique or practice correctly. At the initial stage of trial, there may be mistakes. So the other job for the change agent is to correct these mistakes and to encourage the client to practice. In a vegetable garden program in a South African health program, it was found, after the demonstration of the vegetable garden at the Health Center for the villagers, that the more cooperative families started to try to grow food on the open spaces near their houses, following the method seen at the Health Center. The health workers, at this stage, assisted the villagers in their trial period.

Studies done on family planning by one of the most advanced research institutes in India, the Gokhale Institute of Politics and Economics, in Poona, provides a good example of how the trial stage works. Here the study was done on the acceptability of the alternative contraceptives by the women of a rural area of Poona. Education was given to the mothers and married women on all methods of
contraception. It was found after a mental trial that 63 women preferred to use the foam tablets, and 15 women preferred to take the diaphragm. The women were taken to the family planning clinic, and the lady doctor at the clinic explained to them about the use of these methods. In the foam tablet group, each woman was given a vial of 12 tablets per month, free of charge. An investigator visited each woman personally at the end of the month to see whether she was following directions or not. It was found that most of them were trying the method, but some of them had discontinued their efforts. Those who were satisfied were given another vial of foam tablets and told that if they ran short of material, they could get additional supplies. The same system was followed in the case of 15 women who preferred to use the diaphragm and jelly. Each was given a diaphragm and a tube of jelly. Each client was told that, in case of spoilage, the diaphragm will be replaced. Eventually, of the 78 women who agreed to take either the foam tablet or the diaphragm and jelly, 60 stopped using them. This was not considered a failure because the women were now trying other methods of contraception.

The objective of a study in a village in Northern India was to make villagers users of modern medicine. The villagers were accustomed to getting the help of indigenous village medical practitioners. At first, the health staff set up a clinic. They publicized the project in advance. Western medicines were presented in a favorable way, mainly by offering the medicines at a low cost. Free diagnosis, examination, and dressings were provided. Besides helping in the clinic, the doctor participated in many informal gatherings.
Villagers expressed their liking for the doctor and his treatment. After this, people started to use the clinic for such complaints as headaches, toothaches, and inflamed eyes. Many of the villagers continued their visits after getting good treatment from the center. Later, it was found that after the departure of the doctor, the villagers fell back to using their indigenous practitioner.

Another study in family planning is a good example of the trial stage. This study was done in a village of Allahabad in India when the oral pill was relatively new to India. The program was on the trial of a sequential oral pill in that rural area. As a result of creating the awareness and interest, a number of women became interested in taking the pill. It was given on a trial basis to 139 women. After a period of time, 62 were satisfied and continued using the pill, but 77 women discontinued because they were not satisfied. Without the trial, it is probable that there would not have been any women using the pill.

The personal influence of neighbors and relatives, as well as opinion leaders, are important for the trying out of a new practice.

A study of the process of the adoption of an agricultural innovation in the village of West Rajasthan in India was done. It was concerned with the cultivation of a new type of crop and on a new technique of cultivation. Schedules were filled by a field investigator on all farmers who were practicing the new procedures. It was found that those who used the new techniques had consulted with opinion leaders during the trial and adoption stage. These leaders favored the new practice and thus influenced the farmers.
(e) Adoption

It is at this stage that the results of the trials are considered. The decision is made to adopt or reject the innovation. If the results are considered satisfactory and useful, then the individual generally will develop a tendency for continued use of the innovation in the future. On the other hand, if the results are found unsatisfactory and useless, the client will usually reject the innovation. Though the client has reached this stage, there still may be difficulties. The job of the change agent is to give the client further training as a way of minimizing mistakes and offering encouragement.

In the South African health program on growing vegetables, a survey was done one year from the date of trial stage. It was found that some families have adopted the practice of growing vegetables, and a total of five different varieties of vegetables were growing. These families were early adopters. These families had successfully passed the trial stage.

