In an experiment evaluating comprehensive pediatric care provided for low-income families, changes in attitudes and satisfactions were examined. Certain general attitudes remained unchanged, but where care was actually delivered there was increased satisfaction and an increased preference for a primary physician. The authors point up the need for further study.

ATTITUDES AND SATISFACTIONS OF LOW-INCOME FAMILIES RECEIVING COMPREHENSIVE PEDIATRIC CARE

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LOW-INCOME families are the target population for large-scale medical care programs which are placed under the rubric "comprehensive." Because of financial and organizational contingencies, some programs are more comprehensive than others in terms of the range of services which they provide. Their common goal is to replace the haphazard organizational structures which have resulted in low-income families receiving medical care in an episodic fashion from various facilities. This fragmentation, with no coordination or continuity of medical care by any one resource, is condemned by health professionals and angry individuals from the community because it is inefficient and costly, and because human dignity is often lost in the anonymity of many public clinics.

Careful study of these programs is necessary to determine the degree to which the goals are being accomplished. The basic question is: Do these programs affect such factors as morbidity, utilization patterns, cost, or patient attitudes and satisfaction? Beginning in 1964, a study was undertaken to evaluate change in these variables as a result of comprehensive pediatric care offered to a sample of low-income families who were, at that time, users of the Children's Hospital Medical Center in Boston. This paper is a report of the attitudes and satisfaction of these families after three years, as compared to similarly selected samples of families who continued to obtain pediatric care in the various facilities which these groups used before 1964.

The physicians in the comprehensive care program provided acute and preventive services for all children in the family on a continuous basis. They made home visits when appropriate as well as the usual office calls. At the same time these physicians were participating in a fellowship program that provided postresidency work in the practice and

teaching of ambulatory pediatrics and family medicine. Ten physicians were in the program for one year and two for two years. When hospitalizations were necessary, patients were admitted to the Children's Hospital where they were cared for by the resident staff, with the Fellow as the private physician. Working closely with the physician, the nurse and other professionals, such as a social worker and child psychiatrist when appropriate, operated as a team to coordinate the over-all medical care of the children in each family. Night and week-end coverage was accomplished by rotation similar to that found in private group practice.

The Study

In 1964, at the beginning of the study, a stratified sample of 750 low-income families was selected from users of the Boston Children's Hospital Medical Center Emergency Clinic. These families lived within a three-mile radius of the hospital and had no regular family physician or pediatrician. The sample had a median income of $4,100; 20 per cent were on welfare and 37 per cent were black. This sample was randomly assigned to an experimental group who received the described comprehensive, family-focused pediatric care for three years, an attention-control group, and a nonattention-control group, with approximately 250 families in each group.

The experimental and attention-control families were interviewed before and at six-month intervals throughout the three-year care period. The nonattention families were identified by the initial interview and reinterviewed at the end of three-year care periods. The design permitted comparisons between the experimental group and the attention group and also between the two control groups. The nonattention group provided the opportunity to investigate the possibility that changes occur from interviewing about health. The collection, processing, and evaluation of the data were handled by the research team who were not involved in the delivery of care. The health team providing care played no role in the evaluation.

Between 1964 and 1968, 29 per cent of the sample were lost from the study. This loss was not exactly equal in the three groups. As can be seen in the tables, there are 173 experimental, 189 attention-control and 180 nonattention-control families. The per cent lost was not significantly different among the groups, and the families who were involved throughout the study period did not significantly differ on the numerous pre-experimental baseline measures. It should also be noted that, although the study period has ended, the experimental families will continue to receive comprehensive pediatric care as before.

Results

We attempted to measure attitudes and satisfactions at various levels. One set of questions assessed the mother's attitude toward preventive practices, her general attitude toward physicians, and her attitude toward the relative importance of health. Agreement or disagreement with statements, such as "there is no point in seeing a doctor when you don't feel sick" and "if a person takes good care of himself, he will stay healthy practically all his life," revealed the mother's willingness to take preventive action. Her attitude toward physicians was elicited by such remarks as "most people are just not willing to spend the money necessary for having really good health care" and "most people do not take enough time to care for their health properly."

