IMPROVING HEALTH CARE FOR LEPROSY PATIENTS IN NORTH EAST STATE, NIGERIA: A CASE STUDY IN PROGRAM EVALUATION

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ABSTRACT

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Donald David Miller

Health is largely a function of behavior. In order to be effective health systems must do more than deliver medical services; they must help people adopt behaviors that will enable them to enjoy higher levels of health. An effective health system is a learning system.

The Sudan Interior Mission operates a health system for leprosy patients in North East State, Nigeria. Part of that system is a leprosy hospital intended to treat leprosy patients whose disorders have become critical. One behavior presumed appropriate for critically ill leprosy patients is to go to the hospital if and when they are referred there by a village clinic attendant. Leprosy patients seemed reticent to go to the hospital, however.

This study evaluated the Leprosy Service of the Sudan Interior Mission with two purposes in view: (a) to recommend modifications which would lead to more effective identification and communication of appropriate health behaviors for critically ill leprosy patients; and (b) to gain insights into effective procedures for evaluating non-formal education programs in the

Third World. The evaluation dealt with both the intents and actualities of the system, and the value of those intents in terms of the over-all well-being of leprosy patients.

The Stake (1967) model of curriculum evaluation was chosen as the framework for the evaluation. Following the Stake model, the leprosy system was described in terms of its intended characteristics from information collected through informal interviews with the Sudan Interior Mission Leprosy Service staff and patients at both the leprosy hospital and selected outpatient clinics. The intended system was reviewed in light of theories of communication, learning and health. Hypotheses were derived as tentative explanations for apparent inadequacies of the system.

The leprosy system was then described in terms of its actual characteristics. Data were collected systematically from (a) existing clinic and hospital records; (b) leprosy clinic attendants; and (c) a random sample of leprosy patients to provide evidence in support or non-support of the hypotheses.

The findings of the study relevant to the leprosy system indicated that leprosy patients were generally willing to accept referral and go to the hospital. The felt need for treatment was high among leprosy patients and patients perceived the leprosy hospital as compatible with their more dominant felt needs. Reticence alone was not adequate to explain why so few leprosy patients utilized the services of the leprosy hospital.

The main explanation for under-utilization of the hospital was that the leprosy attendants at village clinics were not actively referring the patients needing hospitalization. Other factors contributing to low levels of referral acceptance were that going to the hospital entailed some financial risk for

patients during certain times of the year; going to the hospital was perceived as difficult by many patients; and most patients had either low levels of awareness or erroneous ideas about the leprosy hospital and the conditions they would experience there.

Whereas the leprosy system was judged to be generally appropriate to the over-all needs of leprosy patients, this study stressed that it is at least as important to help patients avoid the need for hospitalization by preventing complications like ulcers as it is to provide hospital services to treat those complications. Also, it is important for the health system to avoid making a patient choose between physical well-being (e.g. going to the hospital to receive medical help) and economic well-being (e.g. staying at his farm to harvest his crops).

Relevant to evaluation procedures, observations from this study indicate that evaluation of non-formal education programs in remote, Third World settings is a task on which serious constraints are laid. Evaluation budgets may be small. Geographic remoteness can make access to library, consulting and data processing resources difficult. The evaluator may be of a different cultural background from the research population.

Constraints like these need not preclude effective evaluation. Evaluation procedures must accommodate the constraints of the task. The Stake model proved to be a useful framework for this task. The use of non-empirical data; searching out local consulting and library resources, and drawing on resources available by mail; using a small sample, simple statistics and manual data processing; and developing personal cross-cultural relationships are procedures which permit effective evaluation in Third World non-formal education programs.

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Stake, R. E. The countenance of educational evaluation. *Teachers College Record* 1967, 68, 523-40.

IMPROVING HEALTH CARE FOR LEPROSY PATIENTS IN NORTH EAST STATE, NIGERIA: A CASE STUDY IN PROGRAM EVALUATION

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The author gratefully acknowledges a number of people and agencies whose inputs and assistance were crucial to this study.

The Sudan Interior Mission, for which the author was working when the study was conducted, provided the context for the study. The problem was a real problem for which the Sudan Interior Mission wanted assistance. This gave the study a valuable dimension of reality. Sudan Interior Mission leaders allowed the author to give part of his assigned working time to conduct the study and permitted him to utilize office staff and facilities to assist with some of the research tasks. The staff of the Leprosy Service of the Sudan Interior Mission in Nigeria were very cooperative in giving access to files, records and people.

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Donald Miller

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INTRODUCTION

Good health is largely a function of behavior. There are behaviors which serve to prevent illness and injury. There are behaviors which serve to allow treatment of disease and injury in the event it occurs. There are behaviors which serve to implement and apply medical prescriptions for curing or controlling disease.

Health care, therefore, is a task in the communication of behavior change. Given the availability of medical expertise and facilities among a population, people need to modify their personal behavioral patterns in order to benefit from them. People need to adopt behaviors to prevent illness and injury. People need to avail themselves of the health-care facilities that are provided for them. People need to do what medical personnel advise.

Education concerns itself with behavior also. In fact education can be defined in terms of behavior change. But education is not a discipline that exists for itself alone. Education is valuable only as it is designed to meet specific needs among specific people. Health is a pressing need among people the world over. And since a major part in communicating health to people is the modification of their behavior such that health will be enhanced, it is appropriate to design health systems with the principles of education and communication clearly in view.

The Sudan Interior Mission is deeply involved with health care for leprosy patients in North East State, Nigeria. Village leprosy clinics, a leprosy referral hospital, an itinerant leprosy rehabilitation team and training facilities are all part of the Sudan Interior Mission's Leprosy Service in Nigeria. With these facilities and provisions available to leprosy patients, the next task is to encourage people with leprosy to avail themselves of the care. In some cases the task is to encourage people with leprosy to attend village clinics weekly to receive treatment. In other cases, clinic patients with complications to their leprosy that cannot be handled at the village clinic need to go to the leprosy hospital for specialized care.

This study is directed toward the behavioral aspects of leprosy health care. Specifically, the problem of encouraging patients with complications to accept referral and actually go to the hospital will be dealt with.

The task will be approached from a curriculum evaluation point of view: given an existing system which is not functioning to the satisfaction of the people involved, how can that system be modified so as to function more effectively? More generally, by what procedures can that system be examined in order to identify and prescribe appropriate modifications?

The Problem

A growing number of concerned people are suggesting that schools have not kept pace with the need for education in most developing countries. School education is often inaccessible for many of the population. It is very expensive. But the more critical problem is that schooling has largely failed to orient itself to the real needs of the people (Abernathy, 1969).

For this reason, there is a noticeable move in the direction of supplementing school education in developing countries with out-of-school, or non-formal education. Non-formal education is a term given to non-school ways of helping people learn the kinds of things they need to know to function better in their society. Societies in the developing world are changing rapidly today. This means, among other things, that people who once were able to feel comfortable and useful in their societies are finding it more and more difficult to do so. Non-formal education seeks to alleviate this situation by offering opportunities for out-of-school learning which will help people readjust to the new demands of a changing world.

Non-formal education differs from informal education in that it is a planned intervention. Informal learning occurs during the process of socialization, usually without planned instructional interventions. The natural acquisition of language or cultural values are examples of informal learning which occurs quite efficiently even though there are few planned teaching interventions. Non-formal education, on the other hand, is a system of planned instructional interventions, intended to result in learning.

Non-formal education seeks to be very life-need related--offering to help learners acquire what they need to participate more fully in life as it exists in their particular environment.

Non-formal education tends to have very specific objectives in terms of skills or behaviors to be acquired by the learner. These skills and behaviors tend to be very concrete and measurable so that an observer, including the learner, can easily recognize when he makes progress toward achieving them.

Non-formal education uses a wide variety of instructional methods with an emphasis on hands-on learning--learning by direct experience (either actual or simulated) more than by vicarious or believe-me-because-I-told-you experiences.

The education task is always bigger than the resources. Non-formal education tends to be a less expensive way to help people learn. Many agencies that are involved with helping people learn through non-formal modes operate on very limited resources. This requires low cost approaches to education that will still result in effective learning. Ideally, people who are involved with non-formal education are more concerned with meeting the needs of people, many people, than of merely perpetuating an institution.

Non-formal education is not encumbered with many of the constraints of the formal school system. For example, before a learner can enter any given module of formal schooling he must have achieved some level of entry behavior. Students are screened to fit the curriculum. Students who do not fit are not admitted and consequently are not afforded the opportunity to be assisted in learning. On the other hand, non-formal education begins with the learners, whoever they are and with whatever entry skills or behavior they may have achieved, and develops an instructional system to fit the learner and meet his needs. This frequently puts non-formal education in a position of supplementing the formal school system to help meet the educational needs of a country. And in that role non-formal education appears to have a lot to offer in terms of the people who cannot for any one of many reasons avail themselves of formal schooling, and in terms of learning needs which are not now served by the formal school system.

So non-formal education may be viewed as a valuable supplement to the formal school system in developing countries to meet very specific needs among the population of a given community. But all is not roses. Learning effectiveness is not automatic just because teaching occurs outside the formal school system. There are many questions of instructional methodology that need answers as they relate to non-formal education. We need to know more about how to design non-formal education systems that will be effective in terms of meeting specific needs among real people. This study proposes to inquire into the processes involved in designing a specific effective low cost non-formal education program.

The Problem

Many programs have been implemented in the Third World intending to help people enjoy a higher quality of life. Some of these programs are popularly classed as educational programs. Others are not generally considered educational programs but bear many characteristics of educational programs.

For example, health programs are planned interventions in the life experiences of sick people and require behavior modifications in order for the benefits of the programs to be realized.

Development programs such as health programs have sometimes been less effective than desired because people have not adopted the necessary behavior modification. For example, though many leprosy patients learn of the availability of services at the leprosy hospital, and some of these accept help, others are not influenced to be helped and still others are not even aware of the resources.

When attempting to increase the effectiveness of the learning (behavior change) among an intended audience whose needs are identifiable, supplementary instructional inputs to the existing system are suggested. For example, of the clinically-treated patients who need leprosy hospital care some, but not all, are influenced to be hospitalized; supplementary instruction is suggested to increase the behavior change consequences of the advice to those who need hospitalization.

Effectiveness of a learning system may be viewed in terms of the amount of behavior change that system elicits among intended learners. Effectiveness ought also to be viewed in terms of the effects of the intended behavior change upon the intended learners. For example, clinically treated patients whose disease is advanced or complicated so that they cannot receive adequate care at a rural clinic operated by a paramedic are being referred to the leprosy hospital for more care. The question is whether going to the hospital is really good for those patients. Put another way, the question is whether hospitalization of critically ill patients is the best approach to helping leprosy patients enjoy better health.

Thus the research problem emerges: a procedure must be developed to guide decisions which will increase the relative effectiveness of a given non-formal education program both in terms of the amount of behavior change it elicits and the value of that behavior change.

More specifically, given an existing system intended to elicit worthwhile learning among a specific group of people but which is evidently less effective than desired, the question is how to modify that system so that learning will be improved both in terms of the amount of behavior change elicited and the worth of that behavior change to the intended learners. This study proposes to identify procedures for dealing with that question.

Significance of the problem. Procedures exist for evaluation of educational programs. Those procedures have largely been developed in the context of formal school systems of the developed world. This study focuses on educational programs with characteristics which are considerably different from a formal school system in a developed country.

1. The learning system for which evaluation procedures need to be developed is not usually identified as a learning system. For instance, leprosy care is thought of as a system to provide medical services for needy patients. However, utilization of those services and application of recommended remedies require behavior change on the part of the patients. The provision of medical services, then, encourages behavior change among the patients and can be viewed as an educational system as well as a medical service system.

2. The learning system for which evaluation procedures need to be developed exists in the Third World and involves people who have grown up in a culture different from that of the evaluation specialist. The evaluation procedures and skills to operate them must accommodate the culture of the program and its participants.

3. The learning system for which evaluation procedures need to be developed operates on a very small budget. Hence, funds available for evaluation procedures are very limited. The procedures developed need to be low cost procedures.

4. The learning system for which evaluation procedures need to be developed has been in existence for more than two decades. Hence, there are assumptions and activities which are long-standing and deep-seated. Those assumptions and procedures have been formulated by people who are not accustomed to think as educators. They are trained professionals who tend to think more in terms of the delivery of services than assisting learning. One of the assumptions is that patients will behave the way the medic thinks best if for no other reason than that the medic has made the pronouncement. The evaluation procedures developed must at the same time acknowledge existing assumptions and activities and assess their worth and utility.

5. The learning system for which evaluation procedures need to be developed is located in an area which is geographically remote. This means that access to technical consulting services is difficult and slow. Evaluation procedures for such a program need to be simple enough to be operated without the ready access to services such as statisticians and electronic data processing.

This study is of particular importance as it inquires into local models of effective learning by examining the existing learning system, seeks to use this information as the basis for modifying the existing system, and describes the procedures which served the process effectively in the context of a long-standing non-formal education system in a cross-cultural context for which little money is available for evaluation and for which technical support services are not easily accessible.

Research context. Leprosy is a serious problem in Nigeria. The Sudan Interior Mission is working in close cooperation with Nigerian government medical offices in the treatment of leprosy. There are leprosy clinics which treat outpatients and there are leprosy hospitals where patients with more serious cases or complications can be hospitalized. Leprosy clinic outpatients are referred to the leprosy hospital if and when their cases warrant it. The assumption is that if patients utilize the appropriate medical services their over-all health will be improved.

At present, the method for encouraging referrals is interpersonal. A representative from the leprosy hospital (a nurse specially trained for leprosy treatment) visits the clinics two or three times a year to examine patients. During those visits, the nurse identifies patients who should be referred to the hospital. Between the nurse's visits, the clinic attendant (a paramedic) is responsible to identify hospital cases. The clinic attendant speaks to the patients about going to the leprosy hospital. The problem is that leprosy outpatients seem reticent to accept referral and actually go to the leprosy hospital. The objective is to encourage leprosy patients to accept referral: in other words, that when the clinic attendant recommends that a patient go to the leprosy hospital, he actually go.

This system is not working effectively enough to satisfy the administration of the Sudan Interior Mission Leprosy Service. Their question is how to modify the existing system such that more needy patients will accept referral and go to the hospital. An instructional supplement to the existing system has been suggested. More fundamentally, the question is whether accepting hospital referral will indeed improve patients' over-all health.

The study proposes to shed light on the above questions. The remainder of this report will present information bearing on the following considerations:

1. An analysis of the existing leprosy system identifying the elements which appear to be dysfunctional in relation to its fundamental purpose of improving the over-all health of leprosy patients and its specific objectives of encouraging critically ill patients to accept referral and go to the hospital.

2. Recommendations for modifying the existing leprosy referral system such that it will function more effectively; and

3. A description of the processes employed in the evaluation of the existing leprosy system and their implications to the field of curriculum evaluation.

The approach. The whole leprosy system is being viewed as a non-formal education program in that it is an intervention which intends to elicit certain behavior changes in order for patients to benefit from the system. Some parts of the system call for activities which are specifically designated as instructional. Both the whole system and the instructional components can appropriately be evaluated using methods and concepts relevant to non-formal education evaluation.

Therefore, the problem was approached as a case study in curriculum evaluation for a non-formal education program in a developing country. An arbitrary decision selected the specific context for this study: the Sudan Interior Mission leprosy hospital at Bayara (near Bauchi) in North East State, Nigeria. The patient population for the study was defined as all the leprosy patients registered at the six Sudan Interior Mission-operated clinics served by the leprosy hospital at Bayara.

Given the instructional task described earlier (to improve the leprosy referral system) and the specific context described above, an existing model of curriculum evaluation was selected. The model described by Robert Stake (1967) was chosen (Figure 1).

The Stake model sees curriculum as describable in terms of antecedents, transactions and outcomes. Stake suggests actually laying descriptive data out in a matrix that will facilitate making observations about logical contingencies between the different elements of the intended curriculum and congruence between what is intended and what is actually observed. Finally, he suggests that observations be made about the empirical contingencies in the observed curriculum and, viewing all this data in light of accepted standards, that judgments be made about the program under consideration. These judgments lead to recommendations for modifications.

Using the Stake model, the existing system was described in terms of intended characteristics from information collected through informal interviews

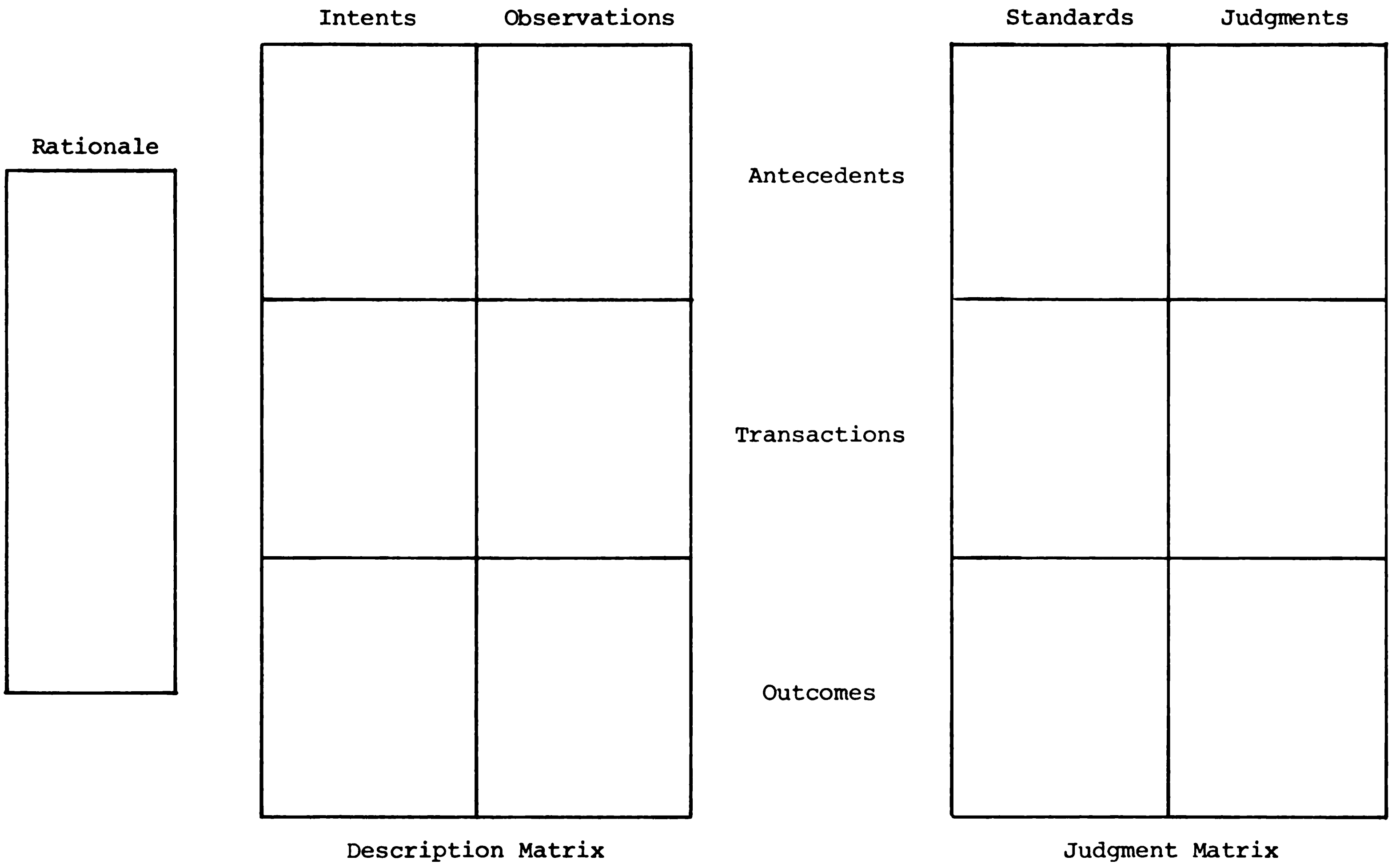


Fig. 1. A layout of statements and data to be collected by the evaluator of an educational program (Stake, 1967).

and correspondence with the Sudan Interior Mission Leprosy Service administration, medical personnel (both national and alien) working with the leprosy service and arbitrarily chosen patients at both the leprosy hospital at Bayara and selected outpatient clinics.

The intended system was then reviewed in the light of existing theories of communication and learning, and hypotheses were derived to identify the variables which would likely explain low levels of effectiveness. An informal, on-the-scene observation of the existing system led to the identification of still other variables which were thought to contribute to the problems.

Having identified the variables thought to be relevant to the problem, additional hypotheses were derived to predict the relationship between each independent variable and the dependent variable, leprosy referral acceptance. Data were collected systematically from (a) existing clinic and hospital records, (b) leprosy clinic attendants, and (c) a random sample of leprosy patients to measure the hypotheses.

The findings and the interpretations were then used to judge the value of the system and approach to modifying the existing system such that leprosy referral acceptance will be increased.

Overview of Dissertation

Chapter one has stated the problem and given an introductory overview of the approach used to address the problem. Chapter two reviews literature in the field of curriculum evaluation and identifies themes which tend to recur throughout the literature reviewed. Chapter three describes in more detail how the Stake model of curriculum evaluation was used to organize the evaluation processes. The leprosy referral system as it was intended to be is described in chapter four, and chapter five reports the findings of the inquiry and, thus, describes the leprosy referral system as it was observed to be. The intended leprosy referral system is compared to the observed leprosy referral system in chapter six which discusses the implications of the findings, makes recommendations for modifying the existing leprosy referral system and summarizes issues relevant to evaluation procedures.

Program Evaluation

The Sudan Interior Mission health-care system for leprosy patients in Nigeria was viewed as an instructional communication system in which patients are learners and the results of their learning are intended to be visible in terms of behavior change. As such, current concepts and approaches to educational evaluation were brought to bear on the task of analyzing and recommending modifications to the existing system. A review of the literature in the field of curriculum evaluation revealed a number of recurring themes.

The Nature of Evaluation

"Value" is the heart of evaluation. Evaluation is the process of valuing or judging. ". . . the goal of evaluation must always be to provide an answer to an all-important question: Does the phenomenon under observation have greater value than its competitors or sufficient value of itself that it should be maintained (Worthen & Sanders, 1973, p. 26)?"

Evaluation does not stop with making observations or even precise descriptions. It goes on to make judgments (Stake, 1967) that should constitute wise decisions about an educational program (Cronbach, 1963). Judgments are appropriate not only for the outcomes and processes of curriculum but for issues as fundamental as the very goals of the system (Stake & Denny, 1969).

