

THE TEACHING OF ADULT
AMBULATORY PATIENT CARE
IN U. S. MEDICAL SCHOOLS:
CHARACTERISTICS OF PROGRAMS

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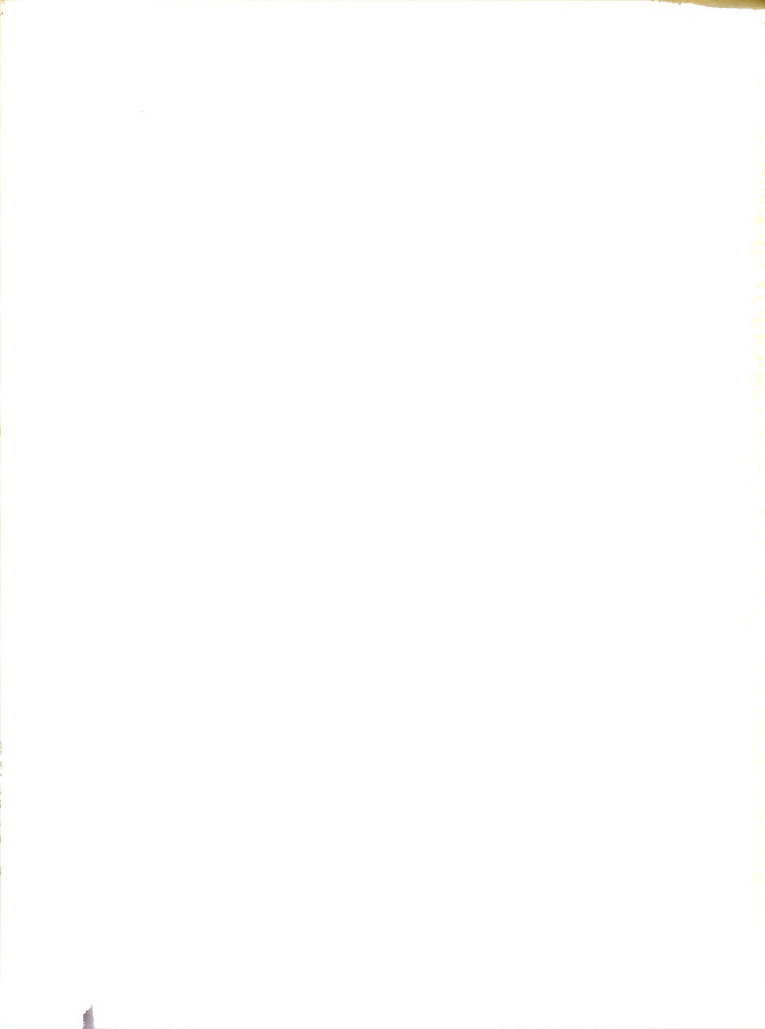
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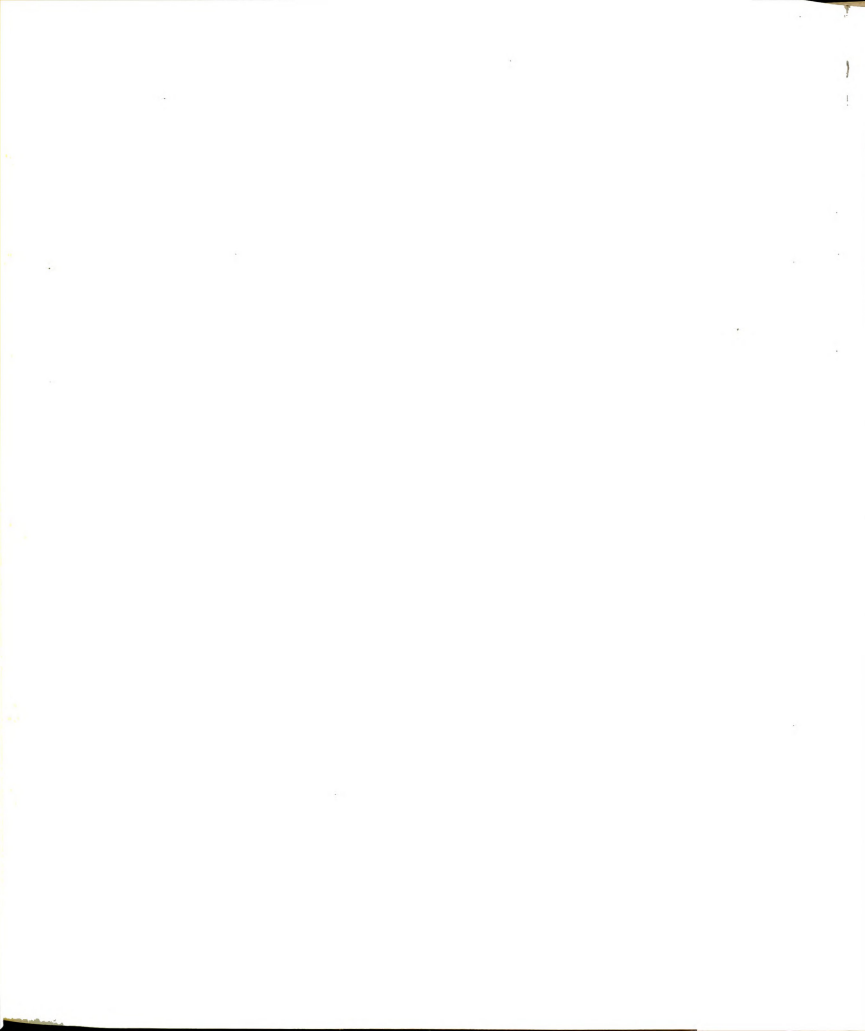
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ABSTRACT

THE TEACHING OF ADULT AMBULATORY PATIENT CARE IN U.S. MEDICAL SCHOOLS: CHARACTERISTICS OF PROGRAMS

By

Donald Merle Gragg

Approximately half of the student's time in medical school is devoted to clinical instruction, learning through supervised experiences with patients. The current rapid increase in the number of medical students without an accompanying increase in the number of university hospital beds suggests that new or modified approaches to clinical instruction are going to be needed. One way that this impending shortage of hospitalized patients might be alleviated would be to increase the utilization of ambulatory patients for clinical instruction. This seems particularly appropriate since the vast majority of clinical instruction in U.S. medical schools involves experiences with hospitalized patients, but the greater proportion of medical practice involves the care of ambulatory patients.

As a first step in stimulating research in this area, a descriptive and exploratory study of the teaching of adult ambulatory patient care in U.S. medical schools

was conducted. The information produced is expected to be valuable to medical schools in planning and conducting ambulatory care teaching programs, and to researchers by suggesting topics for further study. The research was intended to produce information with which to answer the following questions:

1. What are the major problems which faculty and students perceive in current adult ambulatory care teaching?
2. Which characteristics of current adult ambulatory care teaching programs are associated with the success or failure of the program?
3. Does the degree of success of programs vary with differing program goals?
4. Are preceptorship programs more successful than clinic programs for some types of goals?

A model was proposed for use in the study of clinical instruction. Patient, Student, and Faculty Variables are largely beyond the control of program designers. Program Goals are determined by the curriculum. Process Variables, i.e. operations variables, are controlled by the program director within the constraints imposed by the previously listed groups of variables. The Outcome Variables are dependent upon Program Goals and Patient, Student, Faculty, and Process Variables.

The available literature on the teaching of ambulatory patient care provided a number of case studies, but proved to be inadequate to guide the design of the present study.

Methodology

A three-phase methodology was used in which the results of the earlier phases were used to assist in the design of the later phases. The first phase of the study consisted of a series of problem identification sessions with medical school faculty and students. The next phase of the study involved interviews at three medical schools with administrators, faculty, nurses, and students representing ten adult ambulatory care teaching programs. This phase resulted in a series of case studies and assisted in the identification of appropriate variables and hypotheses for use in the questionnaire phase.

The first component of the questionnaire phase was a survey of the ninety-six established United States medical schools which identified sixty-two clinic programs and twenty-six preceptorship programs appropriate for further study. These programs were selected because they dealt with medical students working with adult ambulatory patients in the fields of general medicine or family medicine. Questionnaires were designed for completion by faculty supervisors of clinic programs, clinic nurses,

participating students in selected programs, and preceptorship coordinators.

Responses were coded and consolidated for computer analysis. Each program was assigned to a series of groups based on (a) faculty and (b) student ratings of the program's success, and (c) on faculty indication of the program's goals.

The data analysis was of three types: the description of all programs and subsets of programs on relevant variables; the determination of the degree of association between variables; and the testing of seventeen hypotheses generated during the first two phases of the study.

Problem Identification Phase

A problem identification process to identify areas of difficulty in adult ambulatory care teaching was carried out primarily to assist in the design of Phases Two and Three of this study. One faculty group and one student group at each of two medical schools participated in the problem identification process. One hundred sixteen problem statements were produced. Problems regarding concern for the continuity of patient care and continuity of the student-patient relationship received the highest priorities. Problems included among the Process Variable group of the model presented received the most attention from both students and faculty. Students demonstrated

more concern than faculty with the Patient Variables, while faculty showed more concern with the Student Variables.

Case Study Phase

Descriptions of nine clinic programs and one preceptorship program at three medical schools were presented. All of the clinic programs used a similar method of operation. An ambulatory patient's medical history, physical examination, and perhaps laboratory studies were performed by a student. The student conferred with a faculty member and the patient's diagnosis and recommended management were discussed and decided. The patient was then advised of the findings and recommendations. In one clinic program, in addition to the process described above, a significant proportion of the student's time was devoted to the study of the pathophysiology of selected disease processes. All of the programs studied demonstrated the fact that good ambulatory care teaching is expensive.

Questionnaire Survey Phase

Adequate data for analysis were obtained on fifty of the sixty-two clinic programs surveyed and twenty-three of the twenty-six preceptorship programs.

Questionnaire results were analyzed and a profile of clinic programs was presented characterizing the programs on each of the variables studied. A comparison of

clinic and preceptorship programs revealed that: (a) preceptorships were more commonly elective experiences; (b) they had a higher priority on two goals, student involvement in a health care delivery system other than a university medical center and experience to assist the student in making career choice decisions; (c) they had a lower priority on goals relating to knowledge of the pathophysiology of diseases and the natural history of chronic diseases; and (d) there was no difference in the faculty ratings of success of the two types of programs.

A comparison of the programs with and without student questionnaire data revealed that those programs selected for study with student questionnaires (a) had a smaller percentage of full-time faculty teaching in the clinic, (b) involved more third-year students, (c) were larger, (d) were more commonly required, and (e) were rated lower by faculty on the educational value of the programs.

There was no meaningful difference between the faculty and student responses to questions on the descriptive, or independent, variables. On the outcome variables, however, there was no significant relationship between faculty and student responses. Students' ratings of program strengths and weaknesses confirmed the earlier finding that clinic and/or curriculum organization was a major problem area.

The relationships between variables were studied (a) by comparing the characteristics of groups of programs with different goals and different success ratings, (b) by correlations between variables, and (c) by multiple regression analyses using the success indices as dependent variables. A number of program characteristics were found to be significantly related to program goals. The ratings of the willingness of faculty to participate in the programs bore the strongest relationship to the faculty ratings of program success, accounting for over 20 percent of the variance of the Faculty Success Index for all clinic programs and programs without student questionnaire data. Student ratings of success were positively correlated with high ranking of the goal, to demonstrate the pathophysiology of disease at a given point in time, and negatively correlated with the number of students in the program.

Three of the seventeen research hypotheses were accepted: (1) Students planning careers in the primary care specialties rated clinic programs as being of greater educational value than did other students. The Faculty Success Index was positively correlated with both (2) faculty willingness to participate in the program and (3) the percentage of participating faculty who were full-time faculty.