The adoption of an innovation is not an impulsive act. There is always a period of time involved. From the study on the compost pit in a rural area in India, it was found that adoption did not take place in the same year. Out of 64 adopters of the compost pit, 20 persons adopted it after one year, 28 persons after two years, 14 persons after three years, and 2 persons after four or more years.

Some clients are "early adopters" and some clients are "late adopters." In a family planning study in a village in Uttar Pradesh, it was found that nearly 15 percent of couples were early acceptors, and 82 percent of the couples were late adopters, while 3 percent were opposed to the program. Generally, it has been found...
that in every community there is usually a small percentage of people
who adopt the innovation early. These early adopters are generally
the leaders and the influential persons of the community. A
study was done on the sanitary composting pit as a means of controlling flies to prevent certain communicable diseases in a village in Lucknow, India. In this program, the clients were the head of each household of that village. It was found that persons enjoying a high position due to owning more land adopted earlier. Observation revealed that average ownership of land of these early innovators was almost double that of the average land ownership of the village. These early adopters are among the influentials who are highly accessible to villagers for information and advice. It was also found that their adoption and approval gave a feeling of confidence to other villagers resulting in the process of imitation.

(f) Integration

It is at this stage that the innovation becomes a routine. True adoption takes place when it is integrated into the day-to-day life of the client. Thus, integration is the last stage of adoption. It is often assumed that the client now has mastery over the innovation. But the job of the change agent still is not over. The change agent should follow up the activities of the client concerning the new practice. In this way, it is possible to correct mistakes which could cause problems, and divert people away from the innovation. Too, reinforcement is an important activity that will help ensure that the innovation has been integrated into the clients' practices.

(g) Resisters
In every society, there are people who resist new ways of doing things. These resisters hinder the innovation process because of a variety of factors that can be called "barriers." There are different types of barriers such as psychological, cultural, economical, vested interest, and the like.

In a family planning study done by the Contraceptive Testing Unit, Bombay, India, on the acceptance of family planning methods, it was found that 85 women, in spite of having a sufficient number of children, specifically stated that they wanted a son. It also was found that out of 85 women, 22 wanted at least one son, and 63 wanted two sons. The need for two sons was that in case of the death of one, the other son would still be able to look after the parents when they were old. The general attitude of all the women having more children so they could have more sons was their form of old age security.

The results of a birth control program in Puerto Rico also illustrates this barrier. Here clients mentioned that they were in favor of having many children. Children would help them in their old age. Having a lot of children is a kind of social security that will pay dividends in later years. Of course, this idea acted as a barrier to getting people to adopt birth control methods.

In a B.C.G. vaccination program, it was found that rumors against the program were spread by an opposition party with political motives. They spread the word that the party in power wanted to start this program because they wanted to eliminate the poor man, not tuberculosis disease. In a smallpox eradication program in rural India, it was found that the "Pandits" (priests) act as an obstacle in the acceptance of the program in that village. The villagers believed that
smallpox occurred because of the anger of the goddesses "Sitala Mata."

So the villagers made offerings to the temple in cash and goods.

When the priests were contacted to provide their religious support for the program, they refused because they didn't want to lose the gifts. (39)

In a program that tried to determine people's acceptance of the Salk vaccine in America, it was found that many parents of teenagers expressed the belief that teenagers were not susceptible to this disease as were younger children. They remembered the disease as being called infantile paralyses. This was one factor for the low acceptance rate of the teenage group. (84)

An immunization program against influenza was arranged by the Personnel Health Service in Jerusalem in Israel. The program was not successful because the clients did not perceive the disease as a threat. They did not see that the suggested immunization would be an effective action. Educational efforts had not been undertaken to increase awareness of this disease as a threat to the health of the target group. (85)

In a program on human waste disposal in India, it was found that only the well-to-do person in a village accepted the latrine and continued to use it. The majority of the villagers, though they believed the latrine was effective, did not have one because they could not bear the cost. (86)

In a birth control program in Puerto Rico, it was found that the people were afraid that the contraceptives would injure their health. Both the men and women believed that the contraceptives
could cause cancer and many other diseases. They also believed that sterilization caused a woman to become sterile and chronically ill.