A Process of Comparison

Ascribing value is a process of comparison. In the case of educational evaluation, pre-stated objectives serve as criteria against which to compare elements of the instructional system. Tyler (1950) has called for clear definition of "behavioral objectives" in order to assess the degree to which those objectives are achieved. Others use the term "intended outcomes" (e.g. Stake, 1967). Considerable attention has been given to the role of instructional objectives in the evaluation process. Stake and Denny (1969) summarize the considerations:

> Scriven (1967) has proposed representing objectives through test items. Krathwohl (1965) helped clarify the problem by discussing levels of specificity of objectives. Gagne (1965) has shown how student achievements can be analyzed to indicate intermediate objectives. Taylor and Maguire (1966) offered a model for the transformation of objectives from societal needs to student behaviors. Atkin (1963, 1968) and Eisner (1967), in a different vein, protested against the constraining effects of specified objectives on educators. These writings are part of a foundation for new methods of representing educational objectives (p. 333).

Comparison also occurs in dimensions other than instructional objectives. Stufflebeam (1970) views curriculum evaluation as a process of comparing alternatives, ascribing relative values to each alternative and choosing an appropriate element to be incorporated into a total instructional system. Stake (1967) talks about "standards" against which to compare curriculum elements--standards either implicitly or explicitly set by communities, other institutions, social expectations and other external considerations. Taylor and Maguire (1966) list five sources of standards against which educational programs can be compared: 1. spokesmen for society at large, 2. subject matter experts, 3. teachers, 4. parents and 5. students themselves.

The point is the same--whether the issue revolves around internal standards (e.g. pre-stated instructional objectives) or external standards (e.g. societal expectations), ascribing value to curriculum is a function of comparing elements of the system to stated standards.

A Comprehensive View

"Evaluation is comprehensive in scope (Anderson, 1965)." One characteristic which is common across many existing models of curriculum evaluation is breadth of scope. Stake (1967) for instance, views evaluation as focusing not only on student achievement but on the full context in which that learning occurs: the school, teacher, processes, relationships, etc. Cronbach's (1963) view adds other dimensions. He suggests that evaluation should include process studies (what happens during instruction that affects learning), proficiency measures (how well the processes succeed in helping students learn), attitude measures (as a learner variable which affects learning) and follow-up studies (to somehow assess not only retention, but the relationship of learning to subsequent life-related demands and needs).

Both Stake (1961) and Cronbach (1963) say that evaluation should extend to the fundamental worth of a program. Stake says that the very objectives of a program need to be scrutinized in order that judgments be made about their value. One of the functions of the standards cells in Stake's model is to help assess the worth of a program. Cronbach's follow-up studies look beyond the achieving and retention of learning to assess whether the items learned have a functional relationship to the needs of a person in his society. Program evaluation goes beyond the achieving of learning objectives to assess the worth of those objectives.

This comprehensive view of evaluation is consistent with current views of curriculum. Curriculum can be defined so broadly as to include anything that bears on learning and which can be manipulated by learning facilitators (Taba, 1962). Educational evaluation, then, appropriately concerns itself with anything related to the value and achievement of learning. Obviously, if evaluation processes actually were to identify, describe, measure and ascribe value to every element which bears on learning, the evaluation task would become monumental and very much out of balance with the rest of the system. Hence, in order to keep evaluation in balance with the rest of the system, it is necessary to select only the more crucial elements to include in an evaluation. Ward and Dettoni (1974) suggest that before information collection processes begin each element be subjectively considered in light of the question, what difference would it make? Only those elements thought to be crucial to the over-all system will be selected for more detailed review and evaluation reducing the number of elements for which information collection processes will be implemented.

The Purpose of Evaluation

People who design and operate instructional programs are repeatedly faced with decisions. The fundamental purpose of evaluation is to help those people make better decisions. Alkin (1969) puts it this way: "Evaluation is the process of ascertaining the decision areas of concern, selecting appropriate information, and collecting and analyzing information in order to report summary data useful to decision-makers in selecting among alternatives

(p. 150)." "Every evaluation question implies a criterion, new information, and a decision (Provus, 1969)." It is not the function of evaluation to make those decisions. It is, however, the function of evaluation to identify alternatives and present information which will help decision-makers make better decisions.

Decisions occur in several dimensions. Alkin (1969) has identified five classes or categories of decisions necessary in curriculum development: 1. systems assessment; 2. program planning; 3. program implementation; 4. program improvement and 5. program certification. There seems to be considerable agreement, however, that course improvement is the function for which evaluation is most important. Cronbach (1963) for instance, said: "The greatest service evaluation can perform is to identify aspects of the course where revision is desirable (p. 48)." To call in an evaluator post hoc merely to measure final outcomes is making meager use of his services. Even comparing one course against another is less important than using evaluation to bring either one closer to perfection.

Ward and Dettoni (1974) speak to the same point in more detail. They begin with two basic assumptions: 1. An educational program is an imperfect venture, achieving somewhat less than competently what its operators intend; 2. the most important purpose of evaluation is improvement of the operation; the most important judgments to be made are those that relate to factors which can be altered (p. 204). They go on to identify two crucial areas in which course improvements can be made especially in programs which reach across cultural and geographical distances:

> . . . (1) the more careful implementation of the general theory upon which the program is based, and (2) more careful adjustment and adaptation to the local situation. In reference to the first, the general theory will itself need to be under constant reexamination and revision on the basis of feedback from the field operations. The second, adaptation to the local situation, also demands that feedback be made available and used by the staff and leaders of the field operation to decrease the discrepancy between intended and realized outcomes (p. 206).

Both the theoretical underpinnings and the operational systems need to be under constant review. That review is the function of repeated evaluative feedback whose chief function is to facilitate realignment and improvement of programs which are in progress.

That means that evaluation must give itself to solving real problems. In order to do so, its functions need to be clearly defined; its purposes agreed upon by all parties concerned; its staff adequately selected and trained. Otherwise evaluation will produce data but will be relatively unuseful to educational program management (Provus, 1969). In brief, curriculum evaluation is ". . . concerned with the practical and the immediate (Grobman, 1968; p. 9)." The evaluator is in a good position to identify issues which are practical and immediate. Gooler and Grotelueschen (1970) suggest that evaluation can and ought to raise practical questions and sensitize curriculum developers to real issues. In an effort to be practical and relevant, evaluation must go beyond the offered statements of goals and tease out the additional, unwritten (and perhaps unperceived) concerns and purposes of the educators (Stake & Denny, 1969). Otherwise, some important practical issues will go unrecognized and unexamined.

Whereas there is considerable emphasis on course improvement, or "formative" functions of evaluation, it is not to be understood that this is its only role. Alkin (1969) identifies "program certification" as one of the important areas for evaluation. Scriven (1967) emphasizes the "summative" role of evaluation. After quoting Cronbach who praises the role of evaluation for course improvement rather than for terminal assessment, Scriven says, "Fortunately, we do not have to make this choice. Educational projects, particularly curricular ones, clearly must attempt to make the best use of both these roles (p. 43)."

In summary, formative evaluation is crucial to the effectiveness of instructional programs. However, summative evaluation is also important. The formative helps make operating systems more effective. The summative accommodates questions of accountability and replicability.

Appropriate Methodology

Evaluation calls for the collection and processing of information. Thus a question of methodology emerges: Which data collection and analysis methods are appropriate for evaluation functions? A range of methodologies have been developed for basic educational research. Likewise, methodologies exist for standardized testing. However, the function of evaluation is different from both basic research and testing. It cannot be assumed, therefore, that basic research and standardized testing methodologies are always appropriate for evaluation.

A fundamental, oft-mentioned difference between evaluation research and basic research relates to generalizability. Basic research concerns itself with discovering and building principles--lawful relationships with high generalizability. By contrast, "Program evaluation is concerned with a phenomenon which has limited generalizability across time and geography (Worthen & Sanders, 1973, p. 32)."

This is not to suggest that the evaluator is not concerned with generalizability. He is, but "He is particularly concerned with deriving principles on which to make decisions about instructional practice . . . (and) focuses on the task of describing the nature and worth of educational programs in order to improve decisions about the management of those programs (Stake & Denny, 1969, p. 330)."

The differences in the fundamental concerns of basic educational research and evaluation may reflect themselves in methodological differences between the two. For example, basic research leans heavily on experimental methodology. But, in the context of educational evaluation it is often problematic to satisfy the demands of true experimentation. To illustrate, educational programs are usually administered to intact groups. To randomly divide groups for the sake of experimental treatment is rarely possible. Furthermore it is seldom feasible to randomize groups either because there are too few groups available to achieve an adequate sample size in each cell, or because it is logistically impossible to do so. Any other approach to experimentation (such as matching students in one group to students in another) is compromise, at best, and should be pursued with caution (Glass, 1969).

Proponents of standardized testing have developed rather sophisticated methodologies for testing and analysis of results. The fundamental purpose for testing is considerably different from the purpose for evaluation. Thus, standardized test data are often not appropriate for evaluation purposes.

Standardized tests are designed to discriminate between students who answer more questions correctly and those who answer fewer questions correctly. To say it differently, standardized tests show where an individual student stands in comparison to a total student population in terms of an overall score.

In contrast, evaluation focuses on the educational program rather than the student. Evaluation seeks to identify the extent to which a program achieves its objectives among a group of learners. Where evaluation makes discriminations, it is between programs (which program is more effective?) rather than among students.

There are several relevant sources of information for educational evaluation. Learners, or samples of learners, are the most often used sources of data for evaluation purposes. Instructional objectives describe the nature and magnitude of change intended to occur among the learners as a result of educational inputs (Mager, 1962). Evaluation is the assessment of the degree to which learning has occurred relevant to the stated objectives (Stake & Denny, 1969). Ultimately, this learning must be measured among the intended learners.

Evaluation should be comprehensive, however, and assess not only learning but also factors which contribute to learning and the value of the learning. Hence, it is appropriate to collect information from sources other than learners themselves. Taylor and Maguire (1966) identify five groups having important opinions on education of which the evaluator should be aware: 1. spokesmen for society at large; 2. subject matter experts; 3. teachers; 4. parents; and 5. the students themselves. Stake and Denny (1969) warn that there are dangers in giving too much consideration to public opinion, but go on to say that the evaluator should be aware of these inputs and should even devise simple instruments and procedures for collecting information from non-learner sources. Cronbach (1963) agrees that information from non-learner sources is valuable input for evaluation when it is cast alongside more objective measures.

When populations of interest are too large to measure in their entirety, sampling methods can be used to collect information from randomly selected members of the larger population which are representative of that population. When populations are relatively inaccessible to measurement (like audiences to mass media in developing countries) other sources of information are being suggested. Small groups of people arbitrarily chosen from a larger population have very accurately described certain characteristics of the larger group (Miller, 1973). In traditional cultures, where there is considerable homogeneity within the target population and where literacy and media exposure are not high, arbitrarily selected subsets of the population and/or informed secondary sources may constitute a source of relatively reliable information about learner groups which has not been widely tapped as yet for evaluation purposes.

In summary, there is no single approach to information collection which is wholly adequate for program evaluation. Information needed for evaluation purposes is a function of the curriculum being evaluated, its context and the evaluation model being employed. The evaluator's task is to select methods which are appropriate to the nature of the information he needs. For some needs, experimental methodolgy is appropriate. For others non-experimental methods are appropriate. ". . . the concepts and techniques that will serve evaluation have roots in philosophy, sociology, anthropology, linguistics, history, and economics as well as psychology (Stake & Denny, 1969, p. 328, 329)." Educational evaluation calls for multi-disciplinary methodologies.

The Evaluator and His Role

The evaluator is often viewed as a specialist in data collection and measurement. And appropriately so, for the evaluator's role includes those functions. However, there is considerable agreement among writers in the field of curriculum evaluation that the evaluator's role should be considerably broader than just data collection and measurement.

Reference has already been made to the comprehensive scope of evaluation. The evaluator's input is appropriate throughout the entire design-implementation-modification process (Corey, 1963). Gooler and Grotelueschen (1970) identify five roles for the evaluator: to raise questions, collect data, interpret data, judge values, and judge responsiveness of audiences. As a raiser of questions, the evaluator seeks to sensitize curriculum development and cause ". . . a lot of concern about justifying, explaining, relating (p. 321)."

Stake (1967) stresses the role of the evaluator in judging. Describing is not enough. The evaluator must also make judgments and communicate them to the curriculum development team. In fact, evaluation should be a team endeavor (Provus, 1969). The evaluator's role is to participate on that team and lead it in the evaluation process toward judgments and improvement decisions about the curriculum (Gooler and Grotelueschen, 1970). The evaluator offers help both in prescribing change and in effecting that change.

These roles call for evaluators to have a broad range of skills. For data collection and measurement roles the evaluator needs skills in general educational research methods, social science research strategies and instrument design (Stake and Denny, 1969).

To make credible judgments the evaluator needs competence in the concepts and models of educational evaluation. He should be well-informed with a sensitivity to learners, their needs and the societies from which they come (Stake, 1967).

In his role on the planning and design team the evaluator needs to be a group specialist, knowledgeable and skilled in the communication of change (Provos 1969).

Evaluation Models

In writing about curriculum evaluation a number of authors have formulated their concepts into models which aid in the undertanding and implementation of evaluation. There is both similarity and distinctiveness among existing models. Following is a brief description of selected models which will illustrate some of those similarities and distinctives.

Ward & Dettoni. Focusing on evaluation procedures, Ward and Dettoni (1974) identify four operations of evaluation (Figure 2). ". . . the base or first stage is description; on this is built measurement; on measurements are built assessments; and then, by bringing value positions to bear on the assessments, one can make evaluations (p. 208)."

Descriptions are often verbal and are usually inadequate for comparative analysis in that form. Measurement quantifies variables so that comparisons can be made. Comparisons might be made between two individuals or between two measures taken at different times on one individual. Comparing the measurements constitutes assessment of change which has (or has not) occurred. The assessment of differences is not adequate, however, without ascribing value

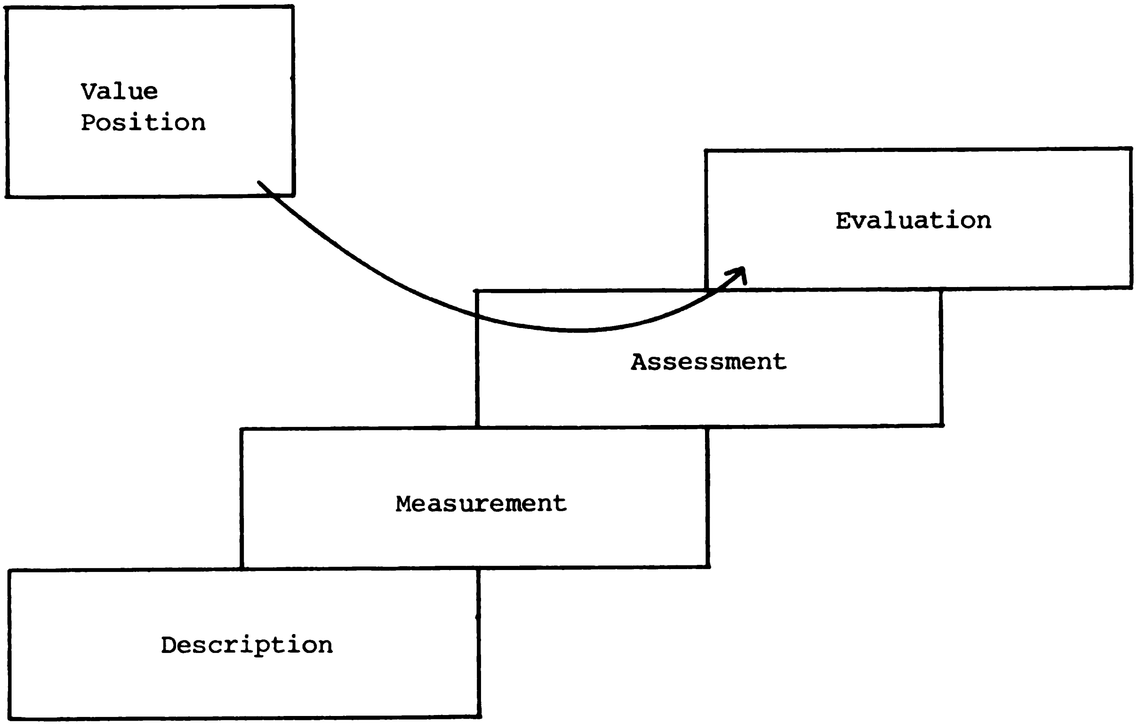


Fig. 2. The four operations of evaluation (Ward & Dettoni, 1974, p. 208).

to those differences. Hence, a value position must be brought to bear in order to judge the relative goodness of the measured differences.

In applying these operations to evaluation, it is necessary to make some choices among items to be included. One fundamental rule of thumb is offered to help make this decision: "What difference would it make (p. 275)?"

Taba. Hilda Taba (1962) offers a model for a comprehensive evaluation program. (See also Taba & Swain, 1962 and Anderson, 1965). She suggests a four-step process:

1. Decide what kinds of evaluation data are needed. Taba identifies four areas to look at: instructional objectives and evidence pertaining to them; factors affecting learning with special attention to student characteristics; teaching-learning operations; teaching methods.

2. Select or construct the needed instruments and procedures. Alternative methods are available from a very wide range of disciplines.

3. Analyze and interpret the data to develop hypotheses regarding needed changes. Taba offers a visualized model depicting the broad patterns of relationships to be studied (Figure 3).

4. Convert the hypotheses into action by making those changes and implementing the modified program.

Whereas Taba's model is a procedural model, it contains a framework for identifying issues for examination and deriving hypotheses about effective learning.

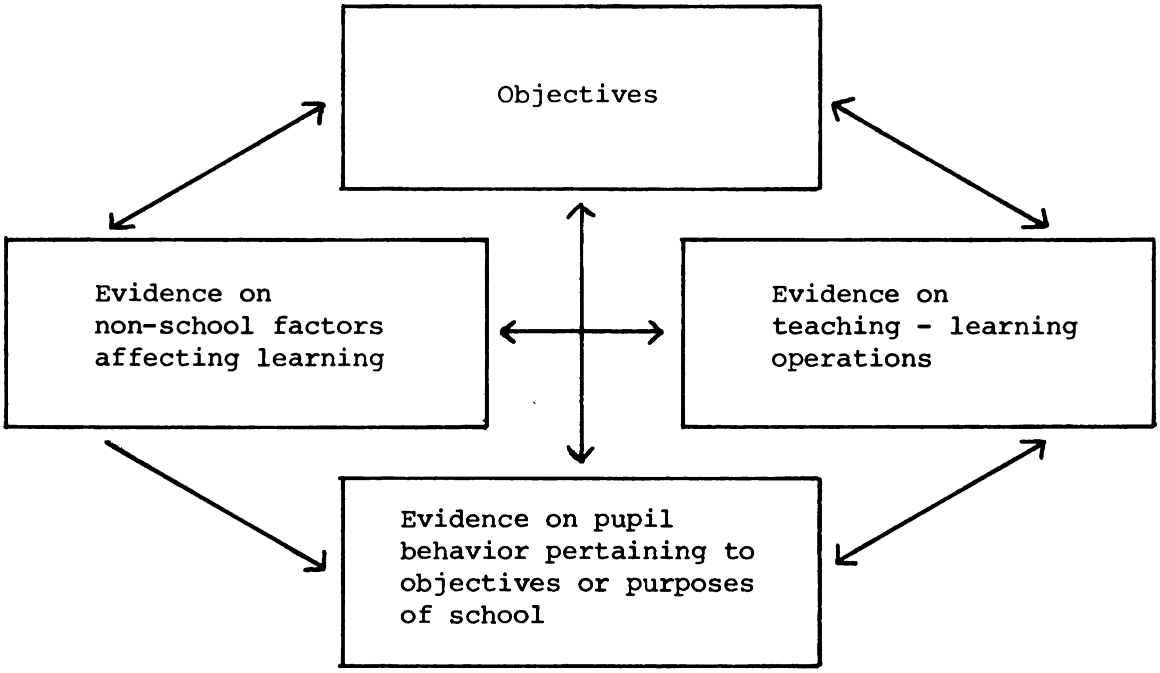


Fig. 3. Broad patterns of relationships to be studied in curriculum evaluation (Taba, 1962, p. 65).

Hammond. Hammond (1973) offers a three-dimensional model which seeks to visualize relationships between program elements (Figure 4). His model brings the institutional, instructional and behavioral dimensions of education into focus. At the same time he suggests that a fourth dimension is under study--the perceptual. He discusses evaluation procedures by identifying five discrete steps:

1. Describe the current program and its effect as a baseline.

2. Define the descriptive variables in the instruction and institution dimensions.

3. State objectives in behavioral terms.

4. Assess the behavior described in the objectives.

5. Analyze the results (factors produced) and compare them to the stated objectives.

Hammond is similar to Ward in that he sees description as foundational to the evaluation process. He is similar to Taba in that he presents a visualized model which helps to identify crucial variables appropriate for evaluative inquiry. He brings instructional objectives into more precise focus by calling for their statement in behavioral terms at the onset of the evaluation process. Evaluation, then, is a process of comparing pre-stated behavioral objectives to actual learning measured in terms of behavior change among learners.

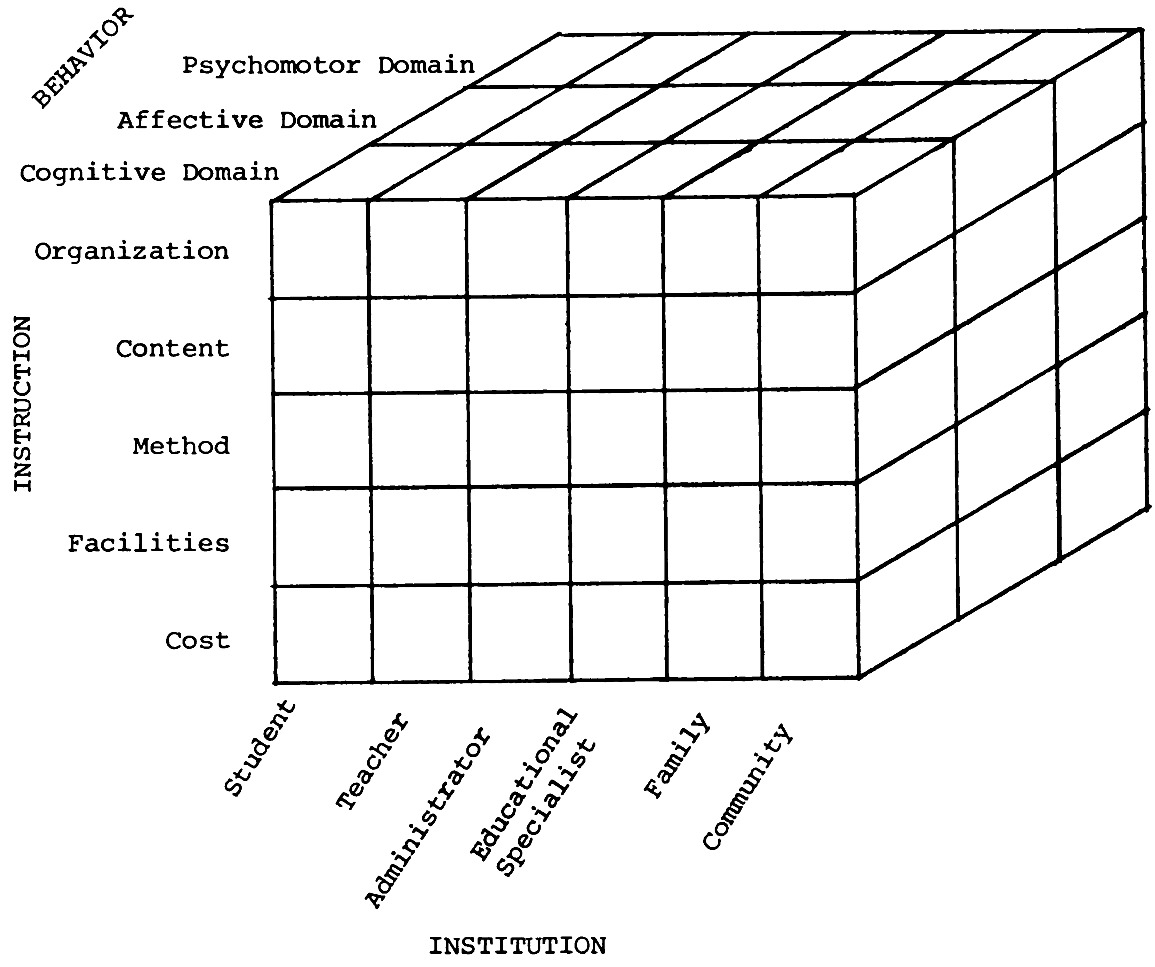


Fig. 4. Structure for evaluation (Hammond, 1963, p. 158).