THE TEACHING OF ADULT AMBULATORY PATIENT'
CARE IN U.S. MEDICAL SCHOOLS:
CHARACTERISTICS OF PROGRAMS

By

Donald Merle Gragg

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DEDICATION

TO

My Wife, Charlotte,
and our three children,
Kathleen, Brian, and Gary.

They gave the encouragement and
support needed to complete this study.

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Chapter 1

THE PROBLEM

The education of medical students consists of the acquisition of the essential knowledge, skills, and attitudes for the practice of medicine. While some of this education occurs through classroom-type activities, approximately half of the student's time in medical school is devoted to learning through supervised experiences with patients. For at least the past half century, the vast majority of these patient care experiences have been with hospitalized patients on the teaching wards of university, or university-affiliated, hospitals. This situation raises two questions, one educational and the other administrative.

Educational Question

Is it educationally sound for medical students to have little, if any, experience in dealing with non-hospitalized, or ambulatory,¹ patients? While the

¹The term, "ambulatory patients," is used throughout this report to indicate patients who are not confined or admitted to a hospital.

student certainly needs to have experience with acutely ill, hospitalized patients under controlled conditions, it is ambulatory patients who provide the opportunity for the student to have experiences that much more closely parallel typical medical practice.

The student should learn to care for patients between the crises that lead to hospitalization. With ambulatory patients the student can follow a patient with a chronic disease thereby gaining a "disease-over-time" perspective that is difficult to achieve with hospitalized patients. Ambulatory patients also present a different spectrum of disorders than are found on a teaching ward. Minor illnesses, smoldering chronic diseases, and psychosomatic and mild emotional disorders constitute the bulk of medical practice, but seldom result in hospitalization.

Medical advances over the past three decades have made it possible for many problems previously requiring hospitalization, to be managed on an out-patient² basis. A continuation of this trend would accentuate the current disparity between the nature of the typical medical practice and the study and management of hospitalized patients.

²The term, "out-patient," refers to patients who are not confined or admitted to a hospital, and is used synonymously with ambulatory patient.

If the educational principle that the content and setting of learning should closely parallel the content and setting of practice is accepted, it must be concluded that ambulatory patients should play a major role in medical education.

Administrative Question

Will there continue to be adequate numbers of hospitalized patients accessible to students to continue the past pattern of clinical teaching? The number of students entering United States medical schools annually increased over 25 percent between 1968 and 1972.³ There is reason to believe that the number of entering students may nearly double between 1972 and 1985.⁴ Unless current teaching hospitals will be able to handle more students, and there is no available evidence for this, the number or size of teaching hospitals will have to increase, clinical teaching will have to be carried out elsewhere, or the amount of clinical teaching per student will have to be diminished.

The problem of adequate numbers of patients in teaching hospitals is aggravated by three additional

³"U.S. Medical School Enrollments, 1968-1969 Through 1972-1973," Journal of Medical Education, 48:293-97, March, 1973.

⁴William G. Anlyan, "1985," Journal of Medical Education, 46:917-26, November, 1971.

factors: (1) Funds for the construction of new hospitals are being curtailed;⁵ (2) Expanding medical insurance programs are reducing the size of the medically indigent population, which has been the traditional source of patients used in clinical teaching; and (3) The number of hospital admissions has stabilized as the length of patient stay declines, resulting in fewer hospitalized patients.⁶ It seems unlikely that traditional teaching hospitals will be able to maintain their nearly exclusive role in the clinical instruction of medical students.

If traditional teaching hospitals will be unable to provide an adequate amount of clinical instruction, what are the alternatives? Clinical instruction could be provided by (a) community hospitals; (b) by educational strategies requiring fewer patients, such as simulation techniques; or (c) by greater utilization of ambulatory patients. All three of these alternatives have, in fact, been used to some extent.

⁵"NIH Funds To Be Less in Fiscal 1974 Than in Fiscal 1972," Bulletin of the Association of American Medical Colleges, VIII, 2 (February, 1973), 1.

⁶Anne R. Somers, Health Care in Transition: Directions for the Future (Chicago: Hospital Research and Educational Trust, 1971), p. 28.

Need for Research on Ambulatory Care Teaching

Since ambulatory care teaching⁷ is expected to assume an increasingly important role in medical education, it is essential to have knowledge of the strategies and methods of this type of instruction in order to design and operate an optimum educational program. Although there is considerable literature⁸ on ambulatory care teaching, no systematic research has been carried out to guide the planning of this aspect of medical education.

The Purposes of This Study

The purposes of this study are: (1) To provide information on selected aspects of current adult ambulatory care teaching to assist educational planners in decision-making; and (2) To identify fruitful areas for further research on adult ambulatory care teaching.

The study is primarily exploratory and descriptive in nature. The research is intended to produce information with which to answer the following questions.

⁷The term, "ambulatory care teaching," is used to mean the teaching of clinical medicine to medical students using ambulatory patients.

⁸This literature is reviewed in Chapter 2.

Research Questions

1. What are the major problems which faculty and students perceive in current adult ambulatory care teaching?
2. Which characteristics of current adult ambulatory care teaching programs are associated with the success or failure of the programs?
3. Does the degree of success of programs vary with differing program goals?
4. Are preceptorship programs⁹ more successful than clinic programs¹⁰ for some types of goals?

A Model for the Study of Clinical Teaching Programs

A detailed examination of a complex system requires an organizing set of principles or a model. A review of the literature on ambulatory care teaching failed to disclose existing principles or a model adequate to guide

⁹"Preceptorship programs" refers to programs in which medical students are involved in ambulatory care outside the usual teaching hospital setting under the supervision of physicians who are primarily practitioners rather than medical school faculty. These programs are sponsored or approved by the school but take place in the physician's office, or other practice site. The students are usually assigned to physicians singly rather than in groups.

¹⁰"Clinic programs" refers to programs in which groups of students are involved in ambulatory care in an out-patient clinic which is part of a university, or university-affiliated, medical center under the supervision of university faculty, either salaried or voluntary.

this study. For this reason the model described below was developed. The model is presented in diagrammatic form in Figure 1.1. Although the model was designed to assist in the study of ambulatory care teaching, it could be applied in the study of any clinical teaching program.

Assumptions

The essential assumptions of the model are that

- (a) program characteristics can be separated into groups of characteristics, or variables, called Patient Variables, Student Variables, Faculty Variables, and Process Variables;
- (b) Program Goals influence some of these variables; and
- (c) the success of the program, as measured by the Outcome Variables, is determined by the program characteristics in the Patient, Student, Faculty, and Process Variable groups, and the Program Goals.

Interdependence, Independent, and Interactions of Variables

The variables within each group, Patient, Student, Faculty, and Process, have considerable overlap or interdependence. For example, the academic rank of a faculty member may influence his willingness to teach in an ambulatory care setting. It is wise, therefore, to think in terms of profiles or clusters of characteristics within each variable group rather than dealing with each variable separately. Although a variable or the profile of variables in one group may influence the characteristics

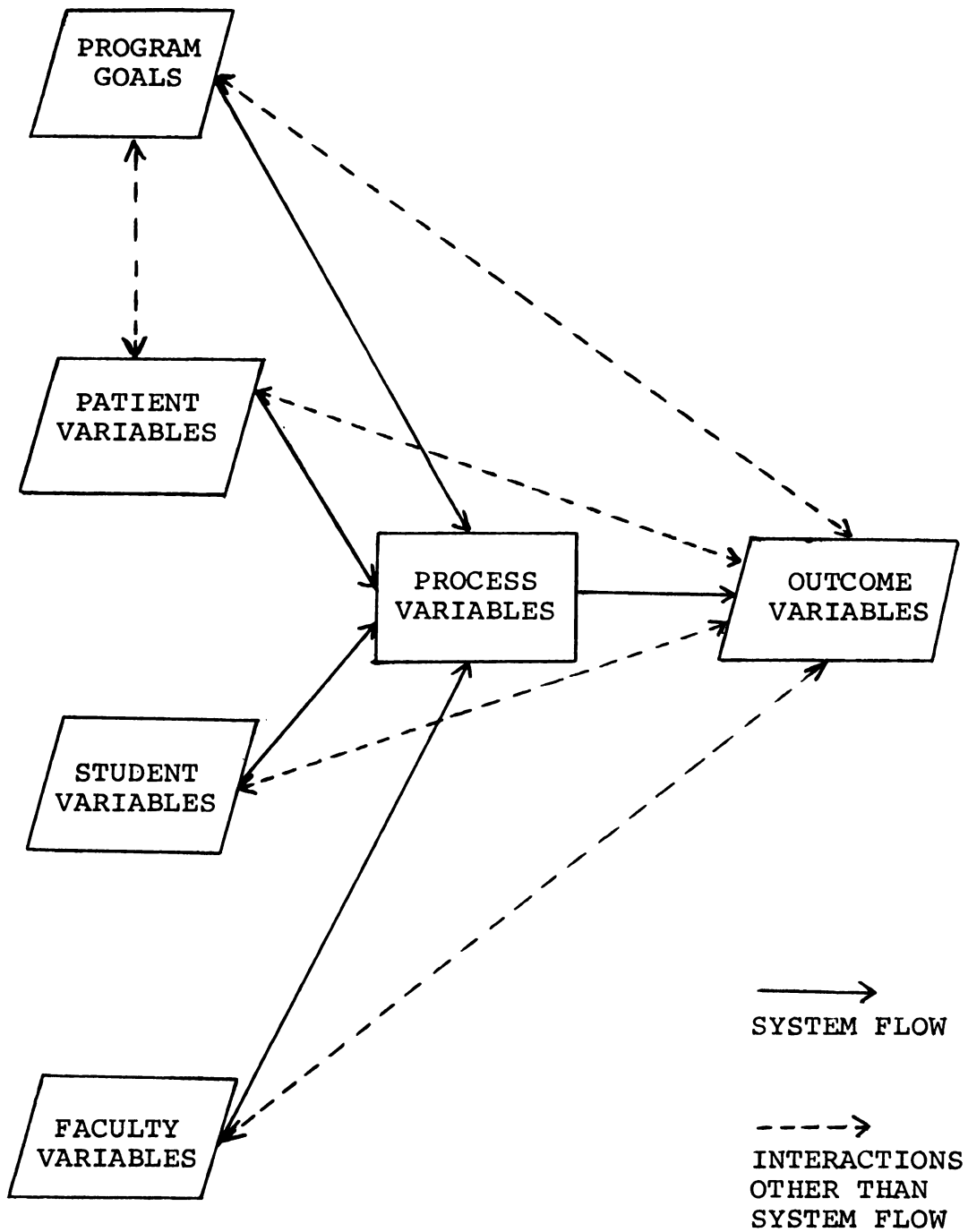
INPUTPROCESSOUTPUT

Figure 1.1

A Model for the Study of Clinical Teaching Programs

of one or more variables in another group, this influence is by program design, not by the inherent nature of the variables involved. Thus, these variable groups can be considered independent of one another for research purposes, while recognizing that interactions, or designed interrelationships, are to be expected. For example, the characteristics of the students in a given program do not inherently change the nature of the faculty in the program, but the characteristics of the students may well influence the selection of faculty members (a program design decision). These interdependent, independent, and interaction relationships must be recognized and reckoned with in the use of this model. Some predicted interactions are represented by arrows in Figure 1.1.

Control of Variables

The different variable groups are under differing degrees of control by the program director. The student and faculty characteristics are usually determined by the overall curriculum, resources, and other factors not under the control of the program director. The program goals are usually determined largely by the curriculum, but with some input by the program director. The patient characteristics are decided by a combination of the available patient population, which is beyond the control of the program director, and the patient selection and/or screening processes which are established by the program



director. The characteristics of the process are specified by the program director within the constraints of the faculty, student, and patient characteristics and the program goals. The program goals and the faculty, student, patient, and process variables, determine the success of the program (outcome variables). These differing amounts of control over the variables of the different groups are of concern in determining which variable groups are most important to study for purposes of assisting in the decision-making of educational planners.