There is no evidence of any difference between the experimental and control groups on these attitudes. They were no different at the beginning of the experimental period and did not change over the three-year period of the experiment. Similar findings occurred

when attitudes on nonmedical subjects were viewed. Responses to statements used to measure attitudes, such as alienation and acceptance of the maternal role, showed no differences between the experimental and control groups before or after the experiment and there was little change during the experiment. Thus, one must conclude that the experience with the experimental pediatric care program had no measurable influence on these general attitudes.

Satisfaction with present medical care was measured in a more specific fashion. In 1968, the mothers were asked how satisfied they were with care they received at their most recent medical visit and were asked to select from among various alternatives things that satisfied or dissatisfied them. Table 1 displays the percentage of mothers who were satisfied or dissatisfied with specific elements of the visit such as waiting time, time spent with the physician, ease of talking with the physician and nurse, and the exactness of the diagnosis. The greatest difference between experimental and control groups occurred around the issue of waiting time. Over 60 per cent of the mothers in the experimental clinic expressed satisfaction because they did not have to wait. Only about 40 per cent of the mothers in the control groups were satisfied with this aspect of their last medical visit. One in five of the control mothers found waiting time to be a particular source of dissatisfaction, whereas only 6 per cent of the experimental group expressed this view. There were no differences in satisfaction or dissatisfaction with respect to the amount of time the physician gave the patient.

These findings are quite consistent with actual measures of time in a time-motion study of the comprehensive care clinic and the medical emergency clinic which families in the control groups used occasionally. In each clinic 50 patients were chosen at random, and the amount of time spent in various activities by the patients and physicians around the visit was recorded. In the comprehensive care clinic patients

Table 1—Per cent of mothers expressing satisfaction or dissatisfaction with particular aspects of a child's most recent medical visit

	Experimental clinic (N=173) %	Contact control (N=189) %	Noncontact control (N=180) %	Significance
Satisfied because of:				
No wait	60.8	38.2	40.6	$p<0.001$
Doctor gave enough time	86.6	82.0	81.7	n. s.
Easy to talk to doctor	87.7	75.7	83.9	$p<0.01$
Easy to talk to nurse	68.4	54.0	56.7	$p<0.02$
Doctor told me exactly what the trouble was	74.9	81.0	81.7	n. s.
Dissatisfied because of:				
Wait too long	6.4	23.2	21.1	$p<0.001$
Doctor didn't give enough time	2.3	5.8	2.8	n. s.
Difficult to talk to doctor	1.8	9.0	5.6	$p<0.02$
Difficult to talk to nurse	1.8	3.7	1.1	n. s.
Doctor didn't tell me what the trouble was	2.9	5.3	6.1	n. s.

waited an average of seven minutes in the waiting room, as compared to 35 minutes for patients in the emergency clinic ($p<.001$). In addition, emergency clinic patients waited 18 minutes in the examining room for the physician, as compared to nine minutes in the comprehensive care clinic ($p<.001$). Actual face-to-face contact with the physician was 19 minutes in the comprehensive care clinic and 15 minutes in the emergency clinic, a difference that could have occurred by chance ($p=.09$).

Mothers in the comprehensive care clinic also found the quality of the relationship to be more satisfying. They indicated a greater degree of ease in talking to the physician and the nurse than did the control mothers who used the emergency clinic, well baby clinic, other out-patient clinics, and an occasional private physician. The mothers in the control groups more often were specifically dissatisfied with difficulties in communicating with the physician. Dissatisfaction in being able to talk to the nurse and the exactness of the physician's diagnosis were low in frequency, and no differences were found between the experimental and control groups.

Data were collected that dealt with the influence of the care program upon health-related attitudes and preferences for types of care in these low-income families. As part of one instrument, administered in 1964 and 1968, the mothers were presented with several hypothetical vignettes describing common clinical situations. In each instance, they were asked in an open-ended manner how they would deal with the situation. Table 2 lists representative vignettes as presented to the mothers. By the research design no data is available for the nonattention group in 1964.

Did participation in the comprehensive care program change a mother's responses to these common medical situations? In 1964, the experimental and control families showed a similar lack of orientation toward use of a primary care physician as compared to such resources as hospital clinics and well baby clinics. Only in the case of high fever did even 25 per cent of them consider turning to such a professional. Comparable percentages for other problems were diarrhea, 22 per cent; immunizations, 10 per cent; chronic disease, 5 per cent; acute poisoning, 5 per cent, and laceration requiring stitches, 1 per cent.