Stake. Robert Stake (1967) offers a model for curriculum evaluation which not only clarifies concepts with a visual matrix, but also serves as a working instrument. (See Figure 1, p. 12.)

Stake views curriculum in terms of antecedents, transactions and outcomes. Evaluation starts with a process describing the existing or intended system across each of these dimensions and examining the intended system vertically in terms of logical contingencies between the elements. The next evaluation function is to describe the actual or observed system and compare the intended system with the observed system horizontally to assess congruencies between what is intended to occur and what actually occurs. The observed system is then examined vertically for empirical contingencies between elements of the actual system.

A second matrix depicts the judgment function of evaluation by identifying standards against which each dimension of the curriculum will be evaluated and the judgments which accrue from the total process of describing and comparing the intended system, the actual system and the standards for judgment.

Stake recommends actually laying out information in matrix cells. Stake's chart, then, becomes not only a representation of his concepts but an instrument which facilitates the evaluation process.

Stufflebeam. Stufflebeam's CIPP model (1970) speaks of evaluation as occurring in four dimensions:

> Context evaluation serves planning decisions to determine objectives; input evaluation serves structuring decisions to determine project designs; process evaluation serves implementing decisions to control project operations; product evaluation serves recycling decisions to judge and react to project attainments (p. 136).

Stufflebeam identifies four key points relevant to evaluation:

1. Evaluation is performed in the service of decision-making.

2. Evaluation is a cyclic, continuing process implemented through a systematic program.

3. Evaluation processes include three main steps: delineating, obtaining and providing information. (See Figure 5.) This becomes a basis for evaluation methodology.

4. The delineating and providing steps are interface activities between the evaluator and decision-makers. Obtaining is a technical activity by the evaluator.

Stufflebeam's model stresses the interface functions of the evaluation which serve the decision-making purposes of evaluation.

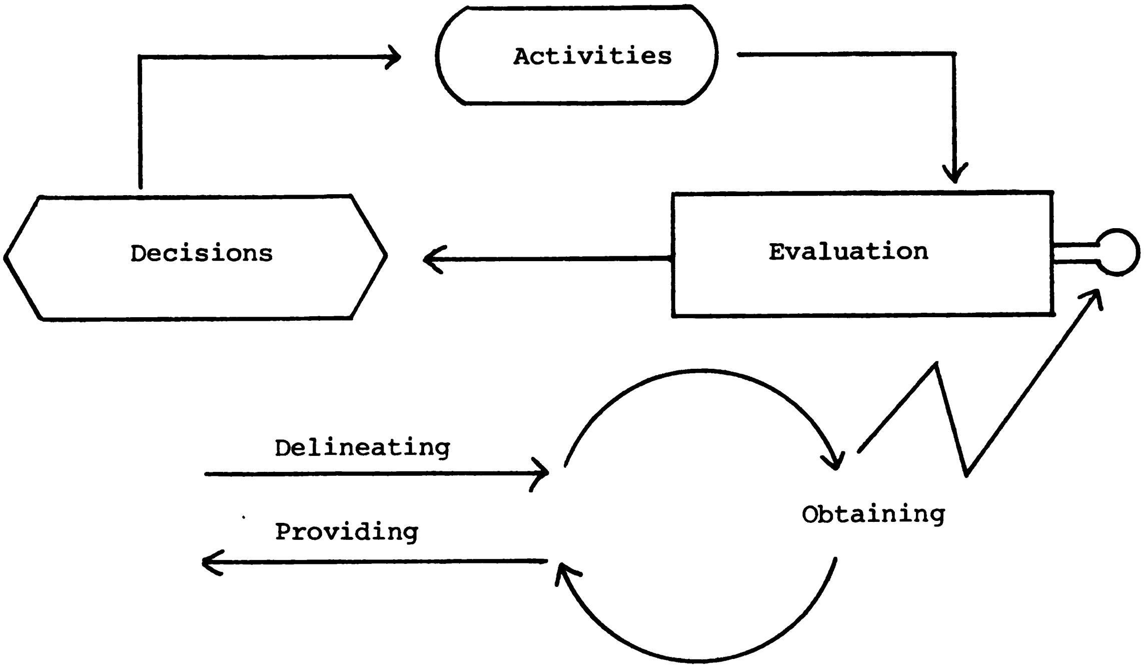


Fig. 5. The relation of evaluation to decision-making (Stufflebeam, 1970, p. 134).

Corey. Corey (1963) advocates what he calls "Action Research." His emphasis is that evaluations should serve to change teachers and thus improve teaching. He discusses the change process and the role of the consultant which is to help people become more aware of the change process and then help them through the process relevant to their teaching activities.

Action research is ". . . research undertaken by practitioners in order that they may improve their practices (p. 141)." Corey lists the functions of Action Research:

1. Derive hypotheses. Action hypotheses have two important characteristics: they describe (a) a desirable goal, or instructional outcome; and (b) a procedure or action for achieving that goal. It's an if-I-do-this-then-that-will-happen hypothesis.
2. Define the variables and operations contained in the action hypotheses.
3. Describe how those variables will be measured.
4. Measure variables for baseline comparisons.
5. Carry out the actions contained in the hypotheses in such a way that appropriate data can be collected.
6. Interpret the data to see whether they support the hypotheses.
7. Infer generalizations that will guide action in future situations.

Summary. A number of evaluation issues are dealt with in the models described in this section.

All the models include procedures for evaluation. Whereas the procedures are described differently by the different writers, there is considerable similarity across all the models.

Each of the models implies that course modification is intended to be the outcome of evaluation. However, Taba, Stufflebeam and Corey are considerably more explicit in stating this than others. Ward and Dettoni (1974) allude to the Stake model in their article and suggest modifications to that model which make the modification function of evaluation more explicit.

Each of the models implies that critical issues need to be selected for evaluation. The Taba, Hammond and Stake models provide a framework for identifying those issues.

Three of the models (Taba, Hammond and Stake) explicitly call for the statement of instructional objectives as a fundamental basis for evaluation. Corey's model calls for "action hypotheses" which are essentially the same as objectives for evaluation purposes.

Four of the models are visualized with Stake's model serving not only to visualize the concepts but as an instrument tool to facilitate the evaluation process.

All of the models call for measurement functions. Hammond uses the term "assess" and Stufflebeam "obtain." Others refer to measurement and description. These terms all refer to the collection of data for use in the evaluation process. It should be noted, however, that none of the models dwell at length on the data collection or measurement functions of evaluation. Measurement is not the whole of evaluation; it is one contributing element to a larger process and is dealt with as such in each of the models discussed.

Evaluation is first and foremost a process of ascribing value. This is made explicit in the Ward & Dettoni and Stake models. Other models seem to assume the valuing function without making explicit references to it.

Research Design

One purpose of this study is to make recommendations for modifications that will improve a specific, existing non-formal education program. The program under consideration is a leprosy health-care system in Nigeria. A second more general purpose is to provide insights and tested procedures for other non-formal education planners so they will be better able to develop effective programs. The procedures which will be tested and described will be of special significance to existing non-formal education programs in the Third World which are cross-cultural, have limited financial resources and are geographically remote from technical support services.

For these purposes the research design calls for a framework to help organize the task and facilitate interpretation of information to be collected. It also calls for methods which are appropriate to the constraints and conditions surrounding the program under evaluation.

The Framework

The model described by Robert Stake (1967) was selected as the organizing framework for this study for the following reasons:

1. The Stake model is comprehensive. It views curriculum evaluation as including (a) comparison of intended objectives to actual achievement of the observed system; (b) comparison of individual elements within the system (both the intended and observed systems) so as to inquire into the relationships and

"contingencies" between them; and (c) subjective judgments and valuations regarding the objectives of the system, the criteria of acceptable achievement and the degree to which those criteria are met.

This view opens the whole system for evaluation, not just part of it, and uses the evaluator more completely, allowing him to be more than a disinterested measurement specialist.

2. The Stake model is functional. It is a model which describes not only the nature but also the process of evaluation. The model is visualized in chart form. That matrix-chart can be used as an instrument to guide the evaluator in collecting and processing information.

3. The Stake model is easily communicable in terms of helping others know how to go about the task of evaluation. The communicability of this model is enhanced in that it is both a conceptual and functional model visualized in a single matrix-chart.

Having selected the Stake model for this study, subsequent steps were taken to apply the concepts and processes described in the model.

Methodology

The Stake model calls for several different kinds of information which in turn require different kinds of information collection methods. For example, information about rationale and intents of the existing system can be collected with non-empirical methods while descriptions of patients and measurement of program outcomes call for empirical methods. A variety of methods for information collection were employed. Some were soft and impressionistic while others were hard and empirical.

The methods were selected to fit not only the needed kinds of information but also the conditions and constraints surrounding the program. For example, reflecting the fact that the program being evaluated had a prior history of two decades, methods were selected to tap existing available information. Empirically, there was a comparative analysis of existing hospital records. Non-empirically, there were unstructured interviews with program personnel, utilizing their knowledge and insights. Reflecting the limited finances available, empirical data about patients were collected among a small sample (n=71) while other information was collected from key informants.

Some of the methodology was carefully designed during early phases of the study. Other methods were allowed to emerge as the field work progressed. For example, reflecting the cross-cultural nature of the study, the researcher went into the field intending to be sensitive to cultural matters and to utilize every opportunity to enhance that sensitivity. It was not possible to predict what opportunities would arise, however. So there is a sense in which the methodology was allowed to remain fluid throughout the study in order to capitalize on any opportunity that might arise.

The Intended System

The leprosy referral system as it is intended to operate was described from information collected through informal conversations and correspondence with several information sources.

E. J. Cummins, M.D., the Medical Secretary for the Sudan Interior Mission was interviewed on several occasions. Cummins is a specialist in leprosy and is responsible to direct the Leprosy Service of the Sudan Interior Mission in

Nigeria. He provided the foundational description of the Sudan Interior Mission Leprosy Service in response to very non-directive questioning. When more specific information was needed specific questions were asked. However, non-directive questions yielded high levels of information.

A search was made for mission documents describing the Leprosy Service of the Sudan Interior Mission in Nigeria. Some were found in the form of teaching materials and outlines in the Sudan Interior Mission Medical Auxiliaries Training School. An organizational chart showing lines of responsibility between personnel in the Mission's Leprosy Service was found. A periodical designed to inform the Mission's supporting constituency about its work carried an article describing the Leprosy Service (Africa Now, May/June 1974).

The above information provided a helpful information base for the description of the intended system. Elements of the system were tentatively described. Then a visit to the area was made to verify those descriptions and to collect information from personnel working in the Leprosy Service that would amplify the information in hand. Lengthy conversations were held with the itinerant nurse and matron of the leprosy hospital at Bayara (both missionaries), with the manager and chief attendant at the leprosy hospital (both Nigerians), with a member of the general population living in and around Bayara (a Nigerian school teacher who served as interpreter), with all six of the village clinic attendants who came to Bayara specifically for this occasion and with arbitrarily chosen patients at the leprosy hospital and two village clinics.

The objective of these non-structured interviews was to construct a verbal picture of what the leprosy system is intended to be. As the description of the intended system emerged it was put to the director of the Leprosy Service for confirmation. Some parts he accepted as representing what the Leprosy Service actually intended, other parts he did not accept. The final description of the intended system included only those elements and descriptions which Cummins accepted as actually representing the intentions of the Sudan Interior Mission Leprosy Service administration.

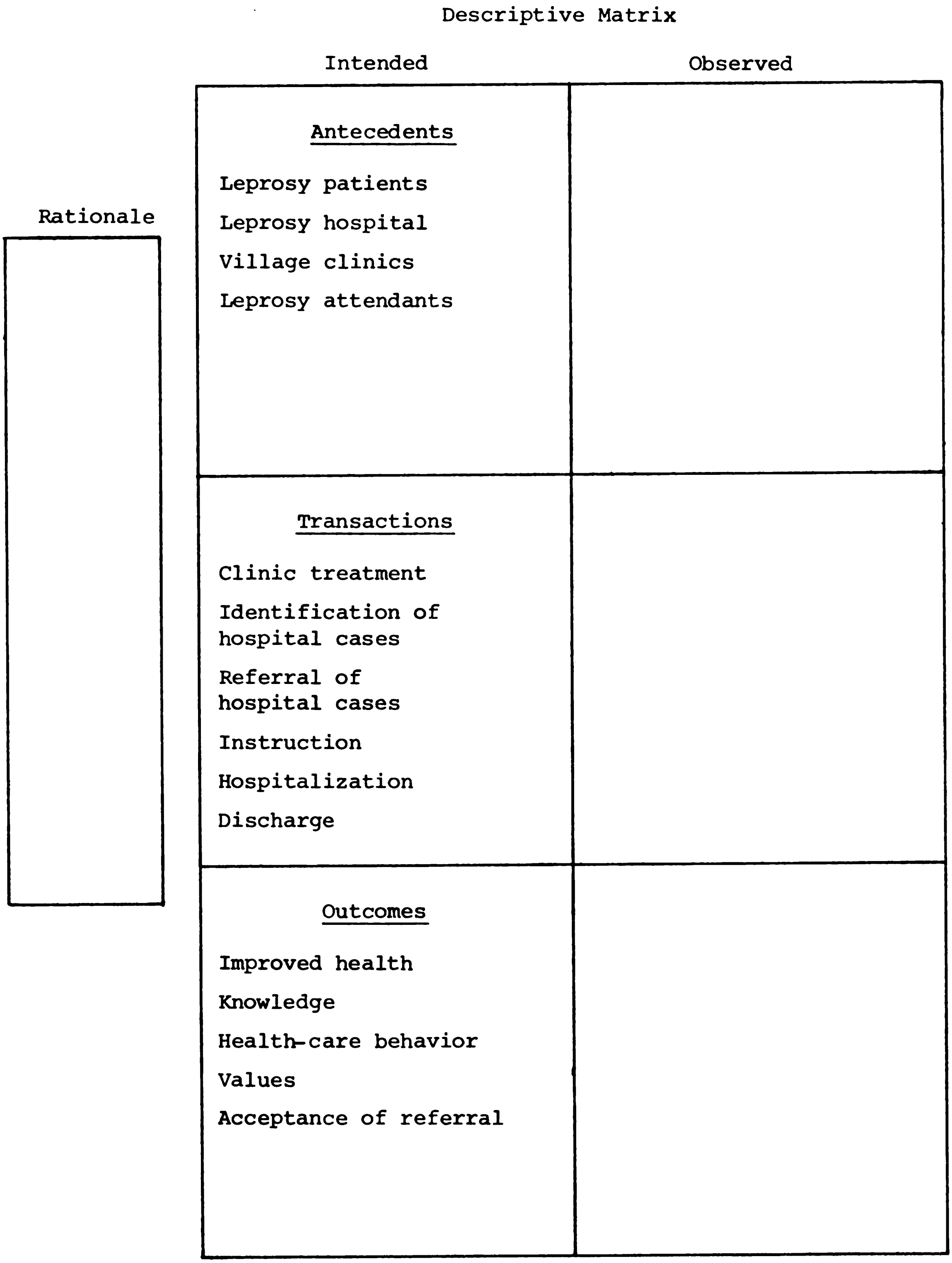
The description of the intended system included the elements listed in Figure 6.

Logical Contingencies and Hypotheses

The Stake model of curriculum evaluation calls for the assessment of "logical contingencies" between elements of the intended system. Examination of the intended leprosy referral system led to the identification of elements thought to be crucial to the acceptance of referral among leprosy patients. The elements were treated as variables and listed, and tentative operations were described for each one. Relationships were then predicted between each independent variable and the dependent variables relevant specifically to acceptance of referral.

The list was long and unwieldy. So a process of refinement began in which some variables were eliminated and others were grouped into more manageable units. This was accomplished by reviewing the intended system in the light of theories of communication relevant to the diffusion of new ideas.

The result of this process was a list of seven hypotheses, each of which includes a statement of predicted relationship between two variables reflecting the theoretical base and statement of expected findings. The following paragraphs list the dependent variables and their tentative operations, the hypotheses and the operations defined for each variable.



Descriptive Matrix

Rationale

Intended	Observed
Antecedents Leprosy patients Leprosy hospital Village clinics Leprosy attendants	
Transactions Clinic treatment Identification of hospital cases Referral of hospital cases Instruction Hospitalization Discharge	
Outcomes Improved health Knowledge Health-care behavior Values Acceptance of referral	

Fig. 6. Outline of elements in the leprosy referral system in North East State, Nigeria.

Dependent variables. The principal dependent variable was "acceptance" of referral, defined as a patient's actually going to the leprosy hospital for admittance after he has been referred there. This definition was relevant only to patients who had been referred to the hospital. For patients who had not been referred to the hospital "acceptance" was defined as the patient's statement that he would be willing to accept referral and go to the hospital if he were referred there. This secondary form of acceptance will subsequently be referred to as "willingness" and is relevant to patients who have not been referred to the hospital.

Independent variables by hypotheses. Knowledge exists that can help people enjoy new benefits. But often the people who need to have that information have not received it yet. Consequently, there is much knowledge that is not being used to the full. Havelock (1969) speaks to this problem and identifies what he sees as the solution. He speaks of the need for "linkers" in the system between research knowledge and consumer practice. He labels those linkers as "change agents". The implication is that where change agents exist and where they function as linkers, consumers can enjoy the benefits of knowledge they would otherwise not have enjoyed. It is not enough to have nominal change agents; there must be functioning change agents who are actively conveying knowledge to the intended consumers.

Rogers (1969) speaks to the same point. He observes that change occurs too slowly in communities where people are left to discover their own needs, solutions and applications. Through the efforts of change agents it is possible to accelerate the rate of adoption of innovations to the betterment of the client system. In order for this to occur, however, a change agent must function and the more change activities he engages in the more success he will enjoy. This has been formalized into a generalization: "Change agent success is positively related to the extent of change agent effort (Rogers, 1971, p. 233). "

The leprosy attendant is in the role of change agent in the leprosy referral system. There is a body of knowledge that can be of help to people who have leprosy. If they are to benefit from this knowledge the leprosy attendant must function in his role as change agent and actively refer needy patients to the hospital.

Hypothesis number one states: (a) Leprosy clinic attendant referral activity is positively related to leprosy acceptance. (b) Leprosy attendants have low levels of referral activity. The independent variable, referral activity, was defined as the number of patients the leprosy attendant actually refers to the hospital by telling them in a face-to-face conversation that they should go to the hospital.

Closely related to change agent effort is technical competence. In their study of modernization in Colombia, Rogers and Svenning (1969) alluded to instances where change agents were technically incompetent. This resulted in relative failure of the whole change system. Technical competence or expertise is important in two dimensions: the change agent's ability to perform his job, and his credibility among the client system.

Hypothesis number two states: (a) Leprosy clinic attendant expertise is positively related to leprosy referral acceptance. (b) Leprosy attendants have low levels of expertise. The independent variable, leprosy attendant expertise, was defined as (a) the degree to which leprosy attendants are able to accurately grade patients' disability; (b) the degree to which the leprosy attendant accurately decides whether a patient needs to be hospitalized; (c) the amount of knowledge about leprosy evidenced by the leprosy attendant; and (d) a subjective evaluation of the leprosy attendants by the itinerant nurse.

Change occurs in response to felt needs. There must be at least some minimal arousal of need in order for change to occur. As a person decides whether to adopt a new behavior that behavior is evaluated in light of his felt need. Will the new behavior alleviate the need? When a choice must be made between two conflicting or incompatible behaviors, the behavior which promises to satisfy the more dominant need will tend to be adopted.

Physical pain and discomfort are needs which motivate people to seek out solutions. Whereas low levels of pain and discomfort will be tolerated in order to allow a person to pursue the satisfaction of more dominant needs, when pain and discomfort reach a certain threshold they take over as the dominant need and motivate a person to seek for means to alleviate the pain and discomfort. Leprosy does not cause a great deal of physical pain or discomfort for most patients. In fact, one major symptom of leprosy is loss of feeling (and pain) in extremities. Because leprosy does not cause high levels of pain or physical discomfort, leprosy patients may not be highly motivated to seek treatment for their disease especially if that treatment will divert them from satisfying other, more dominant needs.

Hypothesis number three states: (a) The felt need for treatment among leprosy patients is positively related to leprosy acceptance. (b) Leprosy patients have a relatively low felt need for leprosy treatment. The independent variable "felt need for treatment" was defined as the patient's relative ranking of need for treatment in a list of other needs including (a) the need to provide for his family (i.e. to feed one's family); (b) the need for gainful work; (c) the need to live with family and friends; (d) the need to have many friends; (e) the need to be free from pain; (f) the need to be "happy now".

The degree to which a modified behavior will result in benefit for a person is a factor in the acceptance of new ideas. Rogers (1971) refers to this as the "relative advantage" of an innovation and generalizes: "The relative advantage of a new idea, as perceived by members of a social system, is positively related to its rate of adoption (p. 142)."

Fatalism is the belief that a person has no control over his circumstances. A person who has high fatalism perceives low relative advantage for new ideas that promise to improve his life--he just does not believe that changing behavior will do any good. The fourth hypothesis states: (a) Fatalism is negatively related to leprosy referral acceptance. (b) Leprosy patients have high fatalism. The independent variable, fatalism, was defined as the belief that one cannot control his circumstances and future.