Current Study

In the current study selected variables within each variable group are examined in order to test the usefulness of the model. The interdependence, independence, and interactions of the selected variables are also explored.

Overview of the Dissertation

Literature on ambulatory patient care teaching is reviewed in Chapter 2. This review consists of an historical perspective followed by a more detailed review organized around the variable groupings used in the previously described model. In Chapter 3 the methodology of the study is described in some detail. The study was carried out in three phases. The first phase consisted of group sessions with medical students and faculty to

identify problems associated with adult ambulatory care teaching. Brief case studies of the adult ambulatory care teaching programs at three medical schools constituted the second phase of the study. The third phase was a series of national questionnaire surveys of adult ambulatory care teaching programs. Chapters 4 through 6 consist of the results of Phases One through Three, respectively.

Chapter 2

REVIEW OF THE LITERATURE

The literature on ambulatory care teaching is reviewed in this chapter with two separate styles. First, a historical perspective is taken in sketching the development of out-patient clinics and the emergence and activities of the Comprehensive Care Movement. In the second part of this chapter bits of information from various sources are organized around the components of the model presented in the previous chapter. There are, therefore, sections on Patient Variables, Faculty Variables, Student Variables, Process Variables, Program Goals, and Outcome Variables.

The purpose of this chapter is to provide the reader with adequate background information to understand the nature and significance of the current study.

An Historical Perspective

Out-patient clinics first appeared in the United States during the latter part of the eighteenth century--the New York Dispensary in 1771, the Philadelphia Dispensary in 1786, and the Boston Dispensary in 1796. The

development of these clinics "stemmed from a sense of obligation on the part of society to provide medical services for all persons regardless of their ability to pay."¹ During the next century dispensaries and the hospitals with which they became affiliated were dedicated to the sick poor. With Lister's discovery of the principles of antisepsis, and the subsequent development of improved surgical techniques, hospitals became centers for the treatment of the sick of all classes. The outpatient clinics, however, remained as a source of ambulatory care primarily for the indigent populace.

The degree to which these pre-twentieth century clinics were used to train physicians is not clear. Medical education was predominately an apprenticeship until the mid-eighteenth century when an academic trend developed. This trend led to the Flexner Report² which "gave the final impetus for centering all medical education in hospitals and universities, and charity wards became the sole teaching centers."³ The role of outpatient

¹Marvin B. Sussman et al., The Walking Patient: A Study in Outpatient Care (Cleveland: The Press of Western Reserve University, 1967), p. 2.

²Abraham Flexner, Medical Education in the United States and Canada (New York: The Carnegie Foundation for the Advancement of Teaching, 1910).

³John Schulman, Jr., "The Role of Hospital Ambulatory Service in Medical Education," Journal of Medical Education, 46:246, March, 1971.

clinics in medical education during the early twentieth century is quite clear. These clinics served as sources of patients who would be admitted to the wards if they were interesting teaching cases.⁴

Out-patient departments had second-class status. Care in these departments was fragmented due to the presence of many specialty and subspecialty clinics with narrow interests and an orientation to crisis or episodic care. Society developed an increasing concern for adequate health care for all people. It is not surprising that there emerged a movement dedicated to promoting and teaching comprehensive medical care.

The Comprehensive Care Movement

Comprehensive care "implies the mobilization of all appropriate available resources for the care of the patient," including a primary concern for the entire patient, the application of preventative measures, and the early detection of disease.⁵ Ambulatory, or out-patient, medicine is not necessarily comprehensive, but a major portion of comprehensive care takes place in the

⁴Sussman et al., op. cit., p. 4; Charles H. Goodrich, Margaret C. Olendzki, and Annemarie F. Crocetti, "Hospital-based Comprehensive Care: Is It a Failure?" Medical Care, 10:366, July-August, 1972; Schulman, op. cit., p. 246.

⁵Peter V. Lee, Medical Schools and the Changing Times (Evanston, Ill.: Association of American Medical Colleges, 1962), p. 29.

ambulatory care setting. It is for this reason that the Comprehensive Care Movement focused on ambulatory care teaching. As a result, during the past two decades the majority of the literature on ambulatory care teaching emerged from this Movement. The comprehensive ambulatory care teaching literature includes two books, several reviews of the literature, and numerous articles describing individual teaching programs. The books and review articles are summarized below. Descriptions of individual programs are incorporated in a later section of this chapter.

The Cornell Program

In 1952 with support from the Commonwealth Fund, the New York Hospital-Cornell Medical Center began the Comprehensive Care and Teaching Program (CC & TP). Reader and Goss provide an extensive report on the first five years of operation of this program.⁶ In the CC & TP, as it was called, senior medical students devoted twenty-two and a half weeks to comprehensive ambulatory medicine. During this time the students attended Medical, Pediatrics, Psychiatry, and elective specialty Clinics, as well as various conferences, seminars, and lectures. The Medical and Pediatric Clinics were reorganized to provide

⁶George G. Reader and Mary E. W. Goss (eds.), Comprehensive Medical Care and Teaching (Ithaca, N.Y.: Cornell University Press, 1967).

continuity of the faculty-student-patient relationship. Consultants were available in the clinics to avoid the fragmentation resulting from frequent referrals to specialty clinics. Students were expected to assume primary responsibility for the diagnosis and treatment of their patients. "On the whole, students eagerly accepted . . . (this) responsibility."⁷

Since the CC & TP was considered an experimental program, arrangements were made for extensive research activities. These aspects of the Program were carried out by the Bureau of Applied Social Research at Columbia University, and had a sociological focus which centered on the effect of the program on the attitudes and values of the medical students. The results of these studies make up a major portion of Reader and Goss' book,⁸ and led to a major publication in medical sociology.⁹ The finding of this intensive research and evaluation effort are well summarized by Reader:

. . . the Cornell Program had the desired effect on students' attitudes and standards as compared with the effect of other fourth-year courses. It resulted in students' becoming more patient-oriented and had moderate success in reversing the trend from first through fourth year, common in medical schools, toward

⁷ Ibid., p. 59.

⁸ Ibid.

⁹ Robert K. Merton, George Reader, and Patricia Kendall (eds.), The Student Physician: Introductory Studies in the Sociology of Medical Education (Cambridge: Harvard University Press, 1957).

an increasing preference for patients with physical illness. At the same time, professional detachment toward patients was enhanced, not at the expense of viewing patients as disease entities rather than as persons, but representing an increase in professional maturity. As a result of the Program, students also tended to attach greater importance to social and emotional problems of patients than those not exposed to it. Their standards in regard to quality of medical care and the limitations of the physician's role were improved by the CC & TP experience; they became more discriminating and more realistic.¹⁰

The Colorado Experiment

A year after the beginning of the Comprehensive Care and Teaching Program at Cornell, the University of Colorado established an experimental comprehensive care teaching program at the Denver General Hospital.¹¹ This program was centered around a specially organized General Medical Clinic (GMC). The GMC served a limited number of patients, both adults and children. The principles of comprehensive care that were taught were similar to those of the Cornell program, but at Colorado there was more emphasis on family care.

A randomly selected half of each senior class attended the GMC program approximately half of their time for twenty-four weeks. In addition to the supervised patient care experiences, the students participated in

¹⁰Reader and Goss, op. cit., p. 287.

¹¹Kenneth R. Hammond and Fred Kern, Jr., Teaching Comprehensive Medical Care (Cambridge: Harvard University Press, 1959).

special conferences. The control group of students spent an equal amount of time in varied experiences at a different hospital.

The research activities associated with the Colorado program focused on psychological studies, and are reported in detail by Hammond and Kern.¹² The experimental group acquired at least as much traditional medical knowledge and skill as the control group, but there was only a slight increase in their understanding of psychological and sociological principles. During the senior year the control group students developed increasingly negative attitudes toward the aspects of comprehensive care, while the attitudes of the experimental group students showed little change.

Reviews of Comprehensive Care Teaching Programs

As part of a series of case reports on experimentation in medical education, Lee includes four comprehensive care teaching programs--Cornell, Colorado, Temple, and North Carolina.¹³ He points out the contrasts among the different programs--Temple emphasized psychosomatic medicine and North Carolina stressed preventive

¹²Ibid.

¹³Lee, op. cit., pp. 29-59.

medicine, whereas Cornell and Colorado carried out research in the sociology and psychology of medical education.

Snoke and Weinerman reviewed twenty-three comprehensive care programs at nineteen medical schools. Of their conclusions, the following are particularly relevant:

1. Medical education in the current era is incomplete without attention to the principles and practice of comprehensive patient care.
2. The comprehensive care unit should be modest in size, with controlled patient load and low preceptor-student ratio.
3. The patient group should be selected to represent a cross-section of the community.
4. The student should have direct responsibility in the care of patients assigned to him.¹⁴

In an attempt to determine the effectiveness of teaching programs in comprehensive medicine, Sanazaro and Bates conducted a study comparing the performance of students in schools with and without explicit comprehensive care programs.¹⁵ They failed to demonstrate significant differences in the relevant behaviors of the two groups of students, but the great majority of the students in both groups were judged to perform at a satisfactory level. The authors acknowledge severe short-comings in their methodology which limit the usefulness of their findings.

¹⁴Parnie S. Snoke and E. Richard Weinerman, "Comprehensive Care Programs in University Medical Centers," The Journal of Medical Education, 40:625-57, July, 1965.

¹⁵Paul J. Sanazaro and Barbara Bates, "A Joint Study of Teaching Programs in Comprehensive Medicine," The Journal of Medical Education, 43:777-89, July, 1968.

Fate of the Comprehensive
Care Movement

The Cornell Comprehensive Care and Teaching Program continued in operation with minor changes for over fourteen years, but then declined until currently only a small vestige remains.¹⁶ The Colorado Program was modified and incorporated into the regular curriculum after the five-year experimental study. In 1961 the program was discontinued.¹⁷ Snoke and Weinerman noted that six of the twenty-one programs they reviewed had been discontinued by 1964.¹⁸ Goodrich, Olendzki, and Crocetti claim that the first generation comprehensive care programs were successful in their area of teaching and research.¹⁹ They report, however, that second-generation projects are failing to replace the traditional out-patient departments.

Over the past few years the number of reports on comprehensive ambulatory care teaching programs has diminished. It appears that many of the principles of comprehensive care have been incorporated into traditional educational programs, and that the major concern of the

¹⁶Personal correspondence.

¹⁷Snoke and Weinerman, op. cit., pp. 632-33.

¹⁸Ibid., pp. 628-31.

¹⁹Goodrich, Olendzki, and Crocetti, op. cit.

Comprehensive Care Movement has shifted from medical education programs to the health care delivery system. The Movement produced much information on various aspects of ambulatory care teaching that is useful in studying medical education.

Aspects of Ambulatory Care Teaching

The literature that resulted from the Comprehensive Care Movement and related ambulatory care teaching programs is predominantly in the form of case studies or compilations of case studies. In this section the information from these reports will be reorganized to fit the model for the study of ambulatory care teaching described in Chapter 1.

Patient Variables

The patient is a critical element in the ambulatory care teaching program, however, as Hammond and Kern point out, patients who do not fit the program "are likely to be barriers, rather than aids, to education."²⁰ Snoke and Weinerman concluded that "ideally, the patient group should be selected to represent a cross-section of the community."²¹ Students are concerned if the patients do not present a concentration of specific diseases, but

²⁰Hammond and Kern, op. cit., p. 141.