In a nutritional program in Guetmala, India, the health educators found existing in the village, two opposing factions. This created a barrier to any action. When one group supported a particular program, the other group rejected it due to rivalry. When the health educators were accepted by one group, they were then rejected by the other.

In a program on changing the food habits of the children in an urban area of Lucknow, India, the health educators could not make the program successful because of cultural factors. In India, the Hindus are accustomed to starting infants on solid food at the age of six months. On that day, religious ceremonies are held that continue throughout the whole day, and on that day, relatives, friends, and neighbors are invited into the house of the infant. This cultural practice is so deeply rooted that it is difficult to change.

The barriers described are only a partial list, but they serve to illustrate how resistors react to innovation.

(h) Overcoming Barriers

Experienced health administrators have compared barriers to "underground rocks" in the sea where many shipwrecks have occurred. The resistors hinder a program. The change agent cannot keep them apart from a program because as members of a community, their active participation is needed. There is no single formula for overcoming resistance, but some general techniques are helpful.

Individual contact has been found to be one of the best
methods in overcoming barriers. Through individual contact, a degree of friendship can be established. Many personal problems or hidden motives concerning health which were acting as barriers can be determined. In a family planning study in an urban area near Lucknow, India, the proper channels for communication were utilized. But it was found that 27 percent of the couples were not accepting contraceptive methods due to a fear of accepting a new approach. The health staffs made personal contact with each and every couple at their house and discussed the matter with them. This encouraged the non-acceptor couples to accept a method of birth control.

Group discussion also serves many of the same functions as individual contact. But it has some special advantages: (a) A large number of people can be contacted within a short time; (b) The feeling of safety and willingness to risk increases; (c) There will be more freedom to say "yes" or "no" about the accepting of the innovation; and (d) The clients will be able to arrive at a consensus about their goals. A study done in Iowa, U.S.A., on nutrition provides an interesting example. The State Hospital in Iowa City had maternity wards where the farmers' wives came to deliver their babies. The "first baby" mothers individually were given information on cod liver oil and orange juice by the nutritionist just before discharge. A leaflet was also handed out. A number of mothers were followed up after two weeks to determine the success of the program. The results were very depressing. It was found that only 20 percent of the mothers were giving cod liver oil to their children, and only 38 percent of the mothers were giving orange juice. A second follow-up was done two weeks later. By
this time, the percentage had increased to 55 percent in the case of both the cod liver oil and orange juice. The results were considered by the hospital staff as an indication of failure. Two reasons were found to act as barriers in the acceptance of these practices. The first one dealt with custom. It was not in the culture of these mothers to give orange juice and cod liver oil to newborn babies. The mother was pressed by the hospital staff to follow a course of action, but on her return to her community, she was urged by friends and neighbors to revert to custom. Because of the two opposing forces, the motivation and learning failed. Later, a group of psychologists from Iowa University led by the late Professor Kurt Lewin designed a program of what they called "group decision" to replace the individual instruction. Different groups were formed, and in each group, there were six mothers. In the discussion groups, instructions were given on baby feeding. The problem of mothers like themselves changing customary behavior was discussed. Towards the end of the discussion, the mothers were asked if they would try the new recommended practices. Most of the women said they would. During a follow-up two weeks later, it was found that 47 percent of the mothers were giving their children cod liver oil, and 85 percent of the mothers were giving them orange juice. During the second survey, it was found that 100 percent of the mothers were giving orange juice, and 88 percent of the mothers were giving cod liver oil. The better result was due to the effectiveness of a group decision in a group discussion setting. Lewin and his workers also demonstrated the effectiveness of group decision in changing other food habits.
In a rural area where literacy is very low, the leaders exert a great influence on the villagers. It has been found that if the leaders approve a program, the followers will also approve it. Leaders can help overcome barriers. This was verified during a diphtheria immunization program in a village of Thailand. Diphtheria was a major public problem in a particular village. A program was started when two children contracted the disease and one died from it. During this crisis period, it was found that two thirds of the villagers were not willing to accept diphtheria immunization. The cause of this non-acceptance was due to the lack of knowledge of the relationship between child health and adult health. People did not know that an adult could "catch" an illness from a child. When the village headman ordered the villagers to have an immunization, it was done. The leader used direct authority to overcome a barrier.