As a person evaluates new behaviors he tends to ask, will they fit my existing system of needs and values (Rogers, 1971)? The question is one of compatibility between the new behavior and the felt needs and values of the potential adopter. Individuals tend to make decisions which are consistent with their experiences and their personal priorities. The fifth hypothesis states: (a) *The perceived compatibility of the leprosy hospital with the patients' felt needs is positively related to leprosy referral acceptance*. (b) *Leprosy patients perceive the leprosy hospital to be relatively incompatible with their felt needs*. The independent variable, compatibility, was defined as the degree to which the patient feels that the leprosy hospital will contribute to the satisfaction of his felt needs.

Another consideration relevant to innovation is the difficulty or complexity of the new behavior. The more difficult it is to adopt the less likely it is to be adopted. The sixth hypothesis states: (a) *The ease of accepting hospitalization is positively related to leprosy referral acceptance*. (b) *Leprosy patients perceive accepting hospitalization as relatively difficult (not easy)*. The independent variable, ease of accepting, was defined as a patient's statement about whether it would be easy or difficult for him to go to the hospital.

Knowledge is an essential element in the innovation-decision process. Fuglesang (1973) says simply that there must be awareness of the issues before new behaviors can be adopted. Rogers (1971) labels the first function of the innovation-decision process as knowledge in which the individual is exposed to the new idea or behavior and gains some understanding about it. Havelock's (1969) whole view of the process of innovation is one of the dissemination and utilization of knowledge. The seventh hypothesis states: (a) *Leprosy patients' knowledge of leprosy and the leprosy hospital is positively related to leprosy referral acceptance*. (b) *Leprosy patients have low knowledge about leprosy and* the leprosy hospital. The independent variable, knowledge, was defined as the degree to which leprosy patients could correctly answer a set of questions about leprosy and the leprosy hospital.

The Observed System

Having described the intended leprosy referral system and examined it in terms of logical contingencies, the Stake model of curriculum evaluation calls for the description of the observed or actual system. This description is for the purpose of facilitating evaluation in terms of congruence and empirical contingencies. Congruence asks whether the actual observed system is the same as what is intended. Empirical contingencies asks whether there is evidence to support the functional relationships between elements of the actual system.

The actual leprosy referral system was observed and described. The crucial elements and variables of the intended system were listed and instrumentation developed to measure each one. Data were collected from several different sources. The approach was to collect information unobtrusively where possible. Following is a description of the sources of information and the methods employed.

Hospital records. From these records a description of the patients admitted to the hospital for a given period of time was constructed. Information included basic demographics, medical history including leprosy onset date and disability at the time of admission, and the patient's hospital experience including the month he was admitted, length of stay, whether this was his first or a subsequent admission and the reason for his admission.

Identical analyses of hospital records were conducted for admissions during the five-month period encompassed by this study (November 1973 through March 1974) and for admissions during the same five-month period the year prior to the study. Comparisons of data from the two periods provided considerable insight into what happens, in terms of actual admissions at the hospital, when leprosy attendants are stimulated to engage in more referral activity.

Patients were admitted to the hospital from government clinics as well as Sudan Interior Mission clinics. This provided a type of control data from clinics other than those included in the study against which to compare some of the effects generated among clinics which were included in the study.

Clinic records. Some basic information about leprosy patients in village clinics was obtained by examining the existing clinic records for each village clinic. This source of information provided an actual count of patients registered and an estimation of patient population parameters from a random sample of patient cards. The patients' age, sex, village and leprosy onset date were collected from clinic records.

Referral forms. Leprosy attendants were asked to fill out a "referral form" every time they told a patient that he should go to the hospital. This made it possible to classify patients according to whether they had been referred or not during the second five-month period. The leprosy attendant also noted on the forms whether the patient went to the hospital. This provided one measure of referral acceptance.

Asking leprosy attendants to keep records of their referrals was intended to stimulate more referral activity, though the attendants were not told this. It was assumed that leprosy attendants would refer more patients during the months when they were recording their referrals than during previous months when they were not recording their referrals. This would lead us to expect more patients to be admitted to the hospital during the months when leprosy attendants were recording their referrals than during the months when they were not recording their referrals.

Supervisor's evaluation. The first line supervisor for leprosy attendants was Evelyn Rorison, R.N. She was specially trained in leprosy care and served as chief assistant to E. J. Cummins, the doctor in charge of the Leprosy Service (Africa Now, 1974).

Rorison was asked to evaluate subjectively each leprosy attendant. Several parameters of evaluation were suggested: e.g. skills and performance of diagnosis, disease classification, disability grading, prescribing dosage, identification of hospital cases and referral of patients. The nurse was given freedom to add other dimensions she considered important. Her instructions were to assign a grade between one (low) and nine (high) for each attendant for each item. The nurse's evaluation covered the following dimensions: accuracy of the UNICEF book, accuracy of diagnosis, accuracy of chart information (drawing of lesions), accuracy of classification, accuracy of referrals, order of the patient cards, orderliness of the patients, up-to-date filing of old charts, up-to-date recording, completeness of information on charts, neatness of UNICEF book, neatness of his person, neatness of the clinic premises, increasing of dosage as prescribed, general ability, general performance, general rapport with patients.

Disability and identification comparisons. Leprosy attendants were asked to examine a random sample of patients in their clinics and (a) grade each one according to his disability following the scheme he was taught during his training, and (b) decide for each patient whether he should be referred to the hospital. The leprosy attendant did this, thinking he was merely providing information about the patients. The traveling nurse was asked to examine the same patients one week later and do the same things: (a) grade each one and (b) decide for each one whether he should be referred. It was assumed that the nurse's skills were sufficient that her evaluations of the patients along these two dimensions could be used as a standard against which to compare the leprosy attendants' evaluations. Neither the nurse nor the leprosy attendant knew how the other had evaluated the patients. This comparison provided one measure of leprosy attendant ability.

Leprosy test. Part of expertise is competent knowledge. E. J. Cummins, the director of the Leprosy Service for the Sudan Interior Mission, whose responsibilities include the training of leprosy attendants, developed a short written test for the leprosy attendants designed to measure what he felt they needed to know about leprosy in order to function adequately. The test was developed with no input from the research director other than the following guidelines: (a) the test should be a written test; (b) the intended correct answers must be written along with the questions and presented to the research director before the tests are administered to the leprosy attendants; (c) the scoring scheme must be outlined and presented to the research director before the tests are administered to the leprosy attendants; (d) the mastery level or minimum acceptable score must be decided and communicated to the research director before the tests are administered to the leprosy attendants; and (e) the test would be graded according to the intended answers and scoring scheme by Cummins himself or the person he delegated the task to, but all tests were to be graded by the same person. The leprosy test was intended to measure the degree to which leprosy patients were able to answer questions which Cummins identified as knowledge they needed in order to function well.

Interviewing teams visited the village leprosy clinics to collect data. At that time the leprosy test was given to the leprosy attendant with instructions to answer the questions in writing and bring the test and the written answers to the team leader. Attendants were not supervised while writing the test. Neither was there a time limit imposed. Neither were there any restrictions about looking for answers in other sources. The leprosy attendant was given every freedom to do whatever he felt necessary to answer the questions.

The leprosy attendant gave his answer sheet to the interviewer team leader without writing his name on it. The test answer sheets were coded by numbers so the researcher could identify which leprosy attendant earned what score. But the leprosy service administrator who graded the tests had no way of identifying who wrote which set of answers.

Scores on the leprosy test were accepted as one measure of leprosy attendant expertise.

Patient interviews. Having collected as much data as possible from other sources, other information was collected directly from the patients themselves. The patient population for this study was defined as all active leprosy patients registered at the six outlying Sudan Interior Mission operated leprosy clinics served by the leprosy hospital at Bayara. The Bayara Clinic was omitted from the study because of its very close connection with the hospital.

An instrument was developed to measure the following patient variables: education, literacy, marital status, occupation, financial responsibility, social integration, pain and pain consequences experienced because of leprosy, relative value ascribed to seven felt needs, fatalism, compatibility of the leprosy hospital to seven felt needs, communication behavior for news and medical information, referral, health-care instruction, knowledge, difficulty of going to the hospital if referred, willingness to accept and actual acceptance (for referred patients).

A list of items designed to measure the above variables was written and pretested in Liberia among leprosy patients at a leprosy hospital in Ganta. The list was revised and carried to Nigeria in October 1973. During that visit to the research site, the early version of the interview schedule was pretested among arbitrarily chosen leprosy patients at the leprosy hospital in Bayara and the outpatient clinic in Miya. It was at that time that the referral record forms were distributed to the village clinic leprosy attendants with instructions for keeping the records.

The interview schedule was revised again and carried back into the field for another pretest in March 1974. At that time, more patients were arbitrarily selected and interviewed at the hospital at Bayara and at a government leprosy clinic at the Tilden Fulani camp near Jos. The Tilden Fulani camp was used because its patients were similar to those in the research population while not actually being part of that population. Pretest interviews were conducted in English through an interpreter. After this pretest, the instrument was finalized and prepared for translation into Hausa.

Translation was done by a bilingual Nigerian whose first language was Hausa. The first translation was taken to a second translator for back-translation into English. In the places where the back-translation did not fit the original English item, the translation was revised. The final translation was reviewed by a third translator who was satisfied that the Hausa version was faithful to the original English version.

The translated interview schedule was then duplicated at the Sudan Interior Mission medical office in Jos and prepared for the field work. Other preparations were also made at that time including the selection of interviewers, scheduling of interviewer training, arrangements for transportation and accommodations during the field work, and engagement of a research assistant.

A missionary was engaged to serve as research assistant primarily to assist in the supervision of interviewing. Six Nigerian school teachers from the Bauchi-Bayara area were engaged as interviewers. Each interviewer was bilingual and had served as interviewer for the Nigerian national census just two months prior to this study. The field work was scheduled for mid-April 1974, to coincide with a school vacation period which would allow the interviewers to work full time for the interviewing period.

Field work began with three days of interviewer training at the leprosy hospital in Bayara. The interviewers were briefed as to the nature of the study. The interview schedule was explained to them in detail allowing time to deal with any questions. The core of the training centered around practice interviews, first among themselves in dyads with one member playing the role of a leprosy patient and the other the interviewer. Each interviewer experienced both roles. Then, a patient from the hospital was interviewed by one of the interviewers in the presence of the whole team. Each interviewer was instructed to record the patient's answers. Answers were then compared to identify items on which the responses were not recorded properly. Finally, each interviewer administered the questionnaire to an individual patient from the hospital. This experience was discussed in the group.

The interviewers were divided into two teams of three interviewers and one supervisor each. Each team was then assigned to a vehicle and to three of the six clinics. The assigned interviewing schedule was arranged so as to allow one day between interviewing days for travel and coding of the previous day's interview schedules. The coded interview schedules were checked daily by the supervisor to identify and correct for any apparent recording or coding problems.

The supervisor functioned as team leader and was responsible to handle the administrative arrangements at the clinics. It was the supervisor who drew the sample of patients to be interviewed. This was done upon arrival at the clinic before the patients came. The supervisor was given access to the patient clinic cards (one card for each patient). Each card was numbered in sequence.

Then, using a table of random numbers a random sample of 20 patients was drawn from all the patients registered at the clinic. The objective was to interview at least twelve of the twenty patients selected at each clinic. If any patient drawn in the first twelve could not be interviewed for any reason he was to be replaced by the thirteenth patient drawn. If a second patient in the first twelve selected could not be interviewed he was replaced by the fourteenth patient drawn. This process was followed to obtain a sample of twelve patients at each clinic.

In addition to the random sample of patients all the patients who had been referred by the leprosy attendant during the preceding five months (November 1973 through March 1974) and who were not drawn in the random sample were identified from the attendant's referral record forms and interviewed. By this procedure both a random sample of all registered patients and the total population of referred patients (during that five-month period) was interviewed at each clinic.

Patients to be interviewed were identified by number on a form given to the leprosy attendant. He then identified and examined each patient and referred each to one of the interviewers. One interviewer interviewed one patient at a time while others waited far enough away that they could not hear the exchange between any interviewer and interviewee. Interviews were conducted orally outside under trees with the interviewer and interviewee sitting casually on a chair, log or the ground. Each interview took about 45 minutes. That meant each clinic required up to ten to fifteen hours of interviewing, or between three and five hours of interviewing per interviewer.

Leprosy attendant interview. After the patients were interviewed and the tests administered to the leprosy attendant the team leader informally interviewed the leprosy attendant to collect other information and impressions that might help in the interpretation of other data. He used a set of open-ended questions and probes to guide the interview.

Standards

The American Leprosy Mission in New York was approached for information about modern leprosy health-care systems. The American Leprosy Mission assists different agencies in many parts of the world with the task of working toward the control of leprosy.

Oliver Hasselblad, M.D., the director of the American Leprosy Mission, very generously provided a number of papers and research reports representing not only the views and findings of the American Leprosy Mission but also those of the World Health Organization and schools of medicine which emphasize the personal and societal dimensions of leprosy and leprosy treatment.

Data Processing and Analysis

Data from the hospital records and patients' questionnaires were coded and punched by hand onto *Indecks* cards for manual sorting. The hospital records data required two decks, one for period one, November 1972 through March 1973, and another for period two, November 1973 through March 1974. The patients' questionnaire information required five decks.

Analysis of the data was kept simple. For most quantitative data the percentile was the major statistic used. For quantitative data including knowledge scores, fatalism scores and compatibility scores, means were calculated. For selected variables the cards were sorted into sample sub-sets and the differences measured. Statistical tests were applied when significance was not obvious. The statistics were calculated by hand.

Data from clinic records were recorded on a chart for comparison purposes since there were only six clinics used in the study. Leprosy attendant expertise and activity scores were recorded on the clinic chart.

A mass of verbal information from informal observations and interviews was recorded on paper and filed for synthesizing later.

The Intended System

Leprosy is prevalent in Africa. Historically, leprosy control efforts have led to the establishment of leprosaria which were a combination of a clinic, hospital and residential village. People who were suspected of having leprosy were sent to a leprosarium to live in isolation till they were dismissed symptom free. This approach to leprosy control rose from a faulty idea about leprosy--that it is extremely contagious--and an unfortunate stigma which resulted in people with leprosy being socially ostracized.

Rationale

The leprosarium approach to leprosy control proved inadequate. The capacity of leprosaria was inadequate to accommodate all the patients. Furthermore, patients resisted going to a leprosarium because it would often take them far from their home and thus separate them from family and friends. The result was that people with leprosy would wait till their disease was far advanced before accepting treatment. A different approach was needed to accommodate more patients and reduce the social consequences of leprosy treatment.

The newer approach to leprosy care is to establish village level leprosy clinics manned by National paramedics who are trained to diagnose leprosy, dispense the leprosy drug in appropriate dosages and refer only critical cases to a leprosy referral hospital. The leprosy hospital now serves fewer patients, specifically those who experience some complication which cannot be handled at the village level. This utilizes the hospital facilities more efficiently for the critically ill while the larger number of less critically ill patients are being cared for closer to home at the village level leprosy clinics.

Antecedents

Leprosy patients. It is estimated that there are nearly 34,000 registered leprosy patients in the area served by the leprosy hospital at Bayara. Approximately 800 of them are registered in the Sudan Interior Mission operated village clinics. A leprosy patient is a person who has been positively diagnosed as having leprosy and who has been registered in one of the village clinics. Since leprosy more often attacks males than females, a preponderance of male patients is expected. It is estimated that between 10% and 40% of the village clinic patients are in need of hospital care due to complications of the disease.

Leprosy patients are members of indigenous ethnic groups in the area. Hausa is their common language, but for many, Hausa is a second, trade language. Animism is the indigenous religion. However, both Islam and Christianity have many adherents among the general population and the population of leprosy patients.

Nearly all the patients are members of farming families and have work responsibilities in the family context. Work responsibilities vary throughout the year. The farming season begins in April when the first rains fall and continues through October, November and December when crops are harvested. There are considerably more work demands on farming families during the farming season than between farming seasons. Particularly heavy work demands are focused on the actual planting and harvest times.

Leprosy patients are relatively well accepted in their social units. They are quite free to live with family and friends in their local villages. This is in contrast to other places, such as India, where leprosy patients are socially and physically segregated from the "clean" society. The patients in Nigeria who experience social stigma tend to be those whose leprosy has led to observable physical mutilation.

It is assumed that people who have contracted leprosy have a high motivation to have their affliction controlled or cured. Presumably, this motivation is sufficiently greater than other felt needs that the patient will take the initiative to present himself at the clinic for treatment. Also, it is assumed that this motivation is sufficiently great that a patient will be willing to accept the instructions of the clinic staff and adopt recommended health-care behaviors including referral to the leprosy hospital if given.

Leprosy patients have other values which may conflict with the felt need for leprosy control. Fatalism, the belief that man has relatively little control over his own circumstances or future, is assumed to be prevalent among leprosy patients. Also, leprosy patients are thought to place a high value on immediate gratification as contrasted to delayed gratification.

Leprosy patients are thought to have a high value on social integration both in terms of domicile (living with family and friends) and number of friends. Leprosy patients have a high value on providing for their families. Leprosy patients have a high value on work--farming, to be specific.

The existing health system for leprosy patients is designed on the assumption that the motivating felt need to have leprosy controlled is dominant over other values and felt needs.

The leprosy hospital. The leprosy hospital is located in Bayara, near Bauchi in North East State, Nigeria. The Bayara leprosy hospital is designed to accommodate up to 60 patients in two wards. The physical facilities of the hospital include the two wards, each with 30 beds, a dressing area, a physical therapy room, a laboratory and offices. There is an outpatient clinic operated on the same site but in different quarters.

The hospital is intended to serve as a leprosy referral center for village clinics in an area surrounding Bayara and extending for about 250 miles in every direction. The hospital is staffed by Sudan Interior Mission-trained Nigerians (Africa Now, 1974). There is one resident, non-Nigerian on the staff of the hospital, an American missionary serving as "matron." There is no resident doctor at the leprosy hospital. The resident staff is capable of providing the necessary day-to-day care for patients. A traveling leprosy rehabilitation team including one specially trained nurse and the doctor visits the hospital approximately every three months to give special attention to selected patients, primarily those patients needing surgical operations.

The basic services provided by the hospital include surgery, primarily reconstructive, rehabilitation assistance such as physical therapy and specially designed shoes for deformed feet, drug stabilization for patients who experience reaction or resistance to the recommended dosage of Dapsone (DDS); and ulcer treatment.

Village clinics. It is estimated that the North East State government is responsible for 150 to 200 clinics and over 33,000 patients in the area served by the leprosy hospital at Bayara. The Sudan Interior Mission operates six clinics serving approximately 800 total patients within the same area. Each clinic is held in conjunction with the village dispensary and uses the same facilities. Each clinic maintains a stock of supplies and up to a three-month supply of medicines.

Leprosy attendants. One leprosy attendant is responsible to conduct the leprosy clinic in each village. The leprosy attendant is responsible to the dispensary attendant, a more highly trained medical auxiliary who is responsible for the village dispensary.

The leprosy attendant is intended to receive three months of training at the Sudan Interior Mission leprosy hospital in Yedekunia, Kano State, Nigeria. That training is intended to provide the leprosy attendants with knowledge and skill in leprosy care. They are expected to know about the nature of leprosy, signs and symptoms of leprosy, the grades of disability of leprosy patients, how to diagnose leprosy, the appropriate treatment and dosage to be prescribed for leprosy patients, and which patients and which complications should be referred to the leprosy hospital for additional care.

A leprosy knowledge test was developed for leprosy attendants. Leprosy attendants are expected to be able to answer 67% of the items correctly. The leprosy attendants are intended to be able to diagnose and classify leprosy, grade patients' disability, deliver the necessary treatments and dressings, dispense drugs in appropriate dosages, identify hospital cases, refer hospital cases to the leprosy hospital and provide instruction for all patients about leprosy and personal health-care practices.

Transactions

The transactions between leprosy patients and the health-care facilities are intended to include the following processes:

Clinic treatment. When a leprosy patient presents himself to the village clinic his experience begins with an examination by the leprosy attendant who makes a diagnosis. When leprosy is positively diagnosed and classified the patient is registered at the clinic and the leprosy attendant prescribes the appropriate dosage of Dapsone (DDS), the drug commonly used for leprosy. The leprosy attendant derives that dosage from a printed chart based on the type and severity of the disease and the age of the patient.

The initial treatment is intended to be the beginning of regular weekly treatment which includes the dispensing of Dapsone to all registered patients plus other services as appropriate (e.g. dressings, analgesics and others.) If a patient does not show up for weekly treatment, especially if his absence from the weekly clinic is extended or frequent, the leprosy attendant is expected to initiate a follow-up visit to the absentee's home to encourage him to resume coming to the clinic regularly.

Identification and referral of hospital cases. During the weekly clinic, the leprosy attendant is to examine each patient, identify those patients with complications and discriminate between the complications he can care for at the village clinic and the ones needing hospitalization. Complications that should be referred to the leprosy hospital include: "recurrent or severe reaction, ulcers, correctable deformities, acute neuritis and iritis, severe extensive disease, DDS intolerance or resistance, and those needing special care such as physical therapy or surgery (Leprosy, 1973)."

Patients with complications requiring hospitalization are told that they should go to the leprosy hospital. It is intended that if a patient resists accepting referral the leprosy attendant will talk to him on subsequent occasions, encouraging him to go to the hospital.

Instruction. A very important part of leprosy health care is instruction for the patient about leprosy, the dangers he faces due to the loss of feeling caused by the disease, and health-care behaviors he must practice to avoid potential complication. The patient should be instructed to (a) avoid burns by keeping his hands away from fire and protecting his hands with a cloth when stirring food or removing things from the fire; (b) never sleep close to an open unprotected fire; (c) always wear shoes outside, being sure they are smooth and in good repair before putting them on; (d) inspect his extremities daily for cuts, bruises, swollen areas, infections or ulcers; (e) keep his tools in good working order with smooth handles; and (f) always take immediate care of every cut, bruise or other injury.

The leprosy attendant is to initiate this kind of teaching for the patient, his family, other medical workers and the community through lectures in schools, churches and elsewhere, and especially through visits to local community leaders (Leprosy, 1973).

Hospitalization. Some patients are referred to the leprosy hospital for specialized care. A patient who accepts the referral and actually goes to the hospital will receive a transfer slip from the leprosy attendant which will entitle him to be admitted to the hospital and receive free care. A patient who occupies a bed in the ward will receive his meals free also.

When the patient is admitted to the hospital he is examined by the hospital nurse and begun on the treatment he needs. There are four basic categories of treatment: surgery, ulcer, medication, rehabilitation. The patient will also receive instruction about how to better care for himself.