²¹Snoke and Weinerman, op. cit., p. 648.



faculty may worry more about the patients' lack of motivation to get well and communications problems." The high percentage of chronically, but not seriously, ill patients with insoluble psychological problems and hopeless social situations, together with the high missed appointment rate, definitely detracted from the effectiveness of the . . . (Colorado) program."²² Students complain of "the frustration of being unable to achieve any observable treatment gain in many cases."²³ Although indigent, chronically ill patients present difficulties in the educational program, they are more satisfied than acutely ill patients with the care they receive in the out-patient clinic.²⁴

Finding suitable patients for inclusion in an ambulatory care teaching program is not easy. The Cornell Comprehensive Care and Teaching Program had to revise patient selection criteria in order to obtain an adequate number of suitable patients.²⁵ A major concern in the selection of patients for a teaching program is the

²²Hammond and Kern, op. cit., p. 159.

²³David E. Reed, "Twelve Years' Experience with a Comprehensive Ambulatory Care Program," Journal of Medical Education, 45:1043, December, 1970.

²⁴Sussman et al., op. cit., p. 85.

²⁵Merton, Reader, and Kendall, op. cit., p. 250.

acceptance by the patient of a medical student as his "physician." In a study of clinic patients Wasserman, et al., found "that 78% (of patients) accepted without question the involvement of medical students in the team; and 22% were fully aware that the students were not graduate physicians, yet welcomed their interest."²⁶ Concern has been expressed for the fact that expanded medical insurance programs are reducing the number of "medically indigent" patients, and that there may be inadequate numbers of such patients to carry out traditional ambulatory care teaching programs. Reed reports the results of a study of private patients in physicians' offices. Of these patients, 25 percent desired contact with medical students, 65 percent did not care, and 10 percent felt that medical student involvement in their care would be unacceptable.²⁷ This report suggests that private patients may be available for the teaching of medical students.

In addition to this general view of the role and problems of the patients in ambulatory care teaching, the literature provides information on some of the specific aspects of the patient role.

²⁶Edward Wasserman et al., "Medical Student Involvement in Comprehensive Health Care," Journal of American Medical Association, 215:2098, March 29, 1971.

²⁷Reed, op. cit., p. 1046.

Socio-economic status. Sussman discusses the impact of the differences between the values of the indigent patient and the middle-class practitioner or medical student.²⁸ Snoke and Weinerman conclude that the dependence of ambulatory care teaching programs on the low-income clinic population has been a definite disadvantage. "The problems presented by such patients are discouraging and difficult, particularly for inexperienced medical students, and have been the source of much of the negative student attitude."²⁹ Sussman concurs that "medical students have not been seeing the type of patients likely to be encountered in their later practice."³⁰ Hammond and Kern also argue that the patient population should represent a variety of social and cultural types.³¹ One study also showed "that more preventive and health education work was possible with moderate-to-high income families than with lower-income families."³² There seems to be little question that the

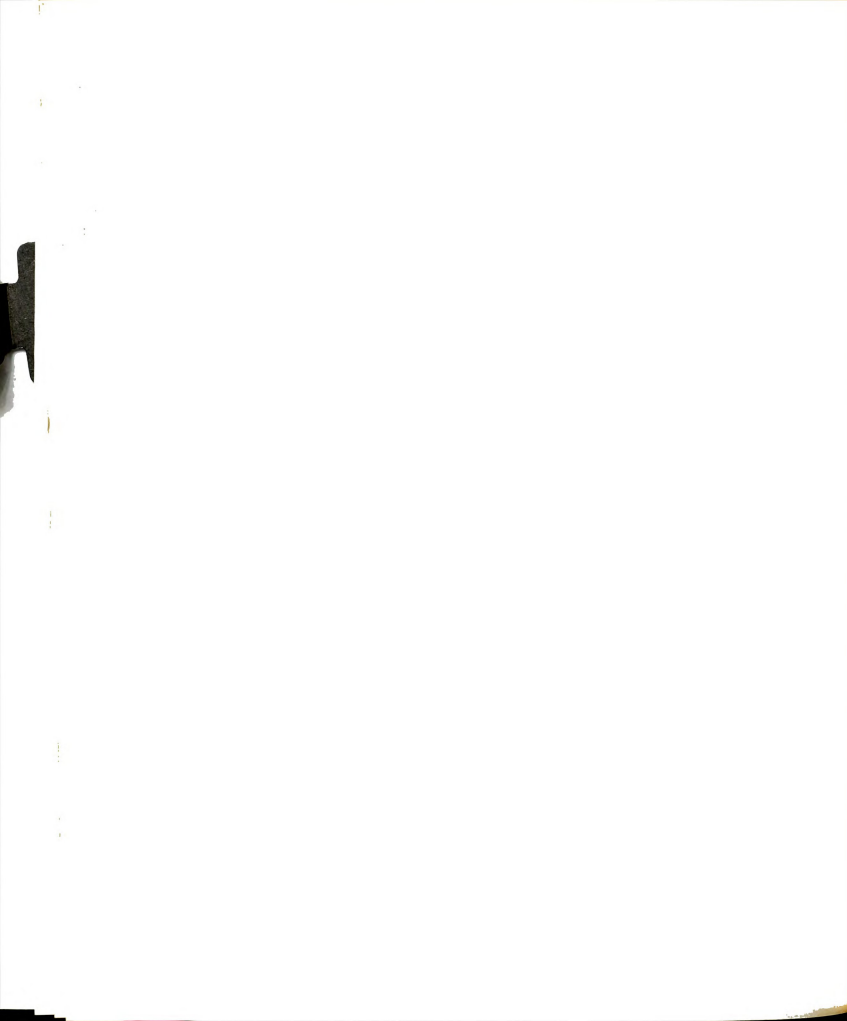
²⁸Sussman et al., op. cit., p. 1.

²⁹Snoke and Weinerman, op. cit., p. 646.

³⁰Sussman et al., op. cit., p. 191.

³¹Hammond and Kern, op. cit., p. 25.

³²Snoke and Weinerman, op. cit., p. 639.



typical clinic patient population consisting of the lower socio-economic classes has presented an education problem.

Psychological and psychosomatic problems. It has been noted that physicians tend to resent patients with emotional problems because of the frustration produced by being unable to affect a cure.³³ In spite of this, the literature suggests that this may not be as great a problem in ambulatory care teaching as the patients' socio-economic status. In the Cornell Program less than 5 percent of the diagnoses established by students were in the categories reflecting predominantly emotional problems.³⁴ Reed observed that students complained of "the predominance of 'functional' (psychosomatic) illness,"³⁵ but that in recent years students have demonstrated more acceptance of this type of problem. He attributes this increased acceptance to changing social values.³⁶ A report of the program at Washington University indicates that one-third of the patients presented with early, poorly manifest, or functional illness. This initially produced considerable

³³Anne R. Somers, Health Care in Transition: Directions for the Future (Chicago: Hospital Research and Educational Trust, 1971), p. 10.

³⁴Reader and Goss, op. cit., p. 61.

³⁵Reed, op. cit., p. 1043.

³⁶Ibid., p. 1044.

student dissatisfaction, but this was partially overcome by teaching the students to understand and cope with these problems.³⁷ It appears that psychological and psychosomatic illnesses present difficulties in ambulatory care teaching, but that these difficulties can be at least partially overcome by an appropriate educational program.

Missed appointments. Studies in two clinics revealed that approximately 20 percent of patients failed to keep their appointments.³⁸ This frequency of missed appointments was one of the students' top three complaints about the teaching program at one institution.³⁹ Sussman found that this irregular attendance by the patients not only produced severe scheduling problems with a waste of student and faculty time, but also lowered staff morale.⁴⁰ None of the authors proposes a solution to this problem, but it is intimately related to the patients' socioeconomic and cultural backgrounds and the type and severity of their medical problems.

³⁷Robert E. Shank, "Three Years' Experience in the Coordinated Outpatient Program at Washington University," Journal of Medical Education, 31:283-93, May, 1956.

³⁸Hammond and Kern, op. cit., p. 53; Sussman et al., op. cit., p. 9.

³⁹Reed, op. cit., p. 1043.

⁴⁰Sussman et al., op. cit., p. 10.

The literature clearly indicates that patient variables play a major role in the design and success of ambulatory care teaching programs. Another major component of such programs is the faculty.

Faculty Variables

The importance of the faculty is well documented in the literature. Reader and Goss state "that the teaching of comprehensive medicine requires a large number of dedicated and skilled faculty members."⁴¹ Hammond and Kern comment on the importance of the faculty as follows:

Staffing a program of this kind is a major problem. Ideally, almost all the staff should be permanently associated with the program on a full-time basis; they should be skillful teachers, willing to devote long hours to working with students; and they should be highly competent in general medicine as well as the medical phases of psychology and sociology, and in their own medical specialty. Such people are not easy to find.⁴²

The problem of acquiring an appropriate faculty is quite complex. Sussman et al. found that nearly half of the physicians working in teaching clinics were dissatisfied with their roles.⁴³ Hammond and Kern noted that faculty tend to arrive late at teaching clinics,

⁴¹Reader and Goss, op. cit., p. 291.

⁴²Hammond and Kern, op. cit., p. 159.

⁴³Sussman et al., op. cit., p. 194.

thus keeping students and patients waiting.⁴⁴ By checking the accumulated patients quickly the faculty can increase their own efficiency at the expense of the students' and patients' satisfaction.

Other problems occur with regard to faculty attitudes. They may demonstrate an inappropriate reluctance to accept a functional diagnosis and even demonstrate frustration with, and hostility toward, the patients.⁴⁵ Also, faculty members with highly specialized backgrounds may be reluctant to teach students utilizing mundane, undifferentiated patients.⁴⁶

Prestige of teaching in the out-patient clinic.

"The out-patient department has traditionally had low status in the medical center pecking order."⁴⁷ A period of teaching in the out-patient clinic has frequently been considered a necessary step prior to being permitted to teach on the in-patient wards, or even to admit patients

⁴⁴Hammond and Kern, op. cit., p. 16.

⁴⁵Ibid., p. 19.

⁴⁶Kerr L. White and William L. Fleming, "Improving Teaching on Ambulant Patients," Journal of Medical Education, 32:30-36, January, 1957.

⁴⁷E. Richard Weinerman, "Yale Studies in Ambulatory Medical Care," The New England Journal of Medicine, 272:947-54, May 6, 1965.

to the hospital.⁴⁸ This low status image of teaching in the ambulatory care setting was modified in two programs by somewhat different strategies. In one case senior faculty members undertook full teaching responsibilities in the clinic program;⁴⁹ and in the other, the personal commitments of departmental chairmen were considered to be critical to the program's success.⁵⁰

Full-time faculty, voluntary faculty or house staff. Although reports cited above have tended to favor the use of full-time faculty in the teaching of ambulatory care, there appears to be some difference of opinion. Reed's study indicates that students value their exposure to practicing physicians (volunteer faculty).⁵¹ Shank reports the successful use of a combination of full-time faculty, volunteer faculty, and house staff, but indicates that careful selection is essential.⁵² Merton's study

⁴⁸John P. Colmore and Stewart Wolf, "A New Design for Service and Teaching in the Out-Patient Department," Journal of American Medical Association, 156:830-33, October 30, 1954; White and Fleming, op. cit., p. 34.

⁴⁹Colmore and Wolf, op. cit., p. 831.

⁵⁰Lee, op. cit., p. 58.

⁵¹Reed, op. cit., p. 1043.

⁵²Shank, op. cit., p. 291.

suggests that volunteer (part-time) faculty may feel less involved in the teaching clinic and, therefore, have fewer ideas for improvements. He also noted that their private practices interfered with participation in clinic planning sessions.⁵³ Reader and Goss found house staff (residents) to be a source of great help in clinic teaching, but stressed that the length of service was critical; "a six month assignment might be acceptable, but a year was ideal."⁵⁴

Student Variables

In most reported ambulatory care teaching programs students assume, under supervision, much of the physician responsibility for patient care.⁵⁵ Reader and Goss noted that, on the whole, the students eagerly accepted this responsibility.⁵⁶ Before students can assume this responsibility, however, they must "have an adequate store of factual knowledge and be confident of their abilities."⁵⁷

⁵³Merton, Reader, and Kendall, op. cit., pp. 259-60.