Many other techniques have been used by health educators to overcome barriers. A study was conducted on nutrition in a village in Guatemala. Here the health educators faced barriers that included a belief that diseases were caused by supernatural powers. In addition, it was found that the village factionalism also was a major barrier. There were two sections in that village. These sections, "barrios," were designated the "upper" and "lower" barrios. The religion, culture, and even the attitude of the two barrios were completely different. It was found that the rivalry between the barrios also touched the nutrition program. A health educator in connection with her work became friendly with the "upper" barrio. Immediately she was looked upon as an enemy by the "lower" barrio.
The object of the health program was to gain cooperation of the whole village. The health educator then followed the technique of residing with the people of the two barrios. She divided her total time; half of her time was spent with the "lower" barrio, and the rest of the time was spent with the "upper" barrio. By doing this, she was less identified with a particular section. This approach was found to be very effective in lessening resistance, especially in the "lower" barrio where people at first thought of the health worker as an enemy.

(87)

(i) Making the Communication Effective

In the adoption process, communication plays an important role. Communication research suggests that while information by itself does not change attitude and behavior, messages must be carefully planned, and appropriate communication channels must be used.

An important aspect for effective communication is the credibility of the source. People tend to accept those messages which they perceive to be very trustworthy and reliable. Whether the message is reliable and trustworthy or not is judged by the source of the message. The degree of acceptance depends to a greater extent on the trusted sources than on the message itself. Data obtained from a health program on poliomyelitis suggested that physicians played a highly important role in stimulating the people to be vaccinated against poliomyelitis. In this study, it was found that more than 90 percent of the adult sample looked upon the physician as the main source of information on poliomyelitis. Moreover, an overwhelming majority of unvaccinated persons reported that they would take vaccination if their physician recommended it.
In another study in the agricultural districts of Grevesmühlen and Greifswald in Germany, aimed at improving environmental sanitation, it was decided to organize "Health Week" in order to help stimulate people to solve their problems. Before the "Health Week" was to begin, a meeting was organized with the doctors of the district to discuss the project. The doctors then gave talks in the districts on the importance of "Health Week." The help of these doctors was found to be very valuable in carrying out the "Health Week" program.

In a smallpox vaccination program in a village in Bihar, India, the health educators used the mass meeting technique to create awareness. In this meeting, talks on the different aspects of the disease were presented by the doctors of the local health center, the panchayat leaders, and the school teachers because these personalities were found to be the most credible communication sources.

For clear comprehension of associated ideas, health educators should start with those things with which the client has a clear perception. This is very important when working in rural areas where the people are generally illiterate. A program on malaria eradication in Africa provides an interesting example. A film on malaria and the mosquito was shown to an audience. To give clearer information about the spread of the disease by the mosquito, a greatly enlarged picture of the insect was projected on the screen. The reaction of the people was quite different than what the educators expected. They expressed the feeling that there was no need to worry about the mosquito. There were none of that size in their country which was very small. They thought that the big-sized mosquito was responsible for carrying the
Another interesting example occurred in a village in Algeria. The environmental sanitation was extremely poor, and all types of communicable diseases were the problem of the community. At first, the health educators contacted everyone who had some influence on the villagers. They started discussions in a friendly way about the health problems of their village and its relationship with their health. The discussions were carried out over a long period of time. The results were depressing. The health educators remarked, "It was like talking to a brick wall." The villagers were blaming their problems on the shortage of doctors and medicine. They did not mention anything about the village sanitation. Later, the health educators projected a series of slides on a screen depicting life in the village. It was found that each and every slide caused a great reaction by the villagers. Some of the villagers remarked, "Oh! Look at the school -- that's where my boy goes!" or, "There is Mr. X; I know him well." As each slide was presented, it was linked with discussion about sanitation problems. Little by little, the audience was convinced of the truth.