It is intended that patients come to the hospital, receive their specialized treatment and be transferred back to the village clinic for additional treatment as soon as possible. It is estimated that most patients admitted to the hospital can be transferred out after two or three weeks and not more than two or three months. Patients are not admitted to the hospital with the intention of their staying indefinitely.

Discharging of patients. Patients may be discharged from the leprosy clinic when specific criteria have been achieved. The responsibility for discharging patients lies with the itinerant nurse. During her visits to the village clinics she will discharge those patients who are ready for discharge.

Outcomes

As a result of the preceding transactions, the following outcomes are intended to occur among the leprosy patients.

Improved health. Leprosy patients who comply with the expectations of the medical staff and receive regular treatment should experience less discomfort, diminishing symptoms and eventually a state in which the disease is permanently controlled or even cured.

Knowledge. It is intended that leprosy patients will learn certain facts about leprosy, health-care behavior and the leprosy hospital. Specifically, they should know (a) that it is possible for a person to avoid getting leprosy--that leprosy is not inherited nor predestined; (b) that it is possible for a leprosy patient to avoid getting ulcers; (c) that a patient who goes to the hospital with a transfer slip from his village clinic is admitted to the hospital without charge; (d) that a patient admitted to the hospital is fed by the hospital without cost to the patient; (e) that few patients lose parts of their body when they go to the hospital; (f) that relatively few patients have surgery when they go to the hospital; (g) that a patient does not stay in the hospital till he is completely cured or dies; (h) that a patient who goes to the hospital will return home after a few weeks or, at the most, a few months.

Perceived compatibility. It is intended that leprosy patients perceive the leprosy hospital as compatible with their other felt needs and values.

Acceptance of referral. It is intended that leprosy patients who are referred to the hospital for special care actually accept that referral and go to the hospital. It is intended that those who have not been referred to the hospital will have high levels of willingness to go in the event that they are referred.

Standards

Leprosy is an ancient disease. There are many references to a disease called leprosy in the Bible. There it is often pictured as a consequence or symbol of sin. This seems to be the root of an unfortunate development over the years--that the disease, leprosy, has assumed a bitter social stigma such that a person who has leprosy is implicitly more than just sick--he is "unclean". This stigma is reinforced due to the ugly deformities often experienced by leprosy patients. Public fear of leprosy, leading to stigma, has been called "leprophobia" (Browne, 1965).

The disease we know as leprosy today is thought to be quite different from the disease called leprosy in the Scriptures (Hasselblad, no date). However, even though the disease is different and divine judgment is not part of the present disease, the social stigma still exists and is often more painful than the disease itself. It is the desire of the World Health Organization and modern health-care institutions to destigmatize leprosy so that one who has leprosy can go about his life more normally, socially integrated and, presumably, with more personal satisfaction (Gussow and Tracy, 1970).

Several steps are being taken to accomplish this objective. First, the use of terms is being changed. The term "leper" is being abandoned. A person who has leprosy is a leprosy patient, (Committee on the change of the words "leper" and "leprosy," 1953) just like a person who has tuberculosis is a TB patient and a person with heart disease is a cardiac patient. In some areas, the disease is coming to be called Hansen's disease, or HD, in preference to leprosy.

Perhaps the more important change is the integration of health-care services for leprosy patients into existing, local, health-care facilities (Hasselblad and McGilvray, 1971). No longer are leprosy patients to be dislocated from their homes and made to live in "leper colonies". Enlightened leprosy care centers are disbanding the colonies and encouraging leprosy patients to live in their home villages with their families and friends. No longer are leprosaria residence quarters where a patient comes to live for the rest of his life. Central leprosy health-care facilities are being transformed into referral hospitals specializing in leprosy care and designed to give special, short term care to patients whose complications are more serious than a local dispenser can care for. No longer are leprosy patients to go off to an isolated place to receive their treatment. Instead, leprosy patients will receive their treatment regularly from the same village clinics that treat common ailments and health needs of the general population.

The approach to health care for leprosy patients is being changed from isolation to integration. The mildly contagious and controllable nature of the disease allows this; the personal and social needs of the patients cry for it. The Sudan Interior Mission Leprosy Service in Nigeria is working to apply the integrated approach to leprosy as a standard for the operation of its clinics and hospital in North East State, Nigeria.

The Observed System

Congruencies, according to Stake, serve to compare the elements of the system as they are intended to be to the elements of the actual system as they are observed to be. Following is a description of the observed system based on data collected.

Antecedents

Leprosy patients. The actual number of patients registered at Sudan Interior Mission leprosy clinics at the time data were collected for this study was 680. This figure was calculated from an actual count of patient cards in the active file at each of the Sudan Interior Mission clinics.

A sample of patients was drawn from the six leprosy clinics in villages other than Bayara. The sample included a total of 71 randomly selected patients. Of those randomly selected patients 42% were male. This does not differ significantly from 50%, the proportion of males expected if patients were distributed normally by sex. However, leprosy attacks more males than females. Consequently, the proportion of males in the sample was tested against the null hypothesis that 55% of the patients are males and found to be significantly different from that figure. The relative number of male patients registered at the Sudan Interior Mission leprosy clinics is significantly fewer than what might be expected, i.e. 55% ($p < .05$). There is a smaller proportion of male patients registered at leprosy clinics than are thought to occur in the total population of people who have leprosy.

During the five-month period in which referral records were kept by the leprosy attendants 57 patients were referred to the hospital from the six test clinics. That is 8% of the patient population. Of those 57 referred patients, 33 (58%) actually went to the hospital and were admitted during that period.

Based on the random sample of patients (n=71) it is estimated that 70% of the patients are under 40 years of age; all of them speak Hausa; 85% have no schooling at all and 97% have no formal schooling; 83% cannot read at all while 8% read only Hausa, 6% read only Arabic (reflecting the Islamic influence) and 3% read Hausa and Arabic; 77% are married; 58% supply their own food through farming while 34% are fed by other people and 8% supply their food through other occupations including cattle raising, trading, crafts and begging.

When asked, "How many people do you feed?" 20% responded, "None" and another 20% indicated they fed nine or more people. It is estimated that leprosy patients are responsible to feed, on an average, between four and five other people.

Patients were asked, "With whom are you now living?" Ninety-four percent of the patients interviewed indicated they are living with family and friends. When asked, "Does anybody else in your home (where you live) have leprosy?" 70% responded, "No, none." This indicates that leprosy patients are not living in segregation communities. Rather, they live with family and friends whether or not others in the household have leprosy.

Patients were asked, "How many friends do you have?" Fifty-five percent indicated they have either one or two friends. The mean of the responses was 2.58 indicating that the average number of friends claimed by leprosy patients is between two and three. Patients were then asked, "How many of your friends have leprosy?" Sixty-five percent of the respondents indicated that none of their friends have leprosy. These responses indicate that leprosy patients in North East State, Nigeria, enjoy a high level of social acceptance and integration.

The patients were asked about the pain and inconveniences they experience due to leprosy. When asked, "Does leprosy ever cause you to feel physical pain?" 47% responded negatively and 43% responded, "Yes, but not often." Only 10% of the patients claimed to experience pain often. Pain is not a major consequence of leprosy for most patients. In fact, anesthesia is much more problematic than pain for most patients.

Patients were asked, "Does the physical pain of leprosy ever cause you to stay home when you want to go to your farm or work?" Sixty-eight percent of the patients interviewed said, "No" and 24% said, "Yes, but not often." Only 5% said either, "Yes" or "Yes, often." (Three percent did not answer the question.) Few patients are confined or restricted in their work because of pain.

Patients' felt needs. What felt needs are part of a leprosy patient's value system and what is the strength of the need for leprosy treatment relative to other felt needs? These questions were approached in three different ways.

The first approach asked for a free response to an open-ended question. The assumption was that items which are mentioned relatively frequently likely represent more dominant needs among the research population. The second approach listed several conditions and asked respondents to indicate for each one whether it would make him happy or sad. The assumption was that if relatively many respondents indicate a "happy" response for any given item that item likely represents a felt need among the research population. The third approach listed seven value items and asked the respondents to rank order them in terms of importance. The assumption was that items which were ranked high by relatively many respondents represented more dominant felt needs among the research population. A further assumption was that if any value item were mentioned relatively frequently in the free response and identified as a happy condition by relatively many respondents and ranked relatively high across the respondents, that item would more certainly be a strong felt need among the patients interviewed.

In the first approach, an open-ended question was put to the patients: "What usually makes a person happy?" No answer categories were suggested. The interviewers were instructed to record exactly what the respondent said in answer to the question. Responses were then content analyzed and grouped into categories. Thirty-five percent of the patients said that "wellness" or to be healthy makes a person happy. Seventeen percent said "food" makes a person happy. The rest of the categories included relatively few responses: 8% said peace of mind; 6% said social relationships; 4% gave answers relating to marriage, family and children; 3% said wealth or money; 3% said work; 3% said "happiness comes from God", and 21% did not know or did not answer the question.

In the second approach to the question, other felt needs thought to be important to leprosy patients were identified from earlier informal conversations with selected patients and medical staff. Patients were asked one question for each of these felt needs designed to measure whether a high value or low value was ascribed to the needs individually. Each item described an experience related to the felt need in question and asked the patient to indicate whether that would make a person happy or sad. The underlying assumption supported during pretesting was that experiences which elicit "happy" responses indicate high value while experiences which elicit "sad" responses indicate low value. In order to avoid response sets some items were stated positively so that "happy" responses would indicate positive values and others were stated negatively so that "sad" responses would indicate positive values. Negative and positive items were randomly distributed in the lists.

The need to provide for one's family was measured with the item: "When a man is feeding his whole family himself, would he be happy or sad?" One hundred percent of the respondents answered "happy", the high value response.

The need to work was measured with the item: "When a man is <u>not</u> able to work, would he be happy or sad?" Seventy-seven percent of the respondents answered "sad", the high value response.

The need for freedom from pain was measured with the item: "When a person is <u>not</u> feeling pain, would he be happy or sad?" Eighty-three percent of the respondents answered "happy", the high value response.

The need for leprosy treatment was measured with the item: "When a leprosy patient is receiving treatment for his leprosy, would he be happy or sad?" Seventy-nine percent of the respondents answered "happy", the high value response.

The need for social integration in terms of friends was measured with the item: "When a person does not have many friends, would he be happy or sad?" Eighty-nine percent of the respondents answered "sad", the high value response.

Figure 7 shows graphically the proportions of the patient population who gave high value responses to each of the items measured.

These data indicate that each of the items measured is a high value item in the value systems of leprosy patients in North East State, Nigeria.

In the third approach to the question of felt needs, the relative strengths of these needs were measured by asking respondents to rank order items describing each need. The interviewer read the following question: "Here are seven things that are important in life. Which one is most important to you? Select only one (1)." He then orally read the following list of items: to have many friends; to farm or work; to have no pain; to live with family and friends; to be happy now; to receive treatment for leprosy; to feed your family yourself. He was allowed to repeat the list in order if the respondent requested it. When the respondent selected the one item which was most important to him, the interviewer marked a "7" next to that item and then read the following: "Now there are six items remaining. Which of these is most important to you?" He then read the list again, omitting the item selected by the respondent the first time. He marked a "6" next to the item the respondent selected this time. He repeated the procedure till all the items were ranked. Figure 8 shows graphically the mean rankings calculated across the sample of patients for each item measured.

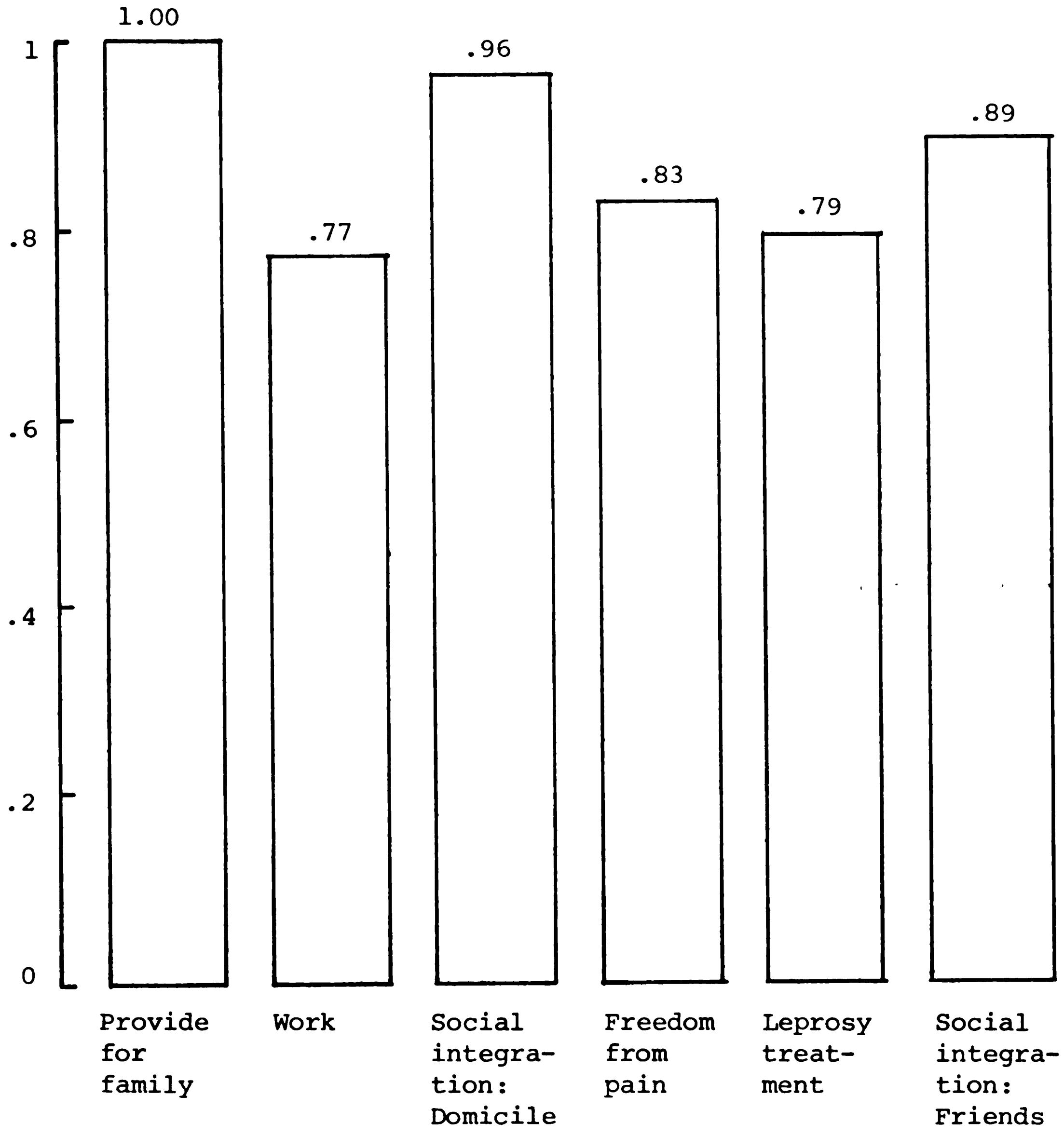


Fig. 7. Percentages of high value responses among leprosy patients in North East State, Nigeria.

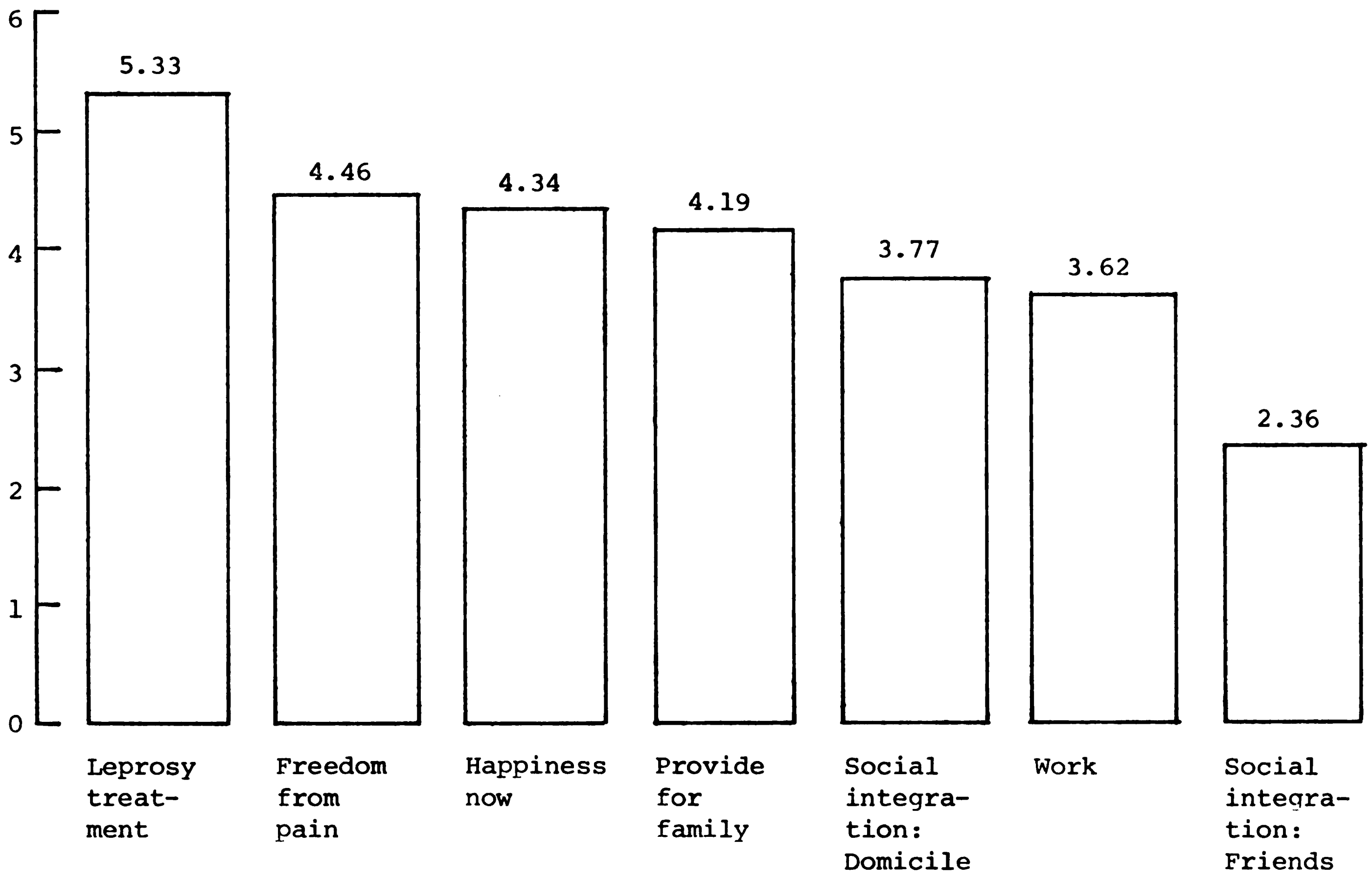


Fig. 8. Mean value rankings among leprosy patients in North East State, Nigeria.

A comparison of data from the three approaches to measuring felt needs revealed an apparent discrepancy. In the first approach, health values appeared dominant. The largest single group of answers to the open-ended question cited "wellness" as important. In the third approach the two highest mean ranks were given to the need for leprosy treatment and freedom from pain. Data from approaches one and three seem compatible. But in the second approach, health matters received among the fewest high value responses.

This discrepancy is probably a function of ambiguity in the specific items in approach number two. One item read, "When a person is <u>not</u> feeling pain, would he be happy or sad?" When it was observed during the data collection that an unexpectedly high number of people were responding "sad" some patients were asked why they responded that way. More than one patient explained that leprosy causes numbness, or anesthesia, in the extremities. Consequently, a person who has leprosy cannot feel pain. To experience anesthesia indicates leprosy; this is not a happy experience.

The other item read, "When a leprosy patient is receiving treatment for his leprosy, would he be happy or sad?" Again, when it was observed that more respondents were saying "sad" than was expected some were asked why they answered that way. The answer was simple to them: A man who is receiving leprosy treatment has leprosy, and nobody wants to have leprosy.

The two items cited above were rejected as invalid. Either answer could indicate either a high or low value on the items being measured. Therefore, since the first and third approaches yielded similar results those data were accepted as indicating that leprosy patients have a strong felt need for leprosy treatment, freedom from pain and general good health.

The remainder of the values items elicited compatible responses between the three approaches. Considering only the remaining items which were measured in both approach two and three the need to provide for one's family drew the highest responses in both measures and the need to live with family and friends received the next highest responses in both measures. The need for many friends and the need for work both received the lowest responses in both measures. These indications of relative strength of needs were further supported by the open-ended question, the first approach. The second largest group of answers about what usually makes a person happy had to do with "food" and/or "money". The relatively higher number of free responses mentioning food and/or money is seen as compatible with and supportive of the high value on providing for one's family elicited from the other two measures.

Felt needs among leprosy patients in North East State, Nigeria, appear to occur in the following order of strength: (a) the need for health, freedom from pain and leprosy treatment; (b) the need to provide for one's family; (c) the need for social integration, especially in terms of living with family and friends; and (d) the need for work. Hypothesis 3b, which stated that leprosy patients have a relatively low felt need for leprosy treatment, was not supported.

Fatalism. An endeavor was made to measure fatalism among leprosy patients. Fatalism was defined as the belief that a person has relatively little or no control over his circumstances and future. A ten-item scale was developed patterned after the instrument used in Colombia by Rogers and Svenning (1969). The Rogers and Svenning scale was modified so as to better fit the culture and vocabulary of leprosy patients in Nigeria, pretested, revised and administered to the sample. Responses to the items were analyzed for reliability and unidimensionality. The split halves correlation was -.01, indicating the scale was not valid or reliable. The ten items were, therefore, rejected as a measure of fatalism. It was not possible to test hypotheses 4a and 4b.

Leprosy hospital. The leprosy hospital at Bayara was observed to have two wards, each with thirty beds. The beds were movable, however, so that a bed could be moved from one ward to the other if necessary. However, to add a bed to either ward would begin to crowd the facilities.

The leprosy hospital is indeed functioning as a referral center. The hospital admissions records for period one (November 1971 through March 1972) indicated that 42% of the first time admissions were high-disability (grade 3) patients; the hospital admissions records for period two (November 1972 through March 1973) indicated that 46% of the first time admissions were high-disability (grade 3) patients. These data are in contrast to the relatively low occurrence (.05) of high-disability patients among the random sample. The hospital serves the needs of more critically ill patients.

The resident staff of the hospital was observed to be entirely Nigerian except for the matron who is an American missionary nurse. Specialized services, especially surgical services, are offered at the hospital by an itinerant leprosy rehabilitation team.