Table 3 contains the percentages of mothers in 1968 in each group who preferred a primary care physician—either family physician or pediatrician—as an initial resource for each specific situation. Each group showed some increase over the 1964 levels for the various problems. In each case, the experimental group was significantly higher than the control groups. The greatest change

Table 2—Samples of vignettes presented to interviewed mothers

A. Your three-year-old has just swallowed something poisonous. What do you think you would do?
B. You (your husband) have a sore throat, a temperature of 104°, and feel awful. You are sure you need (he needs) medical advice. What would you do?
C. Your whole family has diarrhea and you want to ask someone about it. What would you do?
D. It is time for your baby to receive the shots that are usually given to babies a few months after birth. What would you do?
E. Your nine-year-old fell and cut himself; you feel sure he needs stitches. What would you do?
F. If you or your husband need a physical examination for work, where would you or he go?
G. Suppose you have a chronic (long lasting) illness such as diabetes or arthritis, and need medical attention for a long time. How would you go about getting this?

Table 3—Per cent of mothers saying they would use a family doctor or pediatrician for selected medical problems of children* (1968)

Medical problem	Experimental group (N=173) %	Contact control group (N=189) %	Noncontact control group (N=180) %
Child temperature—103	66.4	36.7	41.1
Child physical exam	48.8	24.5	25.8
Family diarrhea	47.4	30.2	30.0
Immunizations	43.4	13.8	17.8
Chronic disease	43.1	11.6	14.0
Child poisoning	23.7	7.4	5.6
Child needs stitches	15.0	2.1	3.3

* All differences between the experimental and control groups are significant below the 0.001 level of probability.

occurred in those medical problems which the mothers were somewhat more inclined to take to a primary physician at the outset. Orientation toward chronic disease and emergencies changed less probably because, even in a comprehensive program, such problems are referred to the hospital or, in the case of emergencies, the family was sometimes met in the emergency room. Referral of families to the emergency rooms was discouraged, but it occurred under certain circumstances.

One of the prominent characteristics of the care program, as in middle-class pediatric practice, is the extensive use of the telephone as an instrument for communication between physician and patient.[1] Table 4 lists the four episodes when a telephone call to the physician might be appropriate, and once again shows the differences between the experimental and control groups. The mothers, in all groups in 1968, showed an increased awareness of the telephone as a means of contacting a physician for fever or diarrhea. Again, less change was found in the case of emergencies. In all

Table 4—Percentage of mothers who said they would use the telephone for the first contact for the various medical problems of children

	1964		1968*		
Problems	Experimental (N=173) %	Attention control (N=189) %	Experimental (N=173) %	Attention control (N=189) %	Nonattention control (N=180) %
Temp. 103°	40	39	84	65	59
Diarrhea	57	62	84	77	70
Poisoning	40	38	58	45	42
Laceration	3	1	10	3	1

* All differences between the experimental and control groups in 1968 are significant below the 0.05 level of probability.

Table 5—Percentage of mothers who said they would use family physician for adult problems

	1964		1968		
	Experimental (N=173) %	Attention control (N=189) %	Experimental (N=173) %	Attention control (N=189) %	Nonattention control (N=180) %
Mother sore throat	32	34	43	33	43
Father sore throat	31	35	36	34	38
Mother chronic disease	3	4	27	14	22
Father physical examination	24	25	27	25	27

instances, the most dramatic rise of projected telephone usage occurred in the experimental group.

The comprehensive care program was pediatrically oriented, delivering medical care only to the children of the families. How much can such a program influence the attitudes of the adults toward their own health? The data shown in Table 5 suggest that there was little carry-over to the adults. Although there was a slight increase in favor of the family physician for maternal health care in the experimental group, this is almost certainly a chance occurrence. Other data suggest that the mothers in the experimental group did prefer a single physician for the entire family from a group of alternatives, despite the fact that the care program delivered care only to their children. Fifty-two per cent preferred this source as compared to 32 per cent in the control group. Possibly, children were interpreted as "family," but it is also possible that providing family-focused care has influenced the mothers toward a preference for total family care, even though they had previously indicated little change in the actual management of adult health problems.