Film, radio, newspaper, and posters are among the modern communication media. These media are very valuable; however, it has been found that traditional and indigenous materials like puppets, drum beating, folk songs, and dramas have been effective in reaching people in rural areas. Many successful health programs have used these old and traditional media. In a smallpox vaccination program in
In a study in Africa on malaria eradication, the use of film shows and a tape recorder were found to be ineffective in creating awareness and interest. To attract the people, an attempt was made to use a film show in a tribal area. Observation of the people during the showing indicated that they were missing most of the message. Even the use of their own dialect to explain the scenes did not improve their comprehension. One woman commented, "When I see the movie, I cannot understand the talk. When I listen to the talk, I cannot follow the picture." Thus, modern techniques might not always work in primitive areas.

In a family planning study in Singur, a village near Calcutta, some interesting points were found. In the preparation of teaching material, the health team considered the beliefs of the villagers on conception and family planning. The belief commonly held by the rural population of Singur was that the first few days after menstruation were the most fertile days for women. In order to postpone pregnancies, one should abstain from intercourse only during these days. To correct this belief, teaching material included materials on the physiology of reproduction with reference to ovulation and fertile and infertile days. All the teaching materials were traditional and home-made. Flip charts were prepared depicting the story of two imaginary couples who married on the same day. One of them followed family planning methods and was happy, and the other couple did not follow the family planning methods and was unhappy.
Another innovative idea introduced in the study was in the preparation of materials. Wall calendars, prepared locally, used a quotation from Tagore, who is known to every Indian as a poet. The calendars were distributed to the villagers.
Chapter VIII

STAGE VII
STABILIZING THE INNOVATION

"The responsibility of the change agent must end somewhere." (10)
Havelock

By gaining acceptance of innovation, half the battle is won. Gaining acceptance will lead the client to practice an innovative program, at least temporarily. But the aim of the change agent is to bring a permanent change so that it becomes a part and parcel of the client's life. It should be deep-rooted, otherwise it will be found that things have drifted back to the way they were before. Studies done in the health field showed that certain things need to be present for the maintenance of innovation on a permanent basis. These things have been found to be an essential factor in the stabilization of health innovation. These factors are: (a) continuing reward; (b) practice and routinization; (c) structural integration into the client's system; (d) continuing evaluation; (e) providing for continuing maintenance; (f) continuing adoption capability; and (h) developing positive attitude to innovation.

(a) Continuing Reward

It is a fundamental psychological fact that a reward is a strong incentive in the field of motivation. Rewarded behavior tends to be repeated and followed. The principle of repetition for reward has been found true in the health field as in other fields like
education and agriculture. Rewards come in two forms: material and psychological. Material forms may be the reduction of the infant mortality rate or the reduction of the smallpox incidence after a vaccination program. The psychological rewards may be praise given by the health staff after a latrine program has been accepted.

A health program in South Africa provides an example of how rewards help. Attempts were made to improve the diet by introducing the vegetable garden and the consumption of eggs and milk to an area where nutritional deficiency diseases were the main public health problem. These programs were very successful and permanent. Ten years after the starting of the program, it was found that people were still continuing their efforts. The cause for this maintenance was the reward. The infant mortality rate had been reduced in ten years from 276 per 1,000 to under 100 per 1,000. It was found that the nutritional status of the children was improved because cases of nutritional deficiency such as kwashiorkor and pellagra had dropped markedly from 12 or more cases in a week to fewer than 12 cases a year. The increase in the weight of the children was another reward. The average year-old baby weighed two pounds more than the average baby of six years ago. Previously, a one-year old baby was getting only milk from breast feeding as the main food with maize as a supplement. After 10 years, it was found that, in addition to breast milk and maize products, a child was getting eggs, tomatoes, spinach, cabbage, pumpkins, potatoes, and peas in his diet.