⁵⁴Reader and Goss, op. cit., p. 261.

⁵⁵Sanazaro and Bates, op. cit., p. 778.

⁵⁶Reader and Goss, op. cit., p. 59.

⁵⁷Ibid., p. 283.

When are students adequately prepared for this responsibility, and what have been the results of scheduling ambulatory care experiences at different times in the student's educational program? In planning the Colorado experiment, it was decided that third-year students were inadequately prepared for the patient care responsibilities expected in the program. The evaluation studies carried out as part of the Colorado program showed that students participating in the clinic during the first half of the fourth year achieved the program goals to a higher degree than students participating during the second half of the year. This was shown to be due to concern with traditional medical knowledge brought about by the impending responsibilities of an internship. This difference disappeared when all students were in the program and there were no control group peers to make participating students feel they were lacking important experiences. Even so, Hammond and Kern suggest that the first half of the fourth year may be the optimal time for ambulatory care experiences for medical students.⁵⁸

Process Variables

There are many aspects of the operation of an ambulatory care teaching program included under the term "process variables" in the model described in Chapter 1.

⁵⁸Hammond and Kern, op. cit., pp. 134-35, 158, 550.

This section contains a summary of information from the literature on several of these variables.

Duration of Program

The importance of the length of the student's participation in the ambulatory care teaching program is well stated by Reader:

Responsibility for patients is the most effective way for the student to learn wisdom in patient management and gain the ability to think through a clinical problem. It also motivates him to read about clinical entities he encounters so that he may better help the patient, thus stimulating more intensive study of scientific medicine. The length of the student's contacts with the same patients is believed to be the most important determinant of development of a sense of responsibility. . . .⁵⁹

Reed reports that students responded favorably to being able "to follow a patient over a period of time and establish a satisfactory doctor-patient relationship."⁶⁰ Reader and Goss, in summarizing their experience state that "a four month period is a minimum; six months to a year would be optimal."

Several programs have had students participating in a clinic for one or two half-days per week for one or two years, thus permitting greater continuity of care than a concentrated period of a few weeks or months. The Colorado planners abandoned this design because of

⁵⁹ Merton, Reader, and Kendall, op. cit., pp. 87-88.

⁶⁰ Reed, op. cit., p. 1043.

concern for scheduling problems and conflicting pressures for the student's time and interests.⁶¹ A program at the University of Vermont, reported by Snoke and Weinerman, used a somewhat unique arrangement to provide continuity in the student-patient relationship. A junior student and a senior student worked as a team with patients, so that the student had two years of contact with the patients, and the patients had a gradual, rather than abrupt, turnover of student-physicians.⁶² This program was discontinued in 1964.⁶³

Reed noted that most of the comprehensive ambulatory care programs remaining in 1970 were either on an elective basis or consisted of a block-time assignment to the out-patient department. Although shorter, block assignments lack some of the advantages noted above, they have their own advantages. Scheduling of student time is greatly simplified. The Colorado study suggests that students are more satisfied with a shorter involvement in comprehensive ambulatory care programs.⁶⁴ A longer period of involvement may also aggravate the students'

⁶¹Hammond and Kern, op. cit., p. 9.

⁶²Snoke and Weinerman, op. cit., p. 642.

⁶³Reed, op. cit., p. 1041.

⁶⁴Hammond and Kern, op. cit., p. 160.

frustrations with the patients' social, psychological, and economic problems. Lee attributed the high student morale in one program, where these problems were particularly severe, to the relative brevity of the clinic experience.⁶⁵

Although the literature provides considerable insight, it does not give definite answers to questions regarding the optimal duration of ambulatory care teaching programs.

Time per patient, number of patients, and number of visits. The literature provides little information on these details of ambulatory care teaching clinic operations. The Colorado program emphasized giving the student "ample time to investigate and manage all of the many problems his patients presented."⁶⁶ The amount of time that is required is not specified, but students would seem to typically see one new patient and one or two follow-up patients per half day as a maximum. Reports on the Cornell program indicate that, on the average, each student saw about thirty patients. The student saw each patient an average of between two and three times.⁶⁷

⁶⁵Lee, op. cit., p. 50.

⁶⁶Hammond and Kern, op. cit., p. 6.

⁶⁷Reader and Goss, op. cit., p. 53.



Patient selection. Although some case studies indicate the specific criteria, if any, used for the selection of patients for inclusion in the teaching program, no good discussion of this variable was found in the literature. One interesting strategy is worthy of mention, however. In one program, students participated in a screening and emergency clinic and selected from this group of patients those that they would evaluate further and follow in another clinic.⁶⁸ This student participation in patient selection would appear to have some definite advantages in achieving student interest in clinic patients.

Faculty-to-student ratio. Reports of programs from the literature indicate some variety in the faculty-to-student ratio in the clinic. One author indicated that their one-to-one ratio was a strong point in the program,⁶⁹ while others advocated, or accepted, ratios of one faculty member for two to four students.⁷⁰ One program which had a ratio of one to one found a ratio of one to two more satisfactory. With the one-to-one ratio the faculty felt their time was used inefficiently because

⁶⁸Snoke and Weinerman, op. cit., p. 639.

⁶⁹Reed, op. cit., p. 1043.

⁷⁰Shank, op. cit., p. 290; Colmore and Wolf, op. cit., p. 831.



of frequent long waits for the students to require assistance. The faculty tended, therefore, to arrive late and show a lack of interest. When the ratio of faculty-to-students was changed to one to two, the faculty were busier, more satisfied, and arrived on time.⁷¹

Conferences and seminars. Bogdonoff, et al., provide insight into the role of conferences in ambulatory care teaching by drawing a parallel to in-patient teaching.

Traditionally, the most exciting learning situation in a department of medicine has been the teaching rounds on the in-patient service, the major feature of which has been the opportunity to spend two or more hours in the midst of the day's activity in pausing to reflect upon the clinical experiences of the training physicians. . . . In the out-patient department the actual work of the day, namely the examination and care of patients, must go on during the very hours that such a midmorning pause may be taken on the in-patient service; therefore, it is not feasible for a group of physicians to take out such a mid-day time for reflection in the ambulatory care area. This has always represented a major short-coming of the out-patient teaching program. Since we considered such group conference time as an important learning experience, it was decided to schedule hours for reflection and discussion at both the beginning and at the end of the working day.⁷²

Reader and Goss observed that students reacted better to small discussion groups than to large meetings.⁷³ Hammond

⁷¹Personal communication.

⁷²Morton D. Bogdonoff, Stanley W. Elwell, and Julian M. Ruffins, "Medical Out-Patient Department Teaching," Journal of Medical Education, 38:885-89, October, 1963.

⁷³Reader and Goss, op. cit., p. 250.

and Kern noted that there was a generally unfavorable reaction by students toward conferences which were primarily concerned with the social and psychological aspects of the patients' problems.⁷⁴ This reaction of students explains why the conferences associated with the Cornell program had "some shift over the years to a somewhat more traditional medical content."⁷⁵

Program Goals

The goals of comprehensive care teaching programs in general followed the definition of comprehensive care presented previously. There is little additional mention of program goals in the literature. Two sources suggest an additional goal, however. The Cornell program might be considered to have achieved another goal

. . . in that it enabled some students to discover that they were not interested in patient care and, accordingly, to choose a specialty career that allowed them to avoid contact with patients or limited their responsibility as physicians to a specific organ system.⁷⁶

Involvement in another program was shown to influence 80 percent of the students in their choice of elective

⁷⁴Hammond and Kern, op. cit., p. 83.

⁷⁵Lee, op. cit., p. 34.

⁷⁶Reader and Goss, op. cit., p. 291.

courses in a subsequent year.⁷⁷ These bits of evidence suggest that ambulatory care teaching programs can provide students with valuable information and experience for career choice decisions.

Outcome Variables

Except for those aspects of ambulatory care teaching covered in the special research studies reviewed as part of the Comprehensive Care Movement, there is little data on the outcomes of these programs. Although students in the Colorado program felt they had learned less during their time in the program, an objective assessment of their acquisition of medical knowledge showed no deficit.⁷⁸ In the assessment of another program students reported their educational return for time spent in the clinic was only fair, but most students indicated that it was as good as, or better than, other clinical assignments. Students from this program were polled three to six years after graduation. The percentage of favorable reactions to the clinic experience was quite stable over time, however, the percentage of mixed responses increased and unfavorable responses decreased after the students graduated and entered practice.⁷⁹

⁷⁷Wasserman et al., op. cit., p. 2098.

⁷⁸Hammond and Kern, op. cit., p. 312.

⁷⁹Reed, op. cit., p. 1043.

Summary

During the eighteenth and early nineteenth centuries out-patient clinics and hospitals primarily provided care to indigent patients. With the advent of antisepsis and other medical advances, hospitals became centers for the care of all socio-economic classes, but out-patient clinics continued to serve mainly the poor. As medical education developed an academic base, the educational activities became centered in universities and teaching wards.

In the early 1950's the Comprehensive Care Movement developed in reaction to many shortcomings of ambulatory care clinics and their associated teaching programs. Several special clinic programs were started, some of which included considerable evaluative research. The programs at Cornell University and the University of Colorado were the most notable of these. Studies of these programs indicated that an intensive educational program could have an impact on medical student attitudes. The usual trend for medical students to become more disease-oriented and less patient-oriented during medical school was at least partially reversed in these programs. By the mid-1960's the Movement appeared to be diminishing, probably because many of its principles had been incorporated into traditional educational programs.

Of the Patient Variables discussed, the most pervasive problem appears to be for teaching clinics to obtain patients who represent a cross-section of the community population, rather than being predominantly indigent with insoluble social, economic, and psychological problems.

The presence of dedicated, enthusiastic faculty strengthens an ambulatory care teaching program, but the traditional low status of the clinics makes it very difficult to obtain such a faculty. Most authors agree that learning is increased when students assume a great deal of patient care responsibility, and that students are not adequately prepared for this before their final year in medical school. There is also some evidence that students are more receptive to ambulatory care teaching before they become overly concerned with the acquisition of skills required for their internships.

A number of aspects of ambulatory care teaching are discussed under the heading, Process Variables. It is suggested that students should have at least four to six months experience in a comprehensive ambulatory care setting. Programs designed to give students part-time experiences over a long period have usually suffered from scheduling difficulties and poor student acceptance. The sources reviewed agree that there should be no more than four students per faculty member in the clinic. Some

authors believe that one faculty member for every two students is necessary, and a one-to-one ratio is desirable.

The presence of conferences or seminars as part of the program is desirable, if not essential. Experience has shown, however, that it is difficult to maintain student interest in conferences on the social and psychological aspects of patients' problems.

Program goals have usually been based on the definition of comprehensive care. Two reports suggest that ambulatory care teaching programs can also be valuable in assisting the student in making career choice decisions.

Other than the Cornell and Colorado studies of changes in student attitudes, there is little written on the outcomes of ambulatory care teaching programs. The students' perceptions of learning gains in the programs have varied from mediocre to fair. There is some evidence that students may tend to value these experiences somewhat more highly three to six years later than immediately following the experience.

Chapter 3

METHODOLOGY

Since the available literature on ambulatory care teaching in medical schools was considered inadequate to guide an exploratory, descriptive research study, a methodology was used in which the results of early phases of the study guided the design of subsequent phases.

Overview of Methodology

The initial phase of the study consisted of conducting small group problem identification sessions with faculty and students from two medical schools. This produced a listing of perceived problems in adult ambulatory care teaching, and an indication of the relative importance of the different problems.