Referral services and facilities were observed to be available at the hospital in the four areas intended: surgery facilities included an operating theatre and a supply of instruments and equipment; rehabilitation facilities included an area where physical therapy is administered, wax bath facilities, prescription shoe manufacturing and staff to perform these functions; medication services included stores of drugs and the skilled staff to observe patients till drug, dosage and patient are stabilized; ulcer treatment services included facilities to immobilize patients and staff to dress ulcers regularly, apply medications and perform surgical operations as needed.

The leprosy hospital is available to serve patients from all the leprosy clinics in the area including both government and mission clinics. All the patients who came to the hospital from either mission or government clinics were admitted. During period one 21% of the patients admitted to the hospital came from government clinics, and in period two 11% came from government clinics.

Village clinics. There is a total of seven Sudan Interior Mission leprosy clinics in North East State, Nigeria, served by the leprosy hospital at Bayara. One outpatient clinic is located at Bayara in conjunction with the hospital. The other six are located in outlying villages. Table 1 lists the six outlying leprosy clinics, the number of patients served by each at the time of the study, and the time and day of the week on which the clinic convenes. No data were available on government clinics.

TABLE 1

Sudan Interior Mission Leprosy Clinics in North East State, Nigeria

Village	Patients	Time & Day
Gar	92	11:30 a.m. Monday
Katanga	115	10:00 a.m. Tuesday
Miya	30	2:30 p.m. Wednesday
Zalanga	61	12:00 noon Thursday
Rinjin Gani	174	10:00 a.m. Friday
Biliri	208	10:00 a.m. Saturday

During the two weeks when the interviewing teams were in the field the clinics met on schedule. The patients showed up on time. Few registered patients were absent from clinics. Leprosy attendants generally attested to patients' willingness to attend the clinic regularly. There are exceptions, of course.

In general, the leprosy clinics used the same facilities as the general clinic in the villages. However, the integration of the leprosy clinics into the village clinics did not seem complete. At Katanga, for example, leprosy patients did not go up on the porch of the clinic building like other patients did. Instead, a table and the supplies for the leprosy clinic were set up under a tree maybe fifty yards away from the clinic building. When asked why this was so the leprosy attendant pointed to the remains of another building and explained that that building used to be the leprosy clinic. When it collapsed there was no money to build another building, so the leprosy clinic is held outside under a tree nearer the old fallen-down building than the newer clinic building.

The real explanation for this may have to do with tradition and habit--the clinic continued being held where the leprosy patients were used to congregating. It would be easy to suspect, however, that some residual segregation motivations might also help to explain this occurrence.

In each village the clinic for leprosy patients was held at a different time than for other patients. This schedule facilitates more efficient handling of leprosy patients and their records and spreads the clinic attendant's work out over more time. Again, in that this measure amounts to a kind of segregation, one might wonder whether segregation is also part of the reason behind this approach to scheduling leprosy clinics.

The integration of the leprosy clinics with the general clinics appears to be somewhat incomplete.

Leprosy attendants. There is one leprosy attendant responsible for each of the leprosy clinics. All six attendants received a three-month course in leprosy and qualified as a Leprosy Attendant. Three of them had received further training as medical auxiliaries and qualified as Dispensary Attendants.

The attendants were given a leprosy test at the time of the field work to measure their present knowledge of leprosy. A minimum acceptable level of .67 was set before the tests were administered. Only one of the six leprosy attendants achieved that level. The scores ranged from .29 to .73. The average score, .46, was far below the accepted level of proficiency. Leprosy attendants have inadequate knowledge of leprosy.

Leprosy attendants' skills were measured in terms of disability grading and identifying patients who should be referred to the hospital. Leprosy attendants were asked to grade each patient in the sample and discriminate for each whether he needed to be hospitalized. The itinerant nurse was asked to do the same thing for the same group of patients. Neither knew how the other had evaluated the patients. For this item the total panel of patients was used including the random sample of 71 plus all other patients who had been referred during the five months of period two (November 1972 through March 1973.) The evaluations by the attendant and the nurse were compared for each patient. Eighty percent of the patients for which this comparison was possible were graded alike by the attendants and the nurse. The few discrepancies in disability grades appeared to be random with neither the nurse nor the attendants tending to grade consistently higher or lower than the other.

Eighty-eight percent of the patients evaluated for hospitalization were evaluated alike by the nurse and the attendants. Of the patients who were not evaluated alike by both evaluators the difference was consistent: the nurse said the patient did not need hospitalization while the attendants said the patient needed hospitalization.

Leprosy attendants displayed acceptable skills in grading disability and identifying patients for hospitalization.

Diagnosis skills were not measured. However, during visits to village clinics to collect data, the process of diagnosis was observed.

When a person came to the clinic for the first time he was asked to wait till the registered patients were cared for. Then each new patient was examined by the leprosy attendant. Usually the patient would identify some mark or symptom which led him to suspect that he might have leprosy. The leprosy attendant examined those symptoms first then asked the patients to strip to the waist and he examined other parts of their bodies for symptoms. His task at this time was to discriminate between the patients who actually had leprosy and those who did not have leprosy. This seemed to be a difficult discrimination for the leprosy attendants. At one clinic, for instance, the leprosy attendant asked the interviewing team leader, a white American researcher, to be present when he examined the new patients. The leprosy attendants repeatedly asked the researcher whether he thought the patient really had leprosy. Repeated efforts to convince the leprosy attendant that the researcher was not a medical doctor and could not help with such a diagnosis failed. The leprosy attendant still asked for help in making the decision. This occurrence could be explained by the extreme politeness and respect shown to a "stranger" in Hausa villages, especially when that stranger is a white man who had honored the village by selecting it for his study. But it could also be explained by a degree of insecurity felt by the leprosy attendant relevant to his responsibility to accurately diagnose leprosy among the patients who came thinking they might have the disease.

This latter possibility was supported during a conversation with the Leprosy Service director for the Sudan Interior Mission. It had been observed that on one visit to a village clinic the itinerant nurse had discharged nearly half the registered patients. The doctor's explanation was that many people are registered at leprosy clinics who do not actually have leprosy. Certain skin fungus can resemble leprosy lesions. Some people pluck their eyebrows entirely and thus resemble leprosy patients in the early stages. These kinds of occurrences can easily deceive a leprosy attendant and lead him to a false diagnosis of leprosy.

The observations cited above suggest that leprosy attendants have inadequate skills in diagnosis of leprosy among new patients.

Leprosy attendants were asked informally: "Have you ever been taught how to teach patients about their leprosy?" This question was followed by an open-ended probe: "Tell me about your training." All the attendants affirmed that their training had touched on health education. But when asked to describe what they were taught the responses described content, not method. These informal interviews with the leprosy attendants suggest that leprosy attendant training dealing with health education tends to stress the content and the need for health education among leprosy patients but provides inadequate instruction in methods of health education. Leprosy attendants have inadequate training in methods of health education among leprosy patients.

In summary, leprosy attendant expertise was low in terms of ability (a) to answer questions on a written test; (b) to diagnose new cases; and (c) to instruct patients. However, in terms of identifying hospital cases leprosy attendants did quite well. And for those leprosy attendants who performed the disability grading function that function was performed satisfactorily.

There is a major weakness among leprosy attendants in the area of health-care instruction. Leprosy attendants engage in little instruction probably because their teaching skills are very low. To improve health-care instruction skills may not increase the number of hospital cases being transferred to the hospital. Instead, it may decrease the number of patients who need hospital care. The preponderance of admissions to the hospital in both periods was for ulcer treatment. Ulcers can be avoided through preventive behavior. A major effect of instruction among leprosy patients should be the adoption of ulcer prevention behavior and thus a decrease in the number of patients needing hospitalization for ulcer treatment.

Hypothesis 2b was somewhat supported. Leprosy attendants have low levels of expertise in some areas while other areas seem adequate.

Transactions

Diagnosis, prescription, treatment, follow-up. When a patient being examined at a clinic was diagnosed to have leprosy he was asked to step aside and wait till all the patients were examined. At that time each new patient was registered by entering his name on a ledger and filling out a clinic card for him. Each patient was assigned a number for the sake of identification in the various records. He was then given his first dose of Dapsone. The leprosy attendant was observed to periodically consult his chart while prescribing the dosage. Prescriptions of the initial dose are presumed to be relatively accurate given the periodic reference to the chart. There was no observation made relevant to the modification of the dosage later in the patients' experience at the clinic.

After being instructed to come back to the leprosy clinic every week the patients were allowed to return to their homes. No observation was made regarding the follow-up activities of the leprosy attendants for patients who were irregular in their attendance.

On leprosy clinic day the patients congregated together and waited till all were present. The leprosy attendant then conducted a short religious service for the patients and began to dispense the week's portions of Dapsone. The leprosy attendant seated himself at a table and placed the patient ledger on the table in front of him. He then called out the patients' names and, when they came to the table, the dosage of Dapsone they should be given. An assistant counted out the pills and gave them to the patients who swallowed the pills immediately. The leprosy attendant focused his attention on the patient ledger calling out names and dosages and recording the transaction in an appropriate column in the book. The assistants focused their attention on the patients and their pills being sure that the right patient received the right amount of medication and that each swallowed the medicine immediately.

Identification and referral of hospital cases. The leprosy attendant was not observed to identify a hospital case during the above group transaction with the patients. It seemed that if a patient were experiencing some kind of special difficulty he called it to the attention of the leprosy attendant and then waited till the other patients had been cared for after which his complication was considered. The diagnosis of complications needing special care seemed to be done, at least in part, by the patient himself.

It should be pointed out, however, that prior to the data collection teams' arrival at the clinics the leprosy attendants had already been stimulated to examine and refer hospital cases. Consequently, most of the patients needing special care may have already been identified in weeks past not necessitating so thorough examination at the time the above observation was made. However, it seemed likely that the process observed by the interviewing team leader may be the more common practice.

Patients were asked: "Has anybody ever told you that you should go to the leprosy hospital for more treatment? If 'yes', who decided that you should go to the leprosy hospital?" Seventy-two percent of the patients said that no one had ever referred them to the hospital. Most of these would not have been referred because they did not need to be referred. Eight percent said they had been referred and identified the leprosy attendant as the one who referred them. Another 10% said that they had been advised by some other leprosy patient or another person to go to the hospital. The remaining 10% gave vague answers. Whereas some leprosy patients were identified as hospital cases and referred to the hospital by leprosy attendants, there were more who were identified and referred by people other than the leprosy attendant.

Patients who were referred to the hospital were given transfer slips signed by the leprosy attendant authorizing the patient to receive free care at the hospital. However, for some leprosy attendants it was a time consuming process to make such a written authorization available to the patients. The book of transfer slips was not always easily available or soon found. During the informal interview with the leprosy attendants they were asked: "Can you bring me your book of transfer slips?" The interview took place in or very near the clinic building. The interviewer took note of how long it took for the leprosy attendant to find and present his book of blank transfer slips. Three of the attendants could produce the book immediately. One attendant had to go to another clinic-related building but found the book quickly. One attendant had the book at his home in the village and had to go there to get it. Another said that he did not even have a book; if he referred a patient he would write a letter. The relatively frequent difficulty and delay necessary to even procure a transfer slip for a referred patient seemed to indicate that written referrals were somewhat uncommon.

These observations lend support to hypothesis 1b which says that leprosy attendants have low levels of referral activity.

Instruction. Patients were asked, "Does the clinic attendant ever explain things to you about your leprosy?" Seventy-two percent of the respondents said "no." During the observations of the clinics in progress there were no instances noted in which the leprosy attendant gave instruction to patients. Leprosy attendants apparently do little health-related instruction among the patients in their clinics.

Hospitalization. Patients who are referred to the hospital and actually go to the hospital receive the specialized care they need. The majority of patients admitted to the hospital came for ulcer treatment. During period one (November 1972 through March 1973) 69% of the admissions were for ulcers and during period two (November 1973 through March 1974) 62% were admitted for ulcers. However, patients were admitted in each period for each of the four categories of services offered: ulcer, medication, rehabilitation and surgery. The first three services are performed by the resident staff of the hospital. Surgical operations are available through the services of an itinerant leprosy rehabilitation team.

A missionary nurse, specialized in leprosy care, had arrived at the hospital before the interviewing teams arrived there for training. She was observed to prepare patients and facilities for the doctor, also a missionary, who arrived a few days after the nurse to perform the surgical operations and special examinations as needed. The doctor finished his work in three days and left the hospital. The nurse remained for an additional week for post-operative care of surgical patients. She then moved to another leprosy hospital in another state to prepare for the doctor's visit there.

All of the care at the hospital including meals was without cost to patients who had been referred from a clinic. Patients who admitted themselves without a transfer slip from a clinic were required to pay a nominal cost for their care.

Approximately two-thirds of the patients were hospitalized for relatively short periods of time. Of the patients admitted to the hospital during period one 55% were transferred back to their village clinic within two months and 65% within four months. Only 35% were retained more than four months. Of the patients admitted during period two 50% were transferred back to their village clinics within two months and 68% within four months. Only 32% were retained for more than four months. Patients are not admitted and allowed to stay indefinitely. When they are well enough they are transferred back to their village clinics.

Patients were asked about the relative difficulty of going to the hospital: "Some leprosy patients say it would be hard to go to the leprosy hospital. What would be the main reason why some would feel this way?" Forty-two percent said they did not know, 27% referred to an inadequate understanding of the hospital and 10% cited social and family reasons. The remaining 10% gave other miscellaneous answers.

The patients were then asked: "If the clinic attendant told you to go to the leprosy hospital, would _you_ find it hard or easy to go?" Eighty-three percent said they would find it easy to go. Of the ones who said they would find it hard to go the only reason cited in response to the question, "Why did you give this answer?" related to transportation and distance.

Most leprosy patients did not seem to feel that it would be hard to go to the hospital. Among those who did the major difficulties seemed to relate to lack of understanding about the hospital, transportation and family/social responsibilities.

Discharging of patients. Few patients released from the hospital were discharged from all leprosy care. Instead, they were transferred back to their village clinic for additional treatment. Patients were discharged from the clinics mainly by the itinerant nurse. Notations were made on their clinic cards indicating the date they were discharged and the person who made the decision. Those cards are kept in an inactive file at each clinic.

Outcomes

Improved health. It is beyond the scope of this study to evaluate the medical outcomes of the leprosy services. However, it was observed that patients are discharged from each clinic during virtually every visit by the itinerant nurse. And patients who have been hospitalized are released from the hospital presumably physically improved over when they were admitted.

Knowledge. Patients were asked nine questions to measure their knowledge about leprosy and the leprosy hospital.

1. When asked, "Some patients have bad ulcers. Is there anything you can do to avoid getting ulcers?" 76% of the respondents said, "No." These data may reflect something of the fatalism hypothesized to occur among the patient population. They certainly indicate inadequate knowledge about ulcer prevention.

2. When asked, "Is there anything a person can do to avoid getting leprosy?" 93% of the respondents said, "No." Again, fatalism may be reflected here. But at the very least there is inadequate knowledge about prophylaxis through sanitation.

3. When asked, "How does a person get leprosy?" 57% of the respondents said, "Don't know" and another 32% gave incorrect answers. It should be noted that medical scientists have not fully answered the question themselves. However, they have learned that leprosy is not inherited. Many of the answers judged incorrect indicated the belief that leprosy is inherited. Only 11% of the respondents gave answers which would be correct based on current medical theories.

4. When asked, "When a leprosy patient goes to the leprosy hospital, how long do you think he will have to stay there?" 49% said they did not know, only 15% responded with answers between zero and six months (the range judged "correct") while 36% of the answers indicated the belief that leprosy patients stay at the hospital for much longer periods of time.

5. When asked, "If you went to the leprosy hospital, how would you get your food?" 37% said they did not know and 28% gave a wrong answer indicating they would somehow be responsible to feed themselves while 35% knew that their food would be provided for them free at the hospital.

6. When asked, "Think of all the patients who will go to the leprosy hospital. How many of them will lose some part of their body while they are there?" 30% said they did not know and 23% said, "Many" while 47% gave the correct answer, "Few of them."

7. When asked, "Think of all the patients who will go to the leprosy hospital; how many of them do you think will have surgery there?" 34% said they did not know or did not answer the question, 36% said, "Many of them" while 30% gave the correct answer, "Few of them."

8. When asked, "If the attendant sent you to the leprosy hospital with a transfer slip, how much would you have to pay to be admitted?" 66% did not know and 14% responded that they would have to pay some amount while 20% responded, "Nothing," the correct answer.

9. When asked, "If you went to the leprosy hospital and later the doctor said you could go home, would you be completely cured?" 48% said, "No" and 48% said, "Yes" while 4% did not know. The correct answer is, "No."

A knowledge score was calculated for each patient by summing the correct answers. The average knowledge score across the entire sample of patients was 2.13. The maximum possible was nine. The average percentile score was .24. Leprosy patients have little knowledge about leprosy and the leprosy hospital. Hypothesis 7b, which says that leprosy patients have low knowledge about leprosy and the leprosy hospital, was supported.

Health behavior. The actual health behavior of leprosy patients was not observed. Three relevant observations can be made, however. First, the relatively high incidence of ulcer patients admitted to the hospital might suggest inadequate ulcer-prevention behavior on the part of the patients. Second, the knowledge test indicated little awareness that a person can do something to avoid getting leprosy and/or ulcers. Given little knowledge about health behavior low levels of health behavior would be expected. Conversely, if there is a lack of health behavior adoption it is likely due primarily to a lack of health behavior awareness. Third, leprosy patients do come to the clinic regularly for treatment. This might indicate willingness to adopt appropriate behaviors even though they may be somewhat inconvenient.

Perceived compatibility. The perceived compatibility of the leprosy hospital with a patient's felt needs was measured by seven items in which the patients were given a brief description of a situation and were asked whether leprosy patients in the hospital or in the villages had the better experience relevant to those situations. Following are the compatibility items and the responses to each one.

1. Patients were asked: "Some patients live in their villages. Some live at the leprosy hospital. What will cause a leprosy patient to feel more pain, to go to the leprosy hospital or to stay in the village?" Seventy-two percent of the respondents said, "To stay in the village," the high compatibility response.

2. Patients were asked: "Which leprosy patients find it easier to farm or work?" Sixty-two percent responded, "Those at the leprosy hospital," the high compatibility response.

3. Patients were asked: "Whose families have a harder time to eat?" Fifty-six percent of the patients responded, "The families of patients in the village," the high compatibility response.

4. Patients were asked: "Which patients have more friends?" Sixty-five percent answered, "Patients in the leprosy hospital," the high compatibility response.

5. Patients were asked: "Which leprosy patients get better treatment for leprosy?" Ninety-two percent responded, "Those in the leprosy hospital," the high compatibility response.

6. Patients were asked: "Which leprosy patients live more alone?" Sixty-two percent of the respondents said, "Patients in the village," the high compatibility response.

7. Patients were asked: "Which leprosy patients are not so happy today?" Seventy-seven percent responded, "Patients in the village," the high compatibility response.

A compatibility score was calculated for each patient by summing all the high-compatibility answers. The compatibility scale was tested for reliability and unidimensionality. The split halves correlation coefficient was .48 ($p < .001$). The scale was accepted as an indicator of perceived compatibility of the leprosy hospital with seven felt needs.

The average compatibility score across the randomly selected patients who answered all the compatibility items was 4.97. This is significantly greater than 3.5 ($p < .001$), the mid-point in the compatibility scale. Leprosy patients expressed relatively high perceived compatibility of the leprosy hospital with their felt needs. Hypothesis 5b, which said that leprosy patients perceive the leprosy hospital to be relatively incompatible with their felt need, was not supported.

Figure 9 shows the percentages of patients who gave high compatibility answers for items for each felt need. Two of the three items that received the higher proportions of high compatibility responses related to a patient's physical and medical needs--to receive treatment for leprosy and to be free from pain. The felt need for which the lowest percentage of patients gave a high

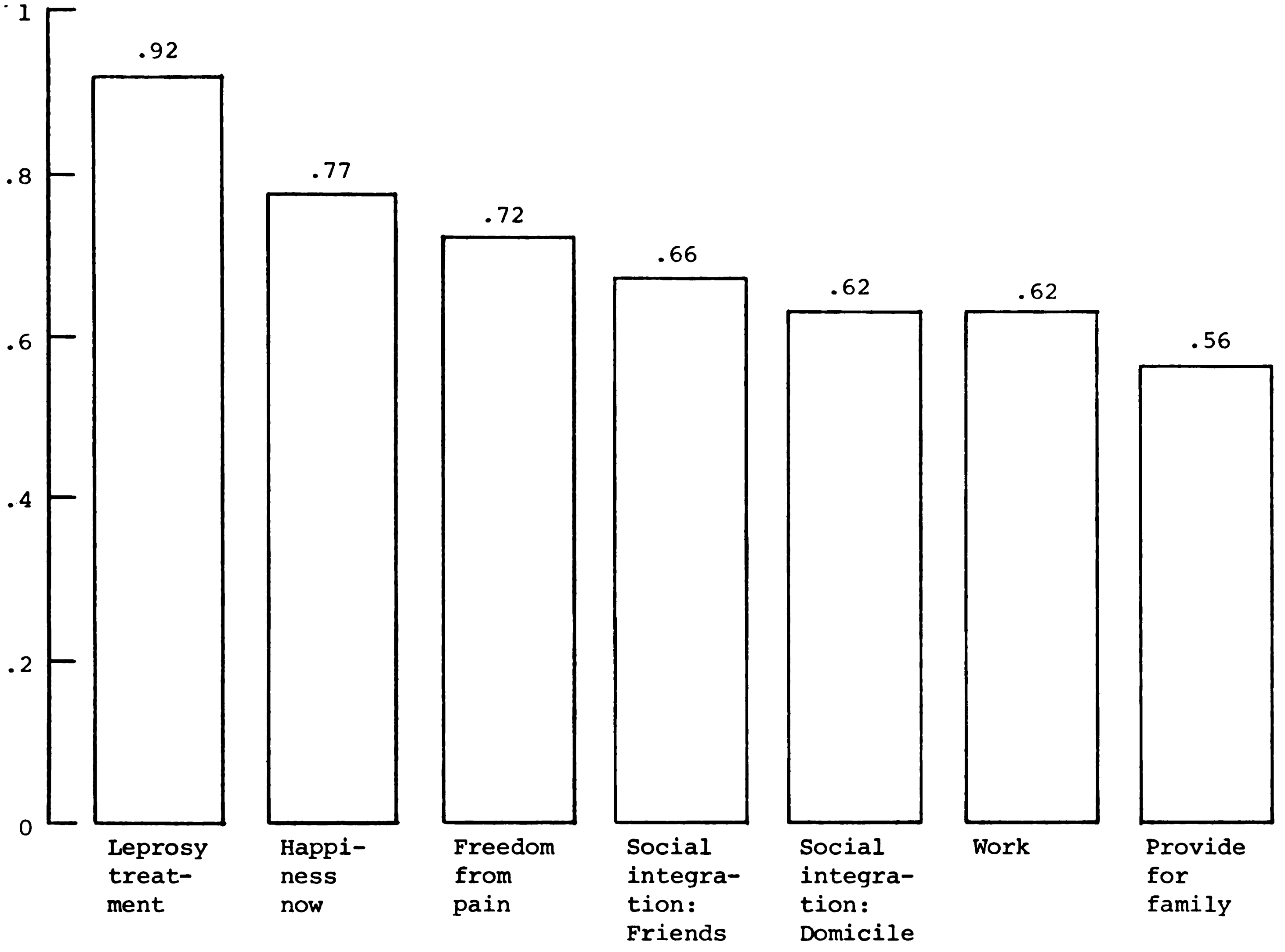


Fig. 9. The percentages of respondents who gave high-compatibility answers to items relating the leprosy hospital to seven felt needs.

compatibility answer was the need to provide for one's family. The leprosy hospital is perceived as more compatible with medical and physical needs than with social and economic needs. The leprosy hospital is also perceived as relatively compatible with the need "to be happy now."