(b) Practice and Routinization

Practice leads to habit, and from habit comes the routine that
is incorporated in the daily life of an individual. Routinization is a sign of permanent adoption. The role of the change agent is to encourage practice until it becomes routine. In Singur, a village near Calcutta, India, family planning was a new program. To keep up the interest in the program and to encourage the people to practice the contraceptive methods, the field workers used the "follow up" technique to encourage routine use of contraceptives. Visits were made to the houses of 488 couples who accepted the methods. Special meetings, distribution of pamphlets, wall calendars, the organization of ladies' clubs, and film shows were arranged. During the personal visits, the field workers made inquiries about the practice of the methods. Whoever experienced difficulties was given advice and corrections. By the end of two years, it was found that a total of 488 couples had tried one form or another of family planning. Of these, 328 were still practicing birth control methods. The primary factor found in the continued acceptance of the methods was its effectiveness. Of those who accepted and practiced for some time and then discontinued, it was thought that these methods were initially popular because of their simplicity in application or absence of interference with sexual satisfaction. Later, the clients learned of their ineffectiveness or partial effectiveness. As a result, they discontinued the use of contraceptives. It is important to note that regular users were satisfied with the effectiveness of the method they had chosen. This effectiveness meant they were rewarded economically and psychologically. Here is an example of reward that leads to practice, and practice that leads to routinization.
(c) Structural Integration into the System

The mode of life controlled by social forces like religion, custom, beliefs, and taboos will generally be resistant to any change that is alien to the local social milieu. Therefore, in order to make health innovation a permanent thing, it must be integrated with the culture.

An example of this is a program started by American Friends Association in a village in Orissa, India. Nutritional deficiency diseases were the problem of the community, so the health agent started two programs on nutrition in the same village. One was successful, and the other was unsuccessful. Behind the success and failure was the structural integration into the client system. One of the programs involved the installation of a vegetable garden, while the other dealt with poultry farming. A vegetable garden in each and every household was one target, while starting poultry farming on a community basis was the other target. The poultry farming program was unsuccessful in the end. A special characteristic of the villages of India is the caste system, the Brahmin, the high, low, and the untouchable. Each local caste holds an approximate caste rank in the society. The poorest man of the village, if he is a Brahmin, still will be asked to sit at the head of a group. If the wealthiest man in the village comes from a low caste, he must still sit on the floor and maintain distance from the high caste. The poultry raising was connected with the caste structure and relative concept of purity and impurity. The poultry raising was carried out by the untouchables and the low caste people. The people of higher caste and the Brahmins...
considered this an "unclean habit." So in this program it was found that though poultry farming was accepted by the untouchables and a few high caste people, the program was not successful because of lack of cooperation by the majority. On the other hand, the vegetable garden program was successful because it did not interfere with the norms of the community. This program became a permanent innovation because it could be integrated into the culture.

The success of birth control programs in the U.S.A. can be explained in this connection. The United States is a society where cultural values and practices relative to fertility have adjusted themselves to changed condition. As society changed from a rural agrarian economy to an urban industrial economy, the value of large families was discarded. Along with the change in cultural values which supported low fertility in the U.S.A., the development of suitable contraceptives made low fertility possible. Thus, a stable population equilibrium stage was produced.

(d) Continuing Evaluation

Through evaluation, clients learn if their investment is worthwhile or not. The evaluation is mainly based on the effectiveness, i.e., the extent to which purposes are achieved. Evaluation generates the decision to continue or modify or discontinue the program. In a sanitation improvement project in Tonga, Africa, a program was started to improve poor environmental sanitation situations which were creating public health problems such as cholera, smallpox, hookworm, dysentery, and diarrhea. The installation of latrines was considered to be the answer. The program was successful because it
was accepted permanently. When villagers were interviewed on the factors that influenced them to continue using the latrines, it was found that the adopters reported that they had noticed a reduction in flies and mosquitoes for the six months' period after latrines were installed. Their evaluation helped sustain the program.