Discussion

Obviously, attitudes and satisfaction can be only an intermediate point on any scale that seeks to evaluate the effectiveness of any care program. A preliminary analysis of other study data found that the experimental families had fewer hospitalizations, fewer operations, more physician visits for health supervision, and fewer physician visits for illness when compared with the attention controls.[2] Final data on utilization, morbidity, and cost are being analyzed and will be reported later. Attitudes and satisfaction are not independent of these other factors, particularly utilization.

Silver, in analyzing changes in attitudes in the family maintenance demonstration, concluded that the participating families liked the care better.[3] The question can be asked whether this is a worth-while goal. There is accumulating evidence that changing attitudes and satisfactions are not only worth-while goals in themselves, but have some very practical consequences. For example, compliance with a prescribed regimen, such as completing a ten-day course of penicillin[4] or maintaining penicillin prophylaxis,[5] is related to the degree to which the patient is satisfied with the physician-patient relationship.[6] It is evident from the data that specific types of patient satisfaction are improved in comprehensive care programs when compared to controls receiving fragmented care.

That similar changes in general health

attitudes, attitudes toward the maternal role, and alienation, did not change is disappointing but not surprising. Most of the items used to measure these attitudes referred to adult behavior and, as we have seen, the changes that occurred in orientation toward action in the case of common pediatric problems did not influence the mother's orientation toward adult problems. Whether or not such changes occur, when care is provided for adults and children in the same program, is an important question for future research. The fact that changes are selective and rather specific suggests that the range of services provided will determine the range of attitudes affected. General attitudes, such as alienation, accumulate over a lifetime and include inputs from the person's entire social milieu. To expect changes in such attitudes to result from a medical care program which is only a small part of a patient's life, particularly over the relatively short period of three years, is perhaps too ambitious a goal.

The selective changes observed in these data also suggest that various changes in the health care system have differential effects. In the control groups there was little change in the services themselves over the three years, but there were some changes in orientation of the mothers' various actions under particular conditions. Two neighborhood health centers were put into operation in two low-income neighborhoods within the three-mile radius defined as the boundary for inclusion in the study. However, the three-mile radius includes a number of low-income neighborhoods outside the geographic boundary of these centers and only 8 per cent of the control families had been to a neighborhood health center. Therefore, changes in the control group cannot be attributed to neighborhood health centers.

During this period, the major innovation in the health care system for which most children in medically indigent families were eligible was Medicaid. It is likely that the increased orientation toward use of a primary physician in the control group resulted from the availability of this means of paying for care. However, it is clear, when comparing experimental and control groups, that provision of comprehensive services has a much greater impact than provision of a payment mechanism alone. Thus, it should not be assumed that changes in payment without changes in services will make a major impact on the fragmented medical care of the poor.

Finally, it should be noted that merely interviewing families periodically does not change their health-related attitudes. Comparison of the contact and noncontact control groups reveals no differences in any of the attitude measures.

Summary

Changes in attitudes and satisfactions in low-income families were measured by questionnaire as part of an experiment evaluating comprehensive pediatric care. While there were no changes noted in such general attitudes as alienation, acceptance of the maternal role, and preventive health practices, increased satisfaction with the delivered care and increased preference for a primary care physician were observed. The changes noted were most striking in those areas where care was actually provided. This suggests that there will only be a major impact on the fragmented medical care of the poor if there are major changes in the services offered. This experiment was concerned with only one model of care and other proposed models should be the subject of similar evaluative efforts.

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How Do You Dispose of an Old Freight Car?

From 70,000 to 80,000 old freight cars are discarded by U. S. railroads each year, dismantled, and cut up for scrap. Since a single car is 40 feet long and weighs up to 27 tons, the process involves a lot of labor and specialized equipment. Open burning is on the way out because of the smoke nuisance and increasingly stringent air pollution requirements. Hand stripping is slow and costly in labor. For these reasons, the Bureau of Solid Waste Management conducted a study which tested 11 methods for the disposal of freight cars—or any heavy bulky structures. Two most promising methods turned out to be:

1. Self-contained incineration in which cars are burned under a funnel-shaped hood containing smoke scrubbers to control air pollution.

2. Removing the wood by cutting it away with high-pressure water jets.

(Bureau of Solid Waste Management, Environmental Control Administration, Rockville, Md. 20852)