Acceptance/Willingness. Referral records kept by the leprosy attendant indicated that during the five-month period between November 1973 and March 1974 inclusive an average of 58% of the leprosy patients who had been referred to the hospital accepted the referral and actually went to the leprosy hospital. Inquiry among the patients yielded similar data. The ratio of accepters to referred patients was 11 to 20, or .55. Slightly over half the patients who were referred to the hospital during this period accepted the referral and actually went to the hospital.

Patients who were not referred to the hospital were asked questions to indicate whether they would be willing to go to the hospital if they were referred. The following three questions were asked in sequence: (a) "If the clinic attendant told you that you should go to the leprosy hospital, would you want to go? If yes, when would you be able to leave?" (b) "Sometimes patients do not agree to go to the leprosy hospital. What would be the main reason why some would not want to go?" (c) "Is this the way you feel too?" Responses to these questions were compared for each respondent and, based on a subjective evaluation of compatibility between the answers, judged to indicate either positive, questionable or negative willingness. Thirty-four percent of the non-referred patients in the sample were judged negative; 24% were judged questionable; 42% were judged positive. Among the total sample, (referred and non-referred patients) 28% were judged negative; 24% questionable and 46% positive. (One respondent—2%—could not be judged because of incomplete data.) More patients were judged willing to accept referral than were judged unwilling to accept referral. This was true among the total sample and among the sub-sample of non-referred patients.

Empirical Contingencies

Contingencies were considered logically in the intended system and led to the statement of seven hypotheses relating certain independent variables to the dependent variables of acceptance and willingness to accept. The consideration of empirical contingencies in the observed system looks for empirical evidence to support the logically derived hypotheses of contingencies or relationships.

Leprosy attendant referral activity. Leprosy attendants were stimulated to increase their referral activity during a five-month period after which admissions at the hospital were counted to see whether there was a significant increase of admissions from the test clinics over the same period one year earlier. The stimulus to increase referral activities was a record keeping function--leprosy attendants were asked to fill out a form for every patient referred to the hospital during five months between November 1973 and March 1974 inclusive.

During the five-month period between November 1972 and March 1973 inclusive there were seven patients admitted at the leprosy hospital from the six test clinics. During the equivalent five-month period one year later, the five months during which the leprosy attendants were asked to record their referrals, there were 35 patients admitted to the hospital from the same clinics. That represents a 400% increase in patients admitted to the leprosy hospital during the second five-month period.

At the same time that hospital admissions from test clinics went up by 400%, self-admitted patients (those who came to the hospital without a transfer slip, presumably on their own initiative) decreased by 29% from 31 to 22; and patients admitted from other clinics which were not included in the study and whose attendants were not asked to record their referrals increased only 5%, from 19 to 20. There was a large increase in patients admitted to the hospital from clinics where the leprosy attendants were stimulated to refer more patients. Hypotheses 1a and 1b, which said that leprosy clinic attendant referral activity is positively related to leprosy referral acceptance; and leprosy attendants have low levels of referral activity, were supported.

Leprosy attendant expertise. Leprosy attendant exam scores and identification scores were compared to referral rates for all six leprosy attendants (Table 2). Statistical analysis was not possible for these data due to the very small sample size (n=6). The leprosy attendant who achieved the highest level on the exam also had the highest referral acceptance rate. The leprosy attendant who achieved the lowest level on the exam also had the lowest referral acceptance rate. No such pattern seemed to be evident between the identification scores and referral rates. These data provide no firm support for hypothesis 2a which says that leprosy clinic attendant expertise is positively related to leprosy referral acceptance. However, the comparison of exam scores to referral rates suggests that a positive relationship may indeed exist. Whereas the hypothesis is not firmly supported, it should not be rejected on the basis of this data.

TABLE 2

Leprosy Attendants' Expertise Scores and Referral Acceptance Rates

	Biliri	Gar	Katanga	Miya	Rinjin Gani	Zalanga
Exam Scores	.63	.40	.31	.40	.29	.73
Identification Scores	.71	.94	1.00	.88	.88	.93
Referral Acceptance Rates	.67	.50	.62	.50	.47	.67

<u>Need for leprosy treatment</u>. Patients referred to the hospital, identified by the leprosy attendants' referral records, were divided into two sub-sets: those who accepted referral and those who did not accept referral. The relative ranking of the need for leprosy treatment was calculated for each sub-set of referred patients. The mean rank for accepters was 5.42; for non-accepters it was 5.59. There is no significant difference between accepters and non-accepters in terms of their relative need for treatment ($p > .10$).

Patients who were not referred to the hospital were divided into three sub-groups according to their judged willingness to go to the hospital: positive willingness, questionable willingness and negative willingness. The relative ranking of the need for treatment was calculated for the two extreme groups. The mean ranking among willing patients was 5.81; for unwilling patients it was 4.89. The difference was in the predicted direction but was not significantly different from zero ($p > .10$).

Hypothesis number 3a, which says that the felt need for treatment among leprosy patients is positively related to leprosy referral acceptance, was not supported.

Fatalism. The scale developed to measure fatalism failed the test for reliability and validity. There is no data from this study acceptable for testing hypotheses 4a and 4b.

Perceived compatibility. Referred patients who accepted referral and referred patients who did not accept referral were compared in terms of their compatibility scores. The mean compatibility score for accepters was 5.50; for non-accepters it was 4.76. The mean difference was not significantly different from zero ($p > .05$).

Non-referred patients who expressed positive willingness to go to the hospital were compared to non-referred patients who expressed negative willingness in terms of their compatibility scores. The mean compatibility score for willing patients was 4.81; for unwilling patients it was also 4.81. There is no difference in compatibility scores between willing and unwilling patients.

Hypothesis 5a, which says that the compatibility of the leprosy hospital with patients' felt needs is positively related to leprosy referral acceptance, was not supported.

Ease of accepting. Referred patients who accepted referral and referred patients who did not accept referral were compared in terms of perceived ease of going to the leprosy hospital. Seventy-two percent of the accepters and 84% of the non-accepters said it would be "easy" to go to the hospital. There was no significant difference ($p > .05$) between patients who accepted referral and those who did not accept referral in the proportion of patients who said it would be "easy" to go to the hospital.

Referred patients who were judged willing to accept referral and referred patients who were judged unwilling to accept referral were compared in terms of perceived ease of going to the hospital. Ninety-two percent of the willing patients said that it would be "easy" to go to the hospital while only 20% of the unwilling patients said it would be "easy." The proportion of willing patients who said it would be "easy" to go to the hospital was significantly greater than unwilling patients ($p < .001$).

Non-referred patients who were judged willing to accept referral and non-referred patients who were judged unwilling to accept referral were compared in terms of perceived difficulty of going to the hospital. Ninety-five percent of the willing patients said it would be "easy" to go to the hospital and 53% of the unwilling patients said it would be "easy" to go to the hospital ($p < .001$).

For both referred and non-referred patients, relatively more willing patients than unwilling patients said it would be easy to go to the hospital.

In summary, all referred patients, whether they accepted or did not accept referral, tended to perceive going to the leprosy hospital as equally "easy." However, more patients who expressed willingness to accept referral, whether they had in fact been referred or not, tended to perceive going to the hospital as "easy" while fewer patients who expressed unwillingness to accept referral tended to perceive going to the hospital as "easy". Hypothesis 6a, which says that the ease of accepting hospitalization is positively related to leprosy referral acceptance, is supported in terms of willingness to accept among all patients. There is no support for the hypothesis, however, in terms of actual acceptance among referred patients.

Knowledge. Referred patients who accepted referral and referred patients who did not accept referral were compared in terms of knowledge scores. The mean knowledge score for accepters was 3.0; for non-accepters it was 2.25. The difference was in the predicted direction but was not significantly different from zero. There is no significant difference in knowledge scores between accepters and non-accepters among referred patients ($p > .10$).

Patients who were judged willing to go to the hospital were compared to patients who were judged unwilling to go to the hospital. The mean knowledge score for willing patients was 2.3; the mean knowledge score for unwilling patients was 1.54. This difference was found to be significantly different from zero ($p < .05$). Patients who are willing to go to the hospital have more knowledge about leprosy and the leprosy hospital than patients who are not willing to go to the hospital.

Hypothesis 7a, which says that leprosy patients' knowledge of leprosy and the leprosy hospital is positively related to leprosy referral acceptance, was supported in terms of willingness to accept referral. There is no support for the hypothesis, however, in terms of actual acceptance among referred patients.

Conclusions

This study intended to shed light on both the specific question of how to improve the leprosy referral system of the Sudan Interior Mission in North East State, Nigeria, and the general question of appropriate procedures for evaluating a non-formal education program in the Third World.

The Leprosy Referral System

The leprosy referral system is a planned intervention in the lives of critically ill leprosy patients intended to improve the health of those patients. The evaluation of the leprosy system led to observations about how well the system is achieving its objectives. It also led to observations about the over-all value of that system.

The Value of the System

Leprosy patients are people with physical needs deriving from their disease. But their physical needs are not their only needs. The standards for leprosy health services call for a system which will accommodate more than just the physical needs of leprosy patients. It calls for a system which will afford the patient a high level of social integration and allow him to carry on his economic activities while at the same time treating his disease. The existing leprosy service of the Sudan Interior Mission in Nigeria largely meets those standards.

The physical needs of critically ill patients are treated at the hospital and patients have been discharged with their symptoms improved and under control. At the same time many other patients who are less critically ill are being treated at village clinics. The total number of all patients registered at village clinics during the time of this study was far more than the hospital could accommodate if it were the only facility. The leprosy system is effectively treating the physical needs of patients who present themselves for treatment.

The system is not, however, effectively preventing physical complications of leprosy. The majority of complications admitted to the hospital during this study were ulcers. Ulcers can be prevented through preventive cautions. Ulcers can be cured easily if they are treated early. The system has every potential for teaching patients to take preventive caution and for spotting and treating minor sores before they become ulcers. It would be better for patients to avoid hospitalization by preventing complications than to allow themselves to be hospitalized for unprevented complications.

The leprosy system does not violate a patient's need for social integration. The majority of leprosy patients live at home with family and friends while they receive weekly treatment at the village level clinic. Those needing hospitalization for complications need be away from home only a few weeks before returning home to resume life in their society. Whereas the social integration of leprosy patients is not as complete as it might be, and whereas social stigma is still somewhat evident among leprosy patients, and whereas the present leprosy system still reflects some traces of the segregation approach to leprosy care it is still evident that the existing leprosy system supports both in concept and design the needs of leprosy patients to enjoy a status of integration with their society.

The economic needs of leprosy patients are only partially accommodated by the existing system of leprosy care. All services are free to leprosy patients if they comply with the system. Professional services, medications, laboratory work and even food during hospitalization are free to patients. Most patients who receive treatment for leprosy experience little or no financial stress due to receiving health-care services.

There are costs which some patients must bear, however. For example, absence from his farm can be costly for a farmer. Medical professionals feel that severe physical needs must be cared for immediately. But if a leprosy patient who is a farmer is asked to go to the hospital during planting or harvest seasons he recognizes full well the economic consequences of complying with that request--he can lose a year's food supply for himself and his family. Many leprosy patients have chosen to live with a physical need uncared for in order to retain their economic income.

Transport to the place where services are rendered can entail considerable cost for patients who must go to the hospital from a long distance. The normal cost of transport increases with distance. For a leprosy patient the cost often increases even more than the normal rate. Drivers do not want leprosy patients to ride in their vehicles for long distances. Other passengers will avoid riding with a leprosy patient, especially one with an open ulcer. Thus a driver's load of paying passengers decreases. Drivers often charge leprosy patients inordinately high rates in order to discourage them. Some leprosy patients have chosen to live with uncared for physical needs in order to avoid the extortion of drivers of public transport.

A health-care system which requires a patient to make a hard choice between physical health and economic health is not an adequate system. In some cases the existing leprosy system asks patients to make that choice. In those cases the system is far from adequate.

Recommendations

The Leprosy Service of the Sudan Interior Mission, like that of the Nigerian government, intends to meet the needs of leprosy patients. The leprosy hospital at Bayara in North East State, Nigeria, is one facility which is currently operated by the Sudan Interior Mission to help meet needs of leprosy patients. The hospital is intended to serve patients with complications which cannot be handled by leprosy attendants in village clinics. The hospital has experienced a time of under-utilization--patients who could benefit from hospital care were not coming to the hospital. One objective of this study was to identify how appropriate utilization of the hospital could be improved among needy patients. The following recommendations are offered to contribute to better and more appropriate utilization of the leprosy hospital and improved health care for needy patients.

Reduce the number of hospital cases.

The hospital intends to serve leprosy patients with complications. However, it will be in the patients' best interest to avoid complications that require hospitalization. This is possible.

Approximately two-thirds of the hospital admissions in both test periods were for ulcers. Ulcers are preventable through appropriate health behavior. The following measures are recommended to reduce the number of patients needing hospitalization: (a) Implement an intensive program of health-care instruction among leprosy patients with special focus on ulcer prevention. The content elements of such a program are contained in the leprosy training notes (Leprosy, 1973). Instructional materials and methods should be developed to help leprosy attendants perform the instructional tasks. (b) Instruct leprosy attendants to regularly examine patients for early signs of ulcers. It may be necessary to modify present clinic procedures to accommodate this. (c) Implement a program of instructional communication among the host society designed to convey competent knowledge to non-leprosy patient community members such that stigma will be reduced and people who have, or suspect they have, leprosy will be willing and socially encouraged to seek treatment before complications such as ulcers set in.

Decrease reticence to accept referral. Prior to this study relatively few leprosy patients were going to the hospital for special care. It had been estimated that 10% to 40% of the registered clinic patients needed special care available only at the hospital. The actual proportion of patients going to the hospital was much smaller than the estimated need. Reticence to accept referral on the part of the patients was thought to be a major reason for the low numbers of patients going to the hospital.

It was found that 58% of the patients referred to the hospital during the five-month test period accepted the referral and actually went to the hospital. Furthermore, 58% of the patients who were not referred and whose willingness could be classified were judged to be positively willing. It is striking to note that the measured referral acceptance rate among referred patients was identical to the measured proportion of non-referred patients judged willing to accept referral. This lends credence to the validity of the willingness measure.

With referral acceptance rates as high as 58%, reticence to accept referral is not adequate to explain the low numbers of patients coming from village clinics to the hospital for specialized care. Other factors contribute to low hospital utilization among leprosy patients. For one, there appear to be fewer patients needing hospitalization than had been estimated. Based on the 10% to 40% estimate, and given a total patient population at six test clinics of 680, we would expect between 68 and 272 patients from these clinics to be in need of special hospital care. The total number of patients referred to the hospital during the study period was 57, 8% of the total patient population. Given the leprosy attendants' demonstration of acceptable skills in identifying hospital cases (88% accuracy), and given the fact that leprosy attendants tended to over-identify, we expect that the total number of patients referred to the hospital is a relatively accurate or even slightly inflated indication of the actual number of patients needing hospitalization. The actual proportion of patients needing hospital care during a five-month period of time is probably no more than 8%.

There are difficulties associated with going to the hospital and those who have gone to the hospital would be in the best position to recognize them. When patients were asked why some would think it hard to go the hospital, "lack of understanding" was mentioned often. It would be expected that patients who had gone to the hospital and returned home would have more knowledge and understanding about the hospital than those who had not gone. But this may not be the case.

Knowledge scores were low for all leprosy patients interviewed. Leprosy patients who were judged willing to go to the hospital had significantly higher knowledge scores than patients who were judged unwilling. This was among patients who had not been referred to the hospital. The picture is different among patients who had been referred to the hospital. Referred patients who accepted the referral and went to the hospital had only slightly higher knowledge scores than patients who were referred and refused to go to the hospital. The difference was so small that it was not significantly different from zero ($p>.05$).

However, patients who were referred, whether they accepted the referral or not, had significantly higher knowledge scores than patients who were not referred whether they were willing or not ($p<.01$). The experience of being referred to the hospital seemed sufficient to increase a patient's knowledge about leprosy and the leprosy hospital. But since that knowledge was increased to a relatively equal level for all referred patients--both those who rejected as well as those who accepted referral--it cannot be inferred that increasing knowledge at the time of referral played a major role in influencing acceptance of referral.

It would suggest that the influence of knowledge in the referral acceptance process comes into play earlier than at the time of referral. In that non-referred patients who express higher willingness to go to the hospital also have more knowledge about leprosy and the leprosy hospital it would seem that pre-referral knowledge is more important in creating a climate of acceptance among patients prior to referral. If this is so it could be hypothesized that patients who have more knowledge before they are referred are more willing to accept referral and will be more likely to actually go to the hospital if and when they are referred.

Patients who accepted referral and went to the hospital did not have significantly higher scores on the leprosy knowledge items than patients who had never been to the hospital ($p > .05$). Patients did not come home from the hospital with more knowledge and understanding about leprosy and the leprosy hospital than when they were admitted. They may come home, however, with more knowledge and understanding about the difficulties involved with going to the hospital.

Other reasons cited explaining why patients perceive going to the hospital as difficult were social and family reasons. There is evidence that this is true. Accepters were compared to non-accepters among referred patients. Relatively fewer accepters were married than non-accepters ($p < .001$). Relatively fewer accepters than non-accepters worked to provide their own food ($p < .05$). Accepters were responsible to feed fewer people ($\bar{x} = 2.05$) than non-accepters ($\bar{x} = 4.28$) ($p < .01$). Patients who have more family and social responsibility are less likely to accept referral than patients who have less responsibility.

Accepters may be less socially integrated than non-accepters. All non-accepters lived with family and friends. But among accepters one of them said he lived with other leprosy patients and two said they lived alone. These three represent 16% of the accepters interviewed. This is not statistically significant but it is suggestive that the more social integration a patient enjoys the more difficult it will be for him to go to the hospital.

When patients who said it would be hard for them to go to the hospital were asked why, all the responses referred to difficulties in transport. These are not imagined difficulties. One patient who had gone to the hospital told in detail about the problems he encountered finding a lorry driver willing to carry him. The patient was refused transport on one lorry after another till he finally persuaded one driver. This was a humiliating experience for the patient and underscores the validity of the responses citing transportation as a source of difficulty relevant to going to the hospital.

Whereas reticence is lower than expected and is not the major contributor to low numbers of patients going to the hospital, reticence can be decreased so as to increase the proportion of referred patients who accept referral and go to the hospital. It is recommended that a minimum goal of 75% referral acceptance be adopted. Reticence to accept can be decreased by the following measures: (a) Provide instruction for patients before they need referral such that their knowledge about leprosy and the leprosy hospital will be increased and a climate for acceptance will be created. Increased knowledge will enhance patients' perceptions of the compatibility of the leprosy hospital to their more dominant felt needs and will generate more willingness to accept in the event of referral. (b) Reduce the difficulties involved with going to the hospital. Fear generated by lack of understanding can be reduced through competent knowledge communicated to patients through an instructional program. Transportation difficulties can be reduced by providing transportation periodically especially for more remote patients. Difficulties relevant to family responsibilities can be reduced by emphasizing referrals during seasons when farming requires less work, e.g. in January, February and March, between one crop's harvest and another crop's planting. (c) Generate a climate of acceptance in the host society. Given the relatively high degree of social integration experienced by leprosy patients, their attitude toward hospitalization is certainly influenced by the attitude which generally exists among other members of the society. A climate of acceptance in the host society can be generated by communicating to them competent knowledge about leprosy through a community instructional communication program.

Increase referral activity. The most outstanding effect measured during this study was that of increased referral activity among leprosy attendants. While admissions remained relatively constant from sources other than the six test clinics, admissions to the hospital from the clinics where the leprosy attendants had been stimulated to refer more patients increased by 400%. This very strongly suggests that leprosy attendants were engaging in little referral activity prior to this study. It also demonstrates that when referral activity is increased referral acceptance will increase. Conversely, it suggests that where referral acceptance is low the most likely explanation is that the leprosy attendant is not actively referring patients.

This idea was supported from the patient questionnaires. Patients were asked, "Has anybody ever told you that you should go to the leprosy hospital for more treatment? If 'yes,' who decided that you should go to the leprosy hospital?" Out of 20 patients in the random sample who said they had been referred to the leprosy hospital only six of them identified the leprosy attendant or any other medical person as the one who said they should go to the hospital. The rest said that other leprosy patients or other people said they should go to the hospital. This is further supported from the hospital admissions records. During period one (November 1972 through November 1973) before the study began 51% of the hospital admissions were self-admitted and not transferred from a village clinic. During period two, one year later when the leprosy attendants were stimulated to increase their referral activity, 27% of the patients admitted to the hospital were self-admitted.

Still more support comes from observing leprosy attendants at the clinics. They were observed to focus much more attention on their ledgers than on their patients such that hospital cases were not likely to be identified unless the patient or someone else called them to the attention of the attendant.

The one measure that will contribute most to bringing needy patients to the hospital is to stimulate leprosy attendants to actually refer patients who need special help offered by the hospital. The following stimuli are recommended: (a) Provide additional instruction for leprosy attendants reiterating their responsibility to refer and the methods and criteria for identifying hospital cases. (b) Require leprosy attendants to record every referral interview they initiate. This record can be kept on the patients' regular clinic cards.

(c) Offer some tangible incentive to leprosy attendants who successfully perform the referral functions. The acceptable standard might be such that 90% or more of the patients needing hospitalization are actually referred and 75% of those who are referred accept referral and go to the hospital. Referral effectiveness can be evaluated by the itinerant nurse/supervisor during visits to the village clinics. (d) Modify leprosy clinic procedures so that the leprosy attendant is better able to examine patients as they come from week to week. Perhaps the attendants' helpers can be trained and trusted to read and record in the ledger while the attendant dispenses the medicine and views the patients.

Instructional Communication Components

In order to achieve the goals the following instructional communication components are recommended for the existing leprosy referral system.

Instruction among leprosy attendants.