(e) Providing for Continuing Maintenance

Any type of innovation is sure to meet with some breakdown or misapplication in due course of time. There needs to be some provision to maintain it. Lack of provision may lead to discontinuance of the program. An excellent example was the tubewell program in a village in India. The villagers were using the pond and river water, and many public health problems were present due to the use of contaminated water. The tubewell program was started, and the program was tremendously successful. The villagers continued to maintain it permanently. One of the factors which made it possible to continue the program was the provisions made for maintenance. It had been found that most of the tubewell breakdowns occurred during the hot, dry season when the pumps were in greatest demand. Common causes for pump breakdown included lack of proper oiling, worn handles, and loose bolts. The village people organized and made a variety of systems for repair and maintenance. Some interested villagers were given training in pump maintenance and repair by the local sanitary engineering department. Funds were collected to meet costs when they arose. Because plans were made for continuing maintenance, the program was continued.

(f) Continuing Adoption Capability
In order to continue innovations, the client needs to be flexible to shift to some better innovation, if it comes, to meet his existing needs or changing needs. The Family Life Project of Puerto Rico provides an example of this need. The clients were the low income group. The object was to discover what values, motives, and communication barriers impeded the success of the birth control program. It was found that fear about contraception as the cause of infidelity, the diminishing of pleasure, the production of illness, the loss of male authority, and communication barriers contributed to the failure of the program. Still, it was found that birth control was not completely rejected. On the other hand, a sign of shifting to better methods to keep up with changing needs was found. Of the 72 families studied by the Family Life Project, over two thirds reported that they had some experience with contraceptive methods. Interviews with 2,125 women (in 1948) who attended the public health clinic revealed that 34 percent had tried some method of birth control. It was also found that many of these families discontinued or improperly used these methods. In 1950, it was found that one out of five deliveries was followed by sterilization. Four to five thousand sterilizations occurred every year; and the demand for sterilizations continued to grow. It was found that most of the women made the decision about sterilization herself. One woman remarked, "It is only once, sure, and they you forget about it, and you don't have to use those dirty things." In this study, it was found that the people who previously used chemical or mechanical contraceptives either moved to sterilization or stopped birth control altogether. The people used
chemical or mechanical contraceptives when they were newly married or had few children and changed to sterilization when they had a sufficient number of children. The demand for sterilization continued to grow. Physicians turned down many cases because of insufficient space in the hospital or because some of the women did not have enough children.

(g) Developing Positive Attitudes

Human behavior is determined, to a large extent, on attitude. Attitudes develop from a variety of sources such as reading, observing, hearing from others, and from one's own personal experience or practice. Attitudes can be either positive or negative. Positive attitudes not only help to accept innovation, but also provide energy to maintain it. On the other hand, negative attitudes inhibit the acceptance and maintenance of innovations. A program on the control of tuberculosis provides an excellent example of the relationship between positive attitudes and the maintenance of a health practice which was introduced into the community as an innovative program. This program was started in an African rural community. Pulmonary tuberculosis was a public health problem. In a survey, it was found that one home in every four was found to harbor an active case. Villagers believed this disease was caused by the poison put in food and drink by an illwisher. So the indigenous methods of treatment were popular. Villagers did not utilize the services provided by the local health center. An attempt was made to make the unfelt needs of the community felt, and to motivate the people to make those changes in their way of life that were necessary to meet these needs.
The program tried to motivate the patients suffering from tuberculosis to go for treatment in the health center, and to motivate other villagers to go to the health center for medical check-ups. In the beginning of the program, there was poor response. After a few years, the program was very successful. A marked change in the attitude of the people took place and, as a result, the program was continued.
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