The second phase of the study was a series of interviews of administrators, faculty, nurses, and students involved in ten adult ambulatory care teaching programs at three medical schools. The lists of problems identified in the previous small group sessions were used to guide the scope of the interviews. The information obtained was used to produce case studies of the ambulatory care

teaching at these institutions and to guide the data collection and analysis in the final phase of the study.

The final phase involved the collection of data with two, sequenced survey instruments. The first survey form was sent to all established United States medical schools and identified adult ambulatory care teaching programs suitable for further study. The major data collection consisted of a questionnaire survey of faculty, nurses, and students involved in selected clinic or preceptorship programs for the teaching of adult ambulatory patient care to medical students. The data obtained were submitted to extensive analysis, and the hypotheses generated during the case study phase were tested.

Restrictions on the Scope of the Study

The scope of the problem identification phase was restricted only in that participants were instructed to identify problems involving teaching medical students in an adult ambulatory (out-patient) clinic setting.

It was considered necessary to further limit the scope of the study for the subsequent phases. For this reason only programs dealing with general medicine or family medicine were included. Programs dealing predominantly with children, surgical specialties, emergency departments, and medical subspecialties were excluded from the study. Also excluded were programs exclusively



involving students in the "pre-clinical" portion of their medical education, which usually constituted the first two years of medical school.

Only those aspects of the ambulatory care teaching programs which fit the model presented in Chapter 1 were included. This eliminated such topics as how a program fit in an institution's overall philosophy of medical education and in the curriculum.

Additional specific limitations of scope will be presented with the description of the main data collection survey in a subsequent section of this chapter.

Problem Identification Phase

Two medical schools were selected for use in the initial portion of the study on the bases of their (1) contrasting characteristics, (2) willingness to participate, and (3) geographic proximity to the investigator. One of these schools is an old, relatively traditional institution with no required adult ambulatory care teaching programs. The other school is a new, innovative institution, which has an ambulatory care teaching program which is required for some students. This school was also in the process of planning an extensive ambulatory care teaching program.

Separate faculty and student sessions were held at each school. At one school, the participants were (a) five faculty members from various specialties, who

were interested in ambulatory care teaching, and (b) three senior medical students with varying ambulatory care experiences. At the other school six faculty members from the Department of Medicine and four senior students with experience in a comprehensive ambulatory care clinic participated.

The nominal group problem identification process as described by Van de Ven and Delbecq was utilized.¹ Participants were requested to "list the subjective and objective problems you have experienced or perceived as a medical student in an adult ambulatory (out-patient) clinic setting," or "list the subjective and objective problems you have experienced, perceived, or anticipate as a faculty member teaching in an adult ambulatory (out-patient setting)." After each participant in a single group had listed the problems which he recognized, the individual lists were consolidated and each group member selected the ten problems which he felt were most important and ranked them from one to ten. After a brief discussion of these rankings each participant reconsidered his priority assignments. He then distributed one hundred points

¹A. H. Van de Ven and A. L. Delbecq, "The Nominal Group as a Research Instrument for Exploratory Health Studies," American Journal of Public Health, 62:337-42, March, 1972; A. L. Delbecq and A. H. Van de Ven, "A Group Process Model for Problem Identification and Program Planning," Journal of Applied Behavioral Science, 7:466-92, 1971.

among these ranked problems in proportion to his perception of the problems' importance.²

After each group session the total assigned points were used to rank the problems generated by that group. After all sessions were held, each problem statement was placed on a card and the cards were sorted into groups having common elements. The categories formed by this process were then ranked by the total points assigned to problems within that category. The problem statements were also sorted by their association with the Patient, Faculty, Student, or Process Variable Groups of the model presented in Chapter 1. The total points assigned to the problems in each Variable Group were determined for faculty and student participants. The results of this problem identification process and the associated analyses are presented in Chapter 4.

Case Study Phase

The purposes of the case study phase of this research were: (1) To apply the information obtained in the problem identification phase to the study of

²The distribution of one hundred points among the ranked problems is a modification of Van de Ven and Delbecq's procedure. They suggest having participants assign one hundred points to their top-ranked problem and values between zero and one hundred to the other nine ranked problems.³ The modification was made in an attempt to equalize the influence of group members in the final consolidated problem priority listing.

³Van de Ven and Delbecq, op. cit., pp. 339-40.

individual adult ambulatory care teaching programs;

(2) To determine the aspects of program design and operation suitable for study by survey methods; (3) To generate hypotheses to be tested in the survey phase of the study; and (4) To produce a series of brief case studies of adult ambulatory care teaching programs.

In order to achieve these purposes it was necessary to identify several medical schools with a variety of adult ambulatory care teaching programs. Consultations with persons familiar with the educational programs of a number of medical schools and a review of the information contained in the directory of medical school curriculums published by the Association of American Medical Colleges⁴ provided considerable information. Based on this information, representatives of four schools were contacted regarding further details of their programs and their willingness to cooperate. Three schools with ten programs meeting the criteria for inclusion in the study agreed to participate. Their programs were believed to represent an adequate variety of program types to fulfill the purposes stated above.

Two days were spent at each of the three schools studying their adult ambulatory care teaching programs and interviewing key personnel in each program. An associate

⁴A.A.M.C. Curriculum Directory (Washington: Association of American Medical Colleges, 1972).



dean for medical education or curriculum and several students were interviewed at each school. The supervising faculty members (program directors) of all programs, and additional faculty members and a clinic nurse and/or secretary for most programs, were also interviewed. The interviews were largely unstructured with the interviewee being asked to describe the operation of the programs being studied. Check-lists of topics to be covered in the interviews were utilized and direct questions were asked on those topics which were not covered in the more open-ended portion of the interview.⁵ The check-lists consisted of those topic areas produced by the problem identification phase of this study, as well as, some descriptive measures considered to be of interest. The interviews were tape recorded with the consent of the interviewee or detailed notes were taken by the interviewer.

The case studies produced as a result of this phase of the study are presented in Chapter 5. The hypotheses generated as a result of the interviews are listed in a subsequent section of this chapter.

⁵Copies of the interview check-lists are included in Appendix A.

National Survey Phase

This phase of the study involved three rounds of data collection. A survey form was sent to all established United States medical schools to identify ambulatory care teaching programs suitable for further study. Detailed questionnaires were pilot tested by sending them to the program directors, clinic nurses, students, and a preceptorship coordinator involved in the programs studied in the case study phase. The final, revised questionnaires were then used to collect data on the programs selected from the responses to the program identification survey.

Program Identification Survey

A survey instrument was designed to obtain a listing of adult ambulatory care teaching programs, both clinics and preceptorships, in the fields of general medicine, internal medicine and its subspecialties, primary care, and family, community, and comprehensive medicine. At the time the instrument was designed it was not possible to estimate the number or types of programs which would be identified, therefore, information was requested to permit programs to be categorized to permit stratified random sampling, if appropriate, for subsequent data collection. For this reason, information was requested on (a) the medical school year (first, second, third, or fourth) of the participating students, (b) the number of hours per week and number of weeks that the students

participated in this ambulatory care teaching program, and (c) whether the program was required or elective. The percentage of the students in each class participating in each program was requested to determine if the program was of adequate size to warrant further study and to determine the feasibility of obtaining questionnaire data from students. The name and address of the faculty supervisor for each program and the nurse supervisor for each clinic program was required for the subsequent questionnaire mailings. A mailing list of all senior students was requested to permit random sampling of students for the questionnaire survey. A copy of the program identification survey instrument is in Appendix B.

The Director of Curriculum of the Association of American Medical Colleges was consulted regarding the overall study. He endorsed the project and recommended that the Group on Medical Education Representative from each school be contacted for the program identification survey information. The survey form, a brief description of the research study, and a covering letter were mailed to the Group on Medical Education Representative of each of the ninety-six United States medical schools which would be granting M.D. degrees in 1973. A follow-up mailing was sent to those individuals who had not responded within one month of the initial mailing.

Results of the program identification survey. The types of responses to the survey are presented in Table 3.1. Fifty of the ninety-six schools returned the completed forms and an additional seven schools provided useful information without completing the survey forms. Thirty-eight schools provided a mailing list of the students in their senior class.

Table 3.1
Responses to the Program Identification Survey

	Number of Schools	Percentage
1. Completed Forms Returned	50	52
2. Partial Data, but Forms Not Completed	7	7
3. Indicated Intent to Cooperate, but No Information Provided	4	4
4. Refused to Participate	5	5
5. No Response	30	31
Total	96	99 ^a

^aTotal percentage less than 100 due to rounding error.

The numbers and types of programs identified are listed in Table 3.2. A total of 276 programs were identified, which represented an average of 4.8 programs per school. Sixty-two clinic programs and 26 preceptorship programs qualified for further study. The reasons for programs to be judged not qualified for further study because of specialty were that (a) They were

concerned with a surgical or other specialty field not included in the study, (b) they dealt exclusively with a medical subspecialty,⁶ or (c) they dealt exclusively with students in the "pre-clinical" phase of their education. Programs were disqualified for size if (a) they were elective and less than 25 percent of the class participated in the program, (b) the general program was required but less than 10 percent of the class fulfilled the requirement in that specific clinic, or (c) the students spent less than three hours per week on a regular basis in the program.

Table 3.2
Numbers of Programs Identified and
Qualified for Further Study

	Number of Programs	Percentage of Total Programs Identified
1. Clinic Programs Qualified	62	22
2. Preceptorship Programs Qualified	26	9
3. Not Qualified, Specialty	156	57
4. Not Qualified, Size	32	12
Total Programs Identified	276	

⁶After reviewing the results of the program identification survey it was decided that efforts to further study ambulatory care teaching in the medical subspecialties by the planned methodology would be unlikely to provide useful information because of the diverse characteristics of this group of programs and the small number of students participating in individual programs.

Table 3.3 lists the frequency with which data requested in the survey form were not completed for those programs which qualified for further study. The only information which was commonly missing was the name and address of a nurse qualified to respond to a questionnaire about clinic programs.

Table 3.3

Frequency of Incomplete Data on Qualified Programs

	Number of Programs With Data Missing	Percentage of Programs With Data Missing
1. Medical School Year of Participating Students	2	2
2. Program Required or Elective	0	0
3. Percentage of Class Participating	3	3
4. Student Time in the Program	3	3
5. Name and Address of Faculty Supervisor	0	0
6. Name and Address of Clinic Nurse	27	44 ^a

^aOf clinic programs.

Based on the data from the survey, twenty-three clinic programs were selected for study by questionnaires to students, as well as to faculty and nurses. The criteria for selecting these programs were: (1) a senior class mailing list was available; and (2) at least 50 percent of the class participated in the program, or those students participating in the program were identified.

Selection of Variables and Questionnaire Design

Those aspects of program design which were involved in the problems identified in the first phase of the study, plus additional program characteristics recognized as being significant in the case study phase, were used as a list of variables from which those suitable for further study by a questionnaire survey were selected. The criteria used for the selection of clinic program variables were: (1) the variable should be categorical or quantifiable; (2) the variable should be of importance in describing the nature of the program, or have a hypothesized relationship to program success; (3) all of the Variable Groups from the model in Chapter 1 should be represented; and (4) the number of variables selected should be such as to permit the student and nurse questionnaires to be limited to one page and the faculty questionnaire to about three pages.

After the variables were selected, each variable was assigned to one or more of the questionnaire forms, faculty, student, or nurse, on the basis of expected competence to respond to the question. Since student questionnaires were not used in all programs, variables assigned to it were also assigned to the faculty and/or nurse questionnaire whenever this was feasible. Some variables were assigned to both the faculty and nurse

questionnaires to serve as a reliability check on responses. The variables selected and the questionnaires to which they were assigned are listed in Table 3.4.

Because of the great variety in the specific activities of individual instructors and students in preceptorship programs the variables selected for the study of these programs were restricted to (a) whether the program was required, selective, or elective, (b) program goals, and (c) two outcome measures, educational value and goal achievement.

Pilot Test of Questionnaires

Questionnaires were constructed based on the variables assigned to each of the questionnaire types, faculty, nurse, student, and preceptorship. For each of the nine clinic programs studied in the case study phase, a faculty questionnaire was sent to the program director, a nurse questionnaire was sent to the clinic nurse, and student questionnaires to all, or a random sample of, students depending on the size of the program. A preceptorship questionnaire was sent to the coordinator of the preceptorship program included in the case study phase. Participants were requested to critique the questionnaire in addition to responding to the questions.

Since the investigator was familiar with all of the programs involved in the pilot testing process, it was possible to determine whether or not questions had been misinterpreted.

Table 3.4

List of Variables for Study of Clinic Programs

A. Patient Variables

1. Percentage of patients medically indigent. (N)
2. Percentage of patients over age 60. (N)
3. Percentage of patients with primarily psychological or psychosomatic problems. (F)
4. Percentage of patients with problems not previously diagnosed. (F)
5. Percentage of patients failing to keep appointments. (N)
6. Percentage of patients cancelling appointments and failing to schedule new appointments. (N)
7. Selection or screening of patients assigned to students. (N)
8. Patients are adults only or adults and children. (F)^a

B. Faculty Variables

1. Willingness of faculty to teach in the clinic. (F)
2. Are faculty full-time, part-time, or volunteer. (F)
3. Seniority of faculty. (F)
4. Percentage of teaching done by house staff. (F)

C. Student Variables

1. Percentage of students who are in their fourth year. (F)
2. Student's career choice. (S)
3. Required, selected, or elected program. (F)
4. Number of students in program per year. (F)

D. Process Variables

1. Student time per new patient. (F, N, S)
2. Student time per follow-up patient. (F, N, S)
3. Student-faculty interaction time per patient. (F, S)
4. Student time per new patient spent in writing the medical record. (F, S)
5. Record written during or after clinic hours. (F, S)
6. Number of patients seen per student during program. (N, S)
7. Percentage of patients seen three or more times. (N, S)^b

Table 3.4 (continued)

8.	Primary purpose of clinic (teaching students or patient care). (F, N)
9.	Presence of teaching conferences. (F)
10.	Types of teaching conferences. (F)
11.	Student time in clinic (hours per week, number of weeks). (F)
12.	Students' degree of patient care responsibility. (F, S)
13.	Faculty-to-student ratio in the clinic. (F)
14.	Percentage of clinic patients seen by students. (N)
15.	Do faculty see patients without students during teaching clinic. (N)
16.	Percentage of patients seen by faculty without students. (N)
17.	Percentage of patients on whom a complete medical workup is performed. (F, S) ^c
<hr/>	
E.	<u>Program Goals</u> (F)
F.	<u>Program's Strong and Weak Areas</u> (S) ^a
G.	<u>Outcome Variables</u>
1.	Education value to students of the program. (F, S)
2.	Student enjoyment of experience. (F, S)
3.	Degree of goal achievement. (F)

^aVariable added after pilot test of questionnaires.

^bVariable modified after pilot test of questionnaires.

^cVariable deleted after pilot test of questionnaires.

Note: F = Faculty Questionnaire; N = Nurse Questionnaire; S = Student Questionnaire

Responses to, and comments on, the questionnaires resulted in the following changes: (1) A question was added to the faculty questionnaire concerning whether the clinic dealt with only adults or adults and children; (2) As a result of students' remarks, a question was added to elicit students' impressions of the program's strong and weak areas and comments on these areas; (3) The question on the percentage of patients receiving a "complete medical workup" was deleted because of apparent ambiguity and the lack of importance of the question; and (4) The style of questions regarding the number of patients seen per student, and the average number of times each patient was seen, were modified to facilitate responses.

The response rate of students on the pilot survey was 67 percent. This response rate was used in determining the number of students per program to be sampled in the subsequent, main questionnaire survey.

Because the changes to the questionnaires between the pilot and main surveys were considered to be minor, the programs studied by the pilot questionnaires were not resurveyed with the final form of the questionnaires.⁷

⁷Copies of the pilot and final sets of questionnaires are contained in Appendix B.

Main Questionnaire Survey

For each of the fifty-three clinic programs selected for further study and not involved in the questionnaire pilot test, a faculty questionnaire was sent to the faculty supervisor previously identified and a clinic nurse, if a nurse was identified in the program identification survey. If no nurse was identified, the nurse questionnaire was also sent to the faculty supervisor with the request that it be passed on to the appropriate nurse or other clinic staff member. Student questionnaires were sent to a random sample of final year students at the institutions involved with the fourteen programs selected for the collection of data from students and not involved in the questionnaire pilot test. For programs in which 90 percent or more of the school's students participated, twenty-five students received questionnaires. If 50 to 90 percent of the students participated in the program, forty students were surveyed.⁸

Faculty and nurses, who had not responded within three weeks of the first mailing, were sent follow-up letters and additional questionnaires. Three faculty members who supervised programs in which students had

⁸The sample sizes were chosen in an attempt to ensure at least ten usable student responses per program, based on an estimated response rate of 50 percent for those students who had participated in the program.



been sampled did not respond within three weeks of the second mailing. These faculty members were contacted by telephone and urged to cooperate. The response rates achieved in this survey are presented in Chapter 6.

Coding and Consolidation of Questionnaire Data

All responses were coded and key-punched on data cards for computer analysis. The coding procedure is described in Appendix C, Table C.1.

Consolidation of clinic program data. Since data on a number of variables were obtained from more than one source per clinic program and most of the planned analyses involved the program as the unit of interest, it was necessary to consolidate the data so that there was a single measure on each variable for use in analysis. Measures of central tendency and dispersion and a frequency distribution were determined for each type of data source (faculty, nurses, and students) on those variables involved. The results of this analysis are presented in Appendix C, Tables C.2 and C.3 and Figures C.1 and C.2. The agreement among the different sources on the descriptive, or independent, variables was considered adequate to indicate that the reliability of responses was satisfactory. Since faculty data were available on more programs than were nurse data and nurse data were available on more programs than were

student data, it was decided to use the data on each variable by faculty sources, if available. When faculty data on a given variable were not available nurse data were used, and if nurse data were not available student data were used. This procedure produced the maximum possible consistency of the source of data on a given independent variable across programs, while providing measures on the largest possible number of variables.

An intercorrelation matrix was formed using the student and faculty ratings of the outcome variables for clinic programs with student data.⁹ No statistically significant correlations were found between student and faculty ratings of the outcome variables. The faculty and student ratings of both educational value and student enjoyment were, therefore, treated as separate measures.

Outcome indices and groupings. To facilitate analysis, outcome measures were combined to produce outcome indices, which were used as dependent variables. Faculty ratings of educational value, student enjoyment, and goal achievement were averaged for each clinic program, and called the Faculty Success Index. A Student Success Index was formed by averaging the students' ratings of educational value and student enjoyment for each clinic Program with student data. An Educational Index was

⁹See Appendix C, Table C.4.

formed for all clinic and preceptorship programs by averaging the faculty rating of educational value and goal achievement.

Each index was used to divide the appropriate programs into outcome groups: High, Middle, and Low Faculty Success Groups, High and Low Student Success Groups, and High, Middle, and Low Educational Groups.¹⁰

Goal groupings. Clinic faculty supervisors and preceptorship coordinators selected the goals that were applicable to their programs from a list of seven goals provided and/or added other goal statements. These goals were then rank ordered by the respondent on the basis of the goal's priority in the program. In an attempt to identify groups of programs with similar goals these goal priorities were examined using means, standard deviations, and frequency distributions of the ranking of each goal across programs, and using correlation coefficients between goals.¹¹ These analytical procedures failed to suggest an empirical method for forming groups of Programs with common goals.

An examination of the goals listed in the questionnaires and the additional goals provided by respondents

¹⁰The index values and number of programs for each of these groups are contained in Appendix C, Table C.5.

¹¹The results of these analyses are included in Chapter 6.

revealed that it was possible to categorize the goals into three groups. One group of goals, named the "Continuity Goals," related to clinical experiences over a period of time, such as "continuity of the doctor-patient relationship" and "the natural history of chronic diseases." Another group of goals, the "Clinical Goals," were concerned with acquiring knowledge of and/or experience with disease states. The remaining goals consisted of a variety of objectives, but all of them related to practical considerations in medical education and practice, other than areas specifically concerning the diagnosis and treatment of diseases. This group of goals was called "Practical Goals." The list of goals provided in the questionnaires and the group designation(s) of each goal are presented in Table 3.5. "Write-in" goals were categorized in a similar manner.

A procedure was established to use this categorization of the goals to assign individual clinic programs to "Goal Groups." Two sets of "Goal Groups" were formed, a primary set and a tertiary set, with each program being assigned to a group within each set. A program was assigned to the primary "Continuity," "Clinical," or "Practical" Group based on the top ranked goal.¹² The

¹²When the top-ranked goal overlapped two categories, the program was assigned to the category containing the top-ranked goal and the next highest ranked goal in either of the overlapping categories; unless the second,

Table 3.5
Group Designation of Goals

		<u>Goals</u>
"Continuity Goals"	(1)	Demonstrate the continuity of the doctor-patient relationship.
	(2)	Demonstrate the natural history of chronic diseases.
"Clinical Goals"	(3)	Demonstrate the pathophysiology of disease at a given point in time.
"Practical Goals"	(4)	Provide experience with diseases which do not commonly lead to hospitalization.
	(5)	Provide student with experience to assist in career choice decisions.
	(6)	Provide student with instruction and experience in abbreviated workups and seeing a volume of patients.
	(7)	Involvement in a health care delivery system other than a university medical center.

tertiary set assignment was the group of goals containing no goal ranked higher than any goal in the other two groups.

This categorization system would permit the formation of six mutually exclusive goal groups,¹³ however, because of the relatively small sample size it was decided to use the primary and tertiary groupings separately in the analysis procedures.

The same procedure was used to assign preceptorship programs to primary goal groups. Since all but two preceptorship programs were in the same tertiary goal group, it was decided that this grouping would not be of value for purposes of analysis.

Data Analysis

The analysis of the data obtained from the Questionnaire survey was carried out for three different General purposes: (1) To describe all programs and subsets of programs on the relevant variables; (2) To determine the degree of association between different variables; and (3) To test the hypotheses generated during the first

third, and fourth ranked goals were all in the same category, in which case that category determined the primary goal group. A similar procedure was used to determine the tertiary set assignment in borderline cases.

¹³The six mutually exclusive groups would be (a) primary continuity, tertiary clinical; (b) primary continuity, tertiary practical; (c) primary clinical, tertiary continuity; (d) primary clinical, tertiary practical; (e) primary practical, tertiary continuity; and (f) primary practical, tertiary clinical.

two phases of this study. These analyses were designed with the assistance of the Office of Research Consultation of the College of Education at Michigan State University.

Program profiles. The means, standard deviations, and frequency distributions of coded responses on all variables were determined for (a) all programs, (b) programs with student data, (c) programs without student data, (d) the various faculty and student success groups, and (e) each primary and tertiary goal group. Findings considered to be of general interest are included in Chapter 6 and Appendix E.¹⁴

Correlations between variables. A series of inter-correlation matrices were formed to determine the correlation coefficients between the numerous variables being studied.¹⁵ Descriptive, or independent, variables, which correlated significantly with one or more outcomes measures in any of the intercorrelation matrices, were submitted to stepwise regression analyses against the appropriate success index.

¹⁴Findings not included in Chapter 6 or Appendix E are available on request.

¹⁵Because there was evidence that the programs with student data differed significantly from those without student data, separate intercorrelation matrices were formed for these two groups of programs in addition to the matrix for all programs.

Tests of hypotheses. The seventeen research hypotheses generated during the first two phases of this study and the statistical techniques used to test the appropriate null hypotheses are presented in Table 3.6. The 95 percent confidence level ($p < .05$) was used in determining the statistical significance of the test statistic in all cases.

Comments on data analysis procedures. Although it is considered justifiable to employ multiple analytic methods in an exploratory study, it must be recognized that the stated level of significance may be misleading. For example, in this study the relationships between some variables were analyzed by three methods, thus tripling the probability of reporting a significant difference, which was in fact due to random chance. The importance of identifying significant relationships in an exploratory study excuses some reduction in the level of confidence in the significance of the findings.

Some of the assumptions of the statistical tests employed were knowingly violated. The data on many of the variables were not normally distributed. The assumption of independence was respected, except that the rankings of different goals were treated as if they were independent of one another. In some cases data which might be considered to be on a nominal scale were

Table 3.6

Research Hypotheses and Methods of Statistical Testing

Research Hypothesis	Statistical Test Used
1. Faculty ratings of educational value more closely approximate student ratings of student enjoyment than student ratings of educational value.	Test of significant difference between two correlation coefficients.
2. Students planning to enter primary care fields (general practice, family practice, internal medicine, or pediatrics) rate clinic programs as being of higher educational value than do students planning to enter other medical fields.	t-test of difference between means (independent samples, one-tailed test).
3. Selective and elective clinic programs are rated higher by students than required programs on both educational value and student enjoyment.	Analysis of variance.
4. Program success is not uniform across goal groups for both clinic programs and preceptorship programs.	Chi-square analysis of goal groups and success (educational) groups for clinic and preceptorship programs.
5. Faculty ratings of the success of clinic programs (Faculty Success Index) are:	
a. Positively correlated with student participation in patient care decisions.	Significance of a correlation coefficient.
b. Positively correlated with the percentage of patients whose primary problems have not been previously diagnosed.	Significance of a correlation coefficient.
c. Negatively correlated with the percentage of patients over age 60.	Significance of a correlation coefficient.

Table 3.6 (continued)

Research Hypothesis	Statistical Test Used
d. Negatively correlated with the percentage of patients who are medically indigent.	Significance of a correlation coefficient.
e. Negatively correlated with the number of students per faculty member in the clinic.	Significance of a correlation coefficient.
f. Positively correlated with the percentage of participating faculty who are full-time faculty.	Significance of a correlation coefficient.
g. Positively correlated with the seniority of participating faculty.	Significance of a correlation coefficient.
h. Positively correlated with the willingness of faculty to teach in the clinic.	Significance of a correlation coefficient.
i. Positively correlated with the percentage of students in the program who are fourth-year students.	Significance of a correlation coefficient.
j. Negatively correlated with the percentage of patients with problems which are primarily psychological or psychosomatic.	Significance of a correlation coefficient.
k. Negatively correlated with the percentage of patients failing to keep appointments or to cancel the appointments.	Significance of a correlation coefficient.
l. Positively correlated with the presence of conferences.	Significance of a correlation coefficient.
m. Higher if the primary purpose of the clinic is to provide patient care or graduate education rather than to teach medical students.	t-test of difference between means (independent samples, one-tailed test).

treated as ordinal or better. For example, whether a program was required, selective, or elective was treated as three levels of "requiredness."

Summary

Since the available literature was considered insufficient to guide the design of an exploratory, descriptive study of adult ambulatory care teaching, a three-phase methodology was used in which the results of the earlier phases were used to assist in the design of the later phases.

The first phase of the study consisted of a series of problem identification sessions with medical school faculty and students. The nominal group process was used in conducting these sessions.

The next phase of the study involved interviews at three medical schools with administrators, faculty, nurses, and students representing ten adult ambulatory care teaching programs. The selection of aspects of the programs to study was guided by the results of the problem identification sessions. This phase resulted in a series of case studies and assisted in the identification of appropriate variables and hypotheses for use in the questionnaire phase.

The first component of the questionnaire phase was a survey of the ninety-six established United States medical schools which identified sixty-two clinic programs

and twenty-six preceptorship programs appropriate for further study. Questionnaires were designed for completion by faculty supervisors of clinic programs, clinic nurses, participating students, and preceptorship coordinators. These questionnaires were pilot tested on the ten programs involved in the case study phase. After minor revisions, questionnaires were sent to faculty and nurses representing the remaining programs to be studied. Questionnaires were also sent to a random sample of student participants in twenty-three of the clinic programs.

Responses were coded and consolidated for computer analysis. Each program was assigned to a series of groups based on (a) faculty and (b) student ratings of the programs' success, and (c) on faculty indication of the program's goals.

The data analysis was of three types: the description of all programs and subsets of programs on relevant variables; the determination of the degree of association between variables; and the testing of seventeen hypotheses generated during the first two phases of the study.

Chapter 4

RESULTS OF PROBLEM IDENTIFICATION PROCESS

(PHASE ONE)

During February, 1973, four nominal group problem identification sessions were held with faculty and students from two medical schools. The primary reason for including this phase in the study was to provide information for the design of Phases Two and Three. This chapter consists of the results of these problem identification sessions.

Composition of the Groups

Separate problem identification sessions were held with one group of faculty and one group of students at each of two medical schools. The number of participants in each group is shown in Table 4.1. Six faculty members per school and eight students per school were invited to participate in the process.

The participating faculty from School One consisted of members of the Department of Medicine. They were all full-time faculty physicians with varying amounts and types of prior experience in ambulatory care teaching.



None of them were currently involved in an organized ambulatory care teaching program. The faculty from School Two consisted of two internists, a family physician, a pediatrician, and a psychiatrist. The family physician was a volunteer faculty member and the others were full-time faculty. All of them had been involved in various ambulatory care teaching programs.

Table 4.1
Composition of Problem Identification Groups

	Faculty	Students
School One	6	4 ^a
School Two	5	3

^aOne of these students did not participate in the priority setting phase of the process.

The participating students from School One had all spent one half day per week for over a year in a comprehensive care clinic. The students from School Two had been involved in various out-patient clinics, mostly emergency rooms and specialty clinics.

Lists of Problems

The output of each group session was a list of problem statements generated by group members in response to the request, "List the subjective and objective problems you have experienced or perceived as a medical student in an adult ambulatory (out-patient) clinic setting"; or

"List the subjective and objective problems you have experienced, perceived, or anticipate as a faculty member teaching in an adult ambulatory (out-patient) clinic setting." From the pooled list generated by each group, each member selected up to ten problems which he felt were most important and distributed one hundred points among these problems in proportion to his perception of their importance. After the group meeting, the points assigned to each problem by different group members were summed and the problems were rank ordered by the total assigned points. Each problem was designated by the investigator as relating to one of the variable groups, Patient, Faculty, Student, or Process, from the model presented in Chapter 1.¹

A total of 116 problem statements was generated by the four groups. The list of the top ten problems from each group, the ranking of these problems, the total points assigned to them, and the variable groups to which they refer are presented in Tables 4.2 through 4.5.²

Categorical Grouping of Problems

The problem statements generated by the four groups were sorted into categories. The total points assigned to

¹The assignment of problems to variable groups necessarily was somewhat arbitrary. Some problems assigned to the Process Variable group related more to the environment than to the process itself. One problem was assigned to both the Student and Faculty Variable groups.

²The complete lists of problem statements are in Appendix C, Tables D.1 through D.4.

Table 4.2

Major Problems Listed by Faculty at School One

Rank	Points	Variable Group	Problem
1	126	Process	The achievement of continuity of care between student and patient.
2	44	Patient	The selection of patients to achieve a representation of a cross-section of the total population of patients.
3	40	Process	The lack of identification of the physician primarily responsible for patient's care.
4	33	Process	The difficulties in the scheduling of patients, preceptors, and facilities.
5	31	Process	The patient spends an unreasonably long time in the out-patient clinic in order to receive care.
6	30	Process	The integration of primary care with specialty care clinics.
7-8	25	Process	Establishing an esprit de corps among faculty, students, and patients in the ambulatory care clinic.
-	25	Process	An impairment of the physician - patient relationship in the teaching clinic setting.
9-10	22	Patient	Acquisition of an adequate patient population base for a teaching clinic.
-	22	Process	Establishment of a financial basis for the clinic operation ("Who pays?")

Table 4.3

Major Problems Listed by Students at School One

Rank	Points	Variable Group	Problem
1	103	Patient	The "no-show" patient, or patient arriving late for an appointment.
2	30	Patient	The low proportion of patients with significant organic disease.
3	28	Process	An inadequate amount of learning for the time commitment involved.
4	18	Process	Patients frequently have a long wait while the students consult with preceptors.
5	17	Patient	Lack of adequate patient mix on socio-economic basis.
6-8	16	Process	Patients hospitalized from the clinic are frequently admitted to a hospital other than the one where the student is primarily assigned.
-	16	Process	The hospital administration's opposition to birth control and abortion.
-	16	Process	Inappropriate social worker input.
9	15	Process	Lack of continuity of patient follow-up due to the student taking a clerkship outside the immediate geographic area.
10	12	Patient	Community physicians are sometimes reluctant to excuse students from clerkship responsibilities to see patients in the clinic.

Table 4.4

Major Problems Listed by Faculty at School Two

Rank	Points	Variable Group	Problem
1	105	Process	Who should pay for faculty teaching time in the ambulatory care setting?
2	60	Process	Conflict between the teaching and service demands on the organization.
3-4	40	Faculty	Difficulty with time availability, quality, and interest of the teaching staff.
-	40	Process	Inadequate facilities for teaching adult ambulatory care.
5	30	Process	Lack of acceptance of primary care as an entity.
6-8	20	Process	Inadequate supporting services in the ambulatory care teaching setting.
-	20	Process	Poor continuity of patient care and student learning in the ambulatory care teaching setting.
-	20	Process	Lack of good teaching methods for ambulatory care instruction.
9	19	Student	Student disinterest in learning in the ambulatory care setting.
10	18	Process	Medical record systems in use were not designed for the ambulatory care situation.

Table 4.5

Major Problems Listed by Students at School Two

Rank	Points	Variable Group	Problem
1	45	Process	The lack of adequate patient follow-up by the student results in the lack of feedback in a "trial and error" learning setting.
2	43	Process	The lack of orientation of the student to the support services available in the clinic and the community.
3-5	25	Process	A data review problem exists when a follow-up patient is seen by a new student.
-	25	Process	No available summary of medical records.
-	25	Process	Excessive use of subspecialty clinics leads to fragmentation of ambulatory care.
6	22.5	Faculty	Lack of faculty (as opposed to house staff) teaching in the clinics.
7-8	20	Process	Lack of adequate follow-up to establish optimal rapport between student and patient.
-	20	Process	Lack of adequate follow-up between clinic visits and hospitalization of patients.
9	14.5	Process	Emergency room is inappropriately used for primary care.
10	11	Process	Inadequate time in clinic setting for students to deal with the problems of patient education.

problems in each category were then used to rank order the categories. The ranks, total points, and categories are shown in Table 4.6. The top ranked category related to concern for the continuity of care both for the benefit of the patient and for the education of the student.

Analysis of Problems by Variable Groups

As indicated previously, each problem statement which was generated was assigned to a variable group based on the model presented in Chapter 1. Problem statements were assigned to a variable group for all problem identification groups, and for faculty and student groups separately (see Tables 4.7 and 4.8).

Even though the problems relating to the Process Variables constituted the great majority of problem statements, the average number of points per problem across variable groups was quite similar. Table 4.8 shows that although both students and faculty produced a predominance of problems in the Process Variable group, students formulated more problems in the Patient Variable group and faculty perceived more problems in the Student Variable group.

Summary

A problem identification process to identify areas of difficulty in adult ambulatory care teaching was carried out primarily to assist in the design of Phases Two



Table 4.6

Problem Categories by Rank and