Leprosy attendants need refresher instruction designed to up-grade their knowledge and skills to perform their tasks. Specifically, leprosy attendants need up-grading in their abilities to diagnose leprosy and provide health-care instruction for patients. (This is not intended to preclude instruction in other areas of need.)

A refresher course curriculum should be planned for leprosy attendants. The course should be administered to the leprosy attendants individually at their clinics during visits by the traveling supervisor/nurse. The course would be completed after four visits. In planning the curriculum for the refresher course the specific needs of the leprosy attendants should be identified and behavioral objectives written for each need. Two needs which should receive priority attention are the needs to diagnose accurately and to know how to provide health instruction for patients.

By way of example, the following two objectives might be appropriate for the refresher course: (a) that leprosy attendants will know how to diagnose leprosy such that 90% of the patients diagnosed during the supervisor's absence will be confirmed by the supervisor during his visit as actually having leprosy; (b) that leprosy attendants will know how to provide health instruction for their patients such that when provided with prepared materials they will precede every clinic with an instructional period, be able to follow the instructions provided with the materials and perform the prescribed instructional tasks.

The itinerant supervisor or nurse can provide this instruction for the leprosy attendants during the periodic visits to village clinics. Instructional time can be provided prior to the scheduled clinic. The clinic time, then, can be used as on-the-job training in which the nurse supervises the leprosy attendant as he puts into practice his knowledge and skills.

This might modify the role of the supervisor during his visits to the village clinics. Instead of being the specialist who has come to perform the specialized tasks he will be the instructor who has come to teach the leprosy attendant to do the work. Instead of seeing all the patients he will supervise the leprosy attendant as he sees the patients. The result of his visits will still be that needy patients receive the benefits of his expertise. It will also be that the leprosy attendant will increase his own expertise. This plan assumes that the supervisor is competent.

Evaluation of the leprosy attendant instruction should focus on performance skills. For example, evaluation of diagnosis ability should be in terms of the proportion of patients diagnosed by the leprosy attendant as having leprosy whom the supervisor or nurse confirms as having leprosy. The suggested goal was 90%. Evaluation of instructional skills should observe the performance of instructional tasks. Does the leprosy attendant precede every clinic with an instructional period? Is he able to perform the instructional tasks required by the prepared material he is being taught to use?

Instruction among leprosy patients. The objectives for instruction among patients are two-fold: to create a climate of acceptance for leprosy treatment including hospitalization if it is warranted; and to persuade leprosy patients to adopt health behaviors such that complications like ulcers will not occur. The following concepts should be taught: (a) Leprosy is not inherited; (b) leprosy is not predestined; (c) leprosy is only mildly contagious; (d) leprosy can be controlled or cured; (e) mutilation is not inevitable and can be avoided; (f) mutilation is often caused by trauma; (g) most patients who go to the hospital return home within a few weeks; (h) patients who go to the hospital with a transfer slip do not have to pay for their care or keep. Health-care behavior relevant to ulcer prevention is described in the leprosy training notes (Leprosy, 1973).

The following steps are appropriate for the design of an instructional program for leprosy patients.

1. State precise, measurable objectives for the instruction. (See Mager, 1962.)

2. Develop instructional materials designed to be administered by a facilitator who may not be expert in the content area. Let the expertise for the instruction reside in the materials, not necessarily in the facilitator. The materials should employ duplicatable channels so as to allow wider distribution. The cassette with accompanying picture manual is one recommended method. It is inexpensive, simple, easily duplicatable and portable. It is sufficiently novel to attract attention; sufficiently similar to radio that it would pose no threat due to novelty; very compatible with the tradition of oral communication among non-literate rural Nigerians.

It is recommended that the content be in the form of stories similar to the many folk stories so widely used by the residents of rural Nigeria. Picture books can illustrate the story. They should be big so that a small group can view the pictures together. They should be complete black and white photographs (Fugelsang, 1973) so as to be perceived as "real". A set of discussion questions should accompany every cassette lesson. The facilitator should be taught to operate the equipment, manipulate the pictures and lead a discussion based on the questions provided. He may also be a feedback channel to the Leprosy Service bringing patients' questions to sources of answers.

3. Teach facilitators how to administer the instructional materials. Leprosy attendants should be trained to facilitate instruction as was discussed earlier. Selected patients can also be trained to facilitate instruction. For example, patients who go to the hospital can receive instruction there. It would seem appropriate for them to learn not only what the materials have to teach, but also how to use the materials to teach others. Patients who have gone to

the hospital have experiences that qualify them to instruct other patients especially in matters relating to hospitalization. Their "homophily" (Rogers, 1971) with other patients suggests they are highly credible sources for instruction.

4. Repeat instruction often. A series of lessons can be developed. It should not be assumed that it is sufficient to expose one patient to one lesson one time. Repetition is a valuable teaching method. The series of lessons should be repeated regularly and often. For example, a series of 26 lessons will take half a year to complete at the rate of one a week. It would be appropriate to repeat the series in succession exposing the patients to each lesson twice a year.

Community instruction. It is recommended that communication programs for the community at large be designed and implemented to increase general knowledge about leprosy among community members so as to decrease fear and misunderstandings about leprosy in the communities and increase the climate of acceptance for both leprosy patients and the utilization of leprosy treatment facilities. The program should be implemented first in communities hosting village leprosy clinics. The Sudan Interior Mission should initiate the program in communities where it operates village clinics. These programs will become models for other community clinics to follow.

The following concepts should be communicated to the communities: (a) Leprosy is not inherited; (b) leprosy can be avoided; (c) leprosy can be cured; (d) leprosy need not cause mutilation; (e) leprosy patients can safely mingle in the community; (f) leprosy hospitalization is temporary and brief.

Media forums are recommended for accomplishing the above objectives. Media forums combine mass channels with interpersonal channels in regular meetings of a selected group of respected and influential citizens of a community (Nash, 1969). A trained leader facilitates the sessions by exposing the group to instructional material on an impersonal channel; leading the group in discussion of the material presented; recording feedback, especially questions, generated by the discussion and channeling that feedback to the program producers for answers which can be shared at the next forum meeting.

Media forums have been used effectively for introducing new ideas to traditional societies (Roy, et. al., 1969). High levels of behavior change have been measured among both participants of the forums and among other community members who did not attend the forums. This "radiation" effect multiplies the value of media forums.

A series of six media forums is recommended. A group of 12 to 20 community members including respected and influential citizens should be selected to participate in the forum sessions. The local leprosy attendant can be trained to convene and facilitate the forum.

Radio has been used effectively in media forums. However, there are limitations to the use of radio. Radio requires all groups to convene at the same time and allows little flexibility to accommodate scheduling variations between groups or within groups. For this reason the cassette is recommended as the channel through which content be presented. All of the reasons for recommending the cassette as an appropriate channel for teaching among leprosy patients apply to this application also. Filmstrips can provide useful visual material with which to illustrate the cassette material. However, projection requirements including equipment and source of power need to be considered before it is decided to use filmstrips.

A series of six cassette forums is recommended. Each session can deal with one of the concepts to be communicated. It is recommended that forum sessions be scheduled once a month for six months. The whole series may be repeated after one year if it is felt desirable.

Objectives for each session should be stated in behavioral terms. Basic materials including the cassette lesson and discussion questions can be prepared in advance. It is recommended that stories be used to convey the messages. Systems should be established to receive and respond to feedback and questions generated at the forum sessions.

Cassette forums can be convened simultaneously in each of several villages. The leprosy supervisor can plan his visits to the villages so as to allow him to visit the community forums twice during the six-month period. During this visit the supervisor can supplement the cassette material by answering questions during the session.

Cassette forums can be evaluated by pre- and posttesting among forum participants. The test should be developed in advance and should be designed to measure the behaviors specified in the objectives for the sessions.

Summary

More leprosy patients (58%) were willing to accept referral and go to the leprosy hospital than were expected. The felt need for treatment was high among leprosy patients and patients perceived the leprosy hospital as compatible with their more dominant felt needs.

Reticence to accept referral is not adequate to explain why so few leprosy patients utilized the services of the leprosy hospital. Instead, the main explanation for under-utilization of the hospital is that the leprosy attendants at village clinics were not actively referring all the patients who needed hospitalization. Other factors were that leprosy patients felt that to go to the hospital entailed some difficulty; and all patients exhibited low levels of knowledge about leprosy and the leprosy hospital.

Every effort should be made to help patients avoid complications that require hospitalization. Patients who do need hospital treatment should be encouraged to accept the referral and go to the hospital. The major recommendation for increasing the utilization of the leprosy hospital by critically ill patients is to encourage leprosy attendants to increase their referral activity. Additional instruction for the leprosy attendants, a recording system for referrals, an incentive program and a modified clinic procedure will combine to provide that encouragement. At the same time a climate for acceptance of referral should be created both among the patients and within the host society. Patients should receive instruction that will increase their knowledge about leprosy and the leprosy hospital. Transportation for needy patients can be provided. And the host society should receive communication inputs designed to increase general knowledge about leprosy and thus create a climate which will encourage those with leprosy to seek and accept appropriate care.

Evaluation Procedures

The more general purpose for this study was to provide insights and tested procedures for evaluating existing non-formal education programs in the Third World which have limited financial resources available for evaluation and are geographically remote from research support services. The research design called for a framework to organize the task and methods appropriate both to the framework and the conditions surrounding the program.

The Stake Model

The existing leprosy system was viewed as a learning system in that it is necessary for behavior change to occur among the patient population in order for the system to be effective. The Stake model of curriculum evaluation was selected as the framework for the study.

The Stake model had been developed in an American formal schooling context. One question implicit in this study was how well that model would serve in a Third World non-formal education context.

The Stake model served the cross-cultural task admirably. This effective use of the model in a new culture was more a function of cross-cultural skills of the researcher and his assistants than of characteristics of the model itself.

Describing the system in terms of "outcomes," "transactions" or processes, and "antecedents" or pre-conditions facilitated the identification of important issues. The search for contingencies and congruencies as Stake suggests facilitated the identification of relationships between elements of the system.

If there were a difficulty related to the use of the Stake model it rose out of its comprehensiveness. There were more variables and hypotheses identified than could be managed in one study. The selection of crucial issues to include in the study proved to be one of the more difficult tasks. This was approached by systematically listing every variable identified in the description of the intended system. Each item was reviewed in light of existing theoretical considerations drawn from disciplines of learning, communication and health. Relationships between each variable and leprosy referral acceptance, the dependent variable, were predicted. Independent variables to be included in the study were selected on the basis of their assumed capability of explaining more of the variance in the dependent variable.

The Stake model served well in identifying the many variables and hypotheses. Selecting which of those variables should be included in the study required considerations from outside the model itself. The model also provided a useful framework for analyzing and communicating the findings of the study.

The Stake model is an appropriate tool to use as a framework for evaluating cross-cultural non-formal education programs.

Financial Resources

Financial constraints had considerable influence on the design and procedures for this study. External funding was not available. Hence, the study was done with minimal funds available from the Leprosy Service in Jos, the Sudan Interior Mission's travel funds for the Media Consultant (the position the researcher was filling at the time) and routine office expenses budget available to the researcher in his role as Media Consultant.

The entire study was completed for only $2500. This figure includes all costs except the researcher's salary. The study was a part of the researcher's assigned responsibilities allowing his time to be given without a surcharge for salary. Even excluding the researcher's salary this figure is very low. Research costs were kept low through the following cost-cutting procedures:

1. Multi-purpose travel. When traveling to the research site the researcher planned to accomplish other work-related objectives which allowed expenses for travel to be shared between projects.

2. Small sample. The universe of patients sampled was restricted to those registered at Sudan Interior Mission clinics in one state. Of those patients a small sample (n=71) was selected. The small sample required minimal interviewer costs (six interviews for two weeks), field transportation costs (visits to six clinics) and data processing costs.

3. Manual data processing. Data processing was done manually using edge-punch cards and a small electronic calculator. Coding and card punching were done locally where labor was inexpensive. Calculations were done by hand. This reduced or eliminated postage, key punch and computer costs.

Useful evaluation research does not always demand large budgets.

Geographic Location

All the processes of this study from its inception to the written report were carried out in Africa. The research site was in rural North East State, Nigeria. The researcher was then living in Monrovia, Liberia. He made three trips to the field site at different times during the design and implementation of the study.

Because of the geographic location the study was designed and conducted without the benefit of easily accessible and competent library, consulting or data processing resources. In light of these limitations the researcher leaned heavily on his own recent university training and personal library. He took other measures, however, to supplement his own resources. Following is a rather detailed account of methods which were employed to accommodate the geographic constraints on this study.

Local resources. A number of people in Liberia were sought out to review and critique the research design and processes at different stages. An American anthropologist teaching at Cuttington College in Liberia provided much useful input. He also provided access to the Cuttington College Library.

The physician in charge of the leprosy work of the Methodist Hospital at Ganta, Liberia, allowed the researcher to pretest an early version of the instrument among some of his patients. The patients spoke English which made it possible for the researcher to interview them directly. It was during this pretesting that some early instrumentation ideas were discarded. One idea included the use of line drawings of faces either smiling to represent happiness or frowning to represent sadness. When the patients looked at the pictures they laughed; the pictures were very strange and humorous to them. And when they were asked to identify which face represented a happy man their responses appeared to be random. The problem was that they did not even recognize the line drawings as faces; they were just funny figures to the patients. That method was abandoned. Pretesting of this nature was possible because a local doctor provided access to leprosy patients who spoke English.

The epidemiologist with the Danfa Rural Health project in Ghana critiqued the design proposal, shared methods and instruments he had used in Ghana and provided access to the library at Legon University in Accra. The Director of Christian Education for the Sudan Interior Mission in Nigeria provided considerable insights into the values and life styles of rural Nigerians and consulted on the instrumentation.

There are people in West Africa who are competent and willing to consult on projects like this. Finding and meeting them is often difficult, however, due to remoteness, sheer distances and transportation problems. Local libraries are available. However, they are limited in the amount of useful material they contain.

Out-of-country resources. Letters were written to contacts in the United States requesting materials of specific nature. A graduate student friend at Michigan State University was most helpful in searching for, photocopying and mailing material to the researcher. Likewise, the president and vice president of the American Leprosy Mission sent more than one packet of very helpful material. Authors of articles received were also written and many of them supplied additional material by mail. A former instructor at Michigan State University kindly replied to a request for information about one instrumentation method.

Resources available by mail were very helpful. However, it was a time consuming process to acquire them.

Study size and complexity. To minimize the potential problems and weaknesses created by inaccessible resources, the study was kept small and simple. The instrument was designed in the field through a lengthy process of multiple pretesting and revision among leprosy patients. The sample was small (n=71). The main statistics used were the mean and percentile. Statistical tests for significance were almost entirely limited to chi square and t-tests. The data were processed by hand using an edge-punch card system and the statistics were calculated by hand using portable equipment. Finally, results of the study are not accepted as conclusions but as action hypotheses to be further implemented and tested.

Summary. Evaluation research must sometimes be conducted in locations which are remote from technical and consulting services. Useful and valid evaluation is certainly possible under these conditions. Even in the Third World competent resources are available for input and assistance. Other inputs are available by mail from resources outside the Third World. It can be difficult and time consuming to tap these resources, however. It is recommended that evaluation in the Third World be kept small and simple and that adequate time be allocated for acquiring and utilizing input from remote sources.

Language and Culture

Research conducted by a member of one culture among people of another culture calls for special sensitivities on the part of the researcher. Special measures were taken to accommodate the need.

It should first be mentioned that the researcher had lived in Jos, Nigeria, for a year in 1966 and 1967. During that time he developed some personal friendships with Northern Nigerians and acquired a deep appreciation for their language and culture. Whereas he did not acquire skill in the Hausa language (which would have been desirable) he did learn many of the greetings which are very important to Hausa-speaking people.

To the extent that it was available literature describing the culture of Northern Nigeria was read to familiarize the researcher with the people. The few materials which were available were generally old and dealt more with Nigeria as a nation than with Hausa-speaking people as a group.

To more adequately accommodate the need for sensitivity to the population of interest the researcher fostered personal relationships among people in the field so as to benefit from their insights.

It was not difficult to find American and European missionaries who would share their insights into the people and their needs. Some missionaries seemed naive. Others seemed very sensitive and knowledgeable. When an expatriate with high empathy skills can be found he can provide a great deal of insight. For example, a young male missionary whose academic background was in Theology served as a research assistant. He was selected because of his evident love for the people demonstrated by an ability to mingle with them and apparently to be accepted by them as an equal. While the research assistant was in the field for data collection it was not uncommon to see him sitting under a tree in the Nigerian manner talking and laughing with a small group of

Nigerians like old friends. This man was deeply sensitive to the feelings and values of the people among whom the study was conducted and offered assistance and insights that helped make the research experience more substantive for the researcher.

Nigerian clinic attendants were another source of informal insight into the population of interest. These men were bilingual so they could communicate with the researcher in English. They were Northern Nigerians. Although they were certainly higher class than their patients due to their education, they demonstrated an understanding and concern for the people they were serving.

During the first visit to the research site the clinic attendants were asked to come to the leprosy hospital to meet with the researcher. The meeting started out rather cold and informal. But as the time went on a friendly and candid relationship grew to the point that the leprosy attendants became willing to criticize the research ideas they were learning about and even offer their own ideas. It was during that meeting when an attendant suggested that lack of transportation was one reason why many patients did not go to the hospital. When one said it, all agreed. Therefore, the issue of transportation was built into the inquiry.

These conversations laid the foundation for further interaction in the field which took place during the data collection. The attendants entertained the interviewers cordially when they arrived. As they learned more about the study and became more acquainted with the research team members they offered their views and insights freely. Each clinic attendant was interviewed informally by either the research director or his assistant. That interview was not structured. The clinic attendants' observations helped direct the researcher's attention to important issues and useful interpretations of information.

The patients, too, were a source of informal information. There were patients at the leprosy hospital with whom the interviewers and researchers interacted often. At the clinics special attention was given to mingling with patients, chatting with them and discovering their values through interpersonal interaction. Several patients were selected for interviewing in a more structured way after the individual interviewing was completed. By that time they had been exposed to the data collection processes and instrument. But they had also been exposed informally to the interviewers and either the research director or his assistant. Some patient groups were more free than others, but in general it was useful to talk with patients in groups. The degree to which the patients felt comfortable in the presence of the interviewers seemed to influence the degree of candidness during the group interviewing session. Where more personal relationships had been effectively established more useful information was collected.

Translators were another source of informal information. The translators were Nigerians who worked for the Sudan Interior Mission translating materials for church-related instructional programs. The translation process was conducted orally to foster a personal relationship. The researcher read the English items. The translator asked for clarifications then wrote a Hausa translation. The researcher asked for the translator's own back-translation and they discussed each item together till the researcher felt that the translator had a grasp of the item's intent. This was a lengthy process, and as the interaction process progressed the exchange became very candid and frank. The translators' inputs led to a number of modifications to the instrument.

Perhaps the most useful source of informally collected information was from the interviewers. From the onset of the contract between the researcher, his assistant and the interviewers deliberate attention was given to fostering personal relationships. Everybody ate together, laughed together, talked together, shared together. The research director and assistant made every effort to avoid the patriarchical image often associated with white leaders in black Africa. When a tire went flat on the road the research director got his hands and clothes dirty helping to change it. When the van got stuck in the sand the research director helped push the vehicle alongside one of the Nigerian interviewers. When materials needed to be carried from one place to another the director and his assistant carried boxes alongside the interviewers. When the interviewers were served food in the villages the director and his assistant avoided eating apart from the Nigerians wherever it was possible.

An effort was made to involve the Nigerians in the intellectual and operational whole of the project. When the director was explaining the purposes and processes of the study to the interviewers he discussed the whole project not just the interviewing tasks. And he repeatedly asked for input from the interviewers on issues being discussed. As the interviewers came to feel more at ease in the situation they began to take the director and assistant into their confidence even on personal matters. And they offered more and more of their own input both when it was requested and when it was not requested. For example, after the first day of interviews one of the interviewers came to the research director and said he had a problem. The word for leprosy hospital in Hausa is the same word used for leprosy clinic (asibiti). When he asked patients whether they had ever been to the leprosy hospital all of them said yes. But he knew some of the patients and knew they had never been there. A check of the patients' clinic cards confirmed his report. The word "asibiti" was ambiguous. The research director called the interviewers together, explained the problem and left them to decide how to clarify the item. They corporately suggested an additional phrase which would clarify which "asibiti" was meant. This modification was made.

Whenever input was offered by interviewers it was acknowledged either with an explanation which would give the interviewer more insight into the study, with more questions whereby the researcher could understand more of the interviewer's intent, or by making a modification to the system on the spot. The interviewers were viewed as an integral part of the total process and a valuable resource. Every effort was made to communicate this to the interviewers by fostering the personal relationships that would accommodate free and candid interaction and by constantly asking for input.

Group interaction was a significant aspect of this function. There were called group sessions when specific matters needed to be handled. There were many more informal sessions when the group happened to be together during which project-related issues were discussed. The researcher and his assistant deliberately probed for the interviewers' input at both the formal and informal sessions.

As one example, after the interviewing was completed the interviewers were treated to a traditional Nigerian feast at the expense of the project. This was intended to be a thank-you session in keeping with the personal relationships which were intentionally fostered. It was also intended to be an occasion for a final informal debriefing. During the meal the researcher dropped a question: "Well, what did you learn about leprosy patients during the last two weeks?" It was then that the researcher learned what patients meant when they said they did not want to go to the hospital because "they would go to bed there." They were referring to their death bed, and nobody wants to go to bed never to wake up again. It was there that it was learned what patients meant when they said "peace of mind" was important to them. Peace of mind means nothing to worry about. When there is enough food and enough strength to farm one does not have to worry about providing for himself and his family—this produces "peace of mind". The insight gleaned from this and other similar occasions added depth to the researcher's understanding.

Information from informal sources and facilitated by personal relationships cannot easily be coded and tabulated systematically. But it served to supplement the researcher's sensitivities and added depth to the entire research process. The researcher's selection of crucial issues was influenced by informal inputs of this nature. The construction of the instrument occurred in a process of dialogue between the researcher and informal sources. Needless to say, the instrumentation was greatly influenced by these inputs. Likewise both the collection and interpretation of the data were influenced by information gleaned from people with whom the researcher interacted on a personal basis.

Whereas it does not affect the statistical significances the researcher feels considerably more comfortable with the conceptual significance of the whole project due to the inputs of these many informal inputs. Inputs of this nature were made possible largely through the fostering of personal relationships with people.

Summary

Evaluation of non-formal education programs in remote, Third World settings is a task on which serious constraints are laid. The Stake model proved to be a useful framework for the task. Procedures for collecting information must accommodate the constraints of the task. The use of non-empirical as well as empirical data, a small sample, simple statistics, searching out local resource people, drawing on resources available by mail and developing personal cross-cultural skills are procedures which permit effective evaluation in Third World non-formal education programs.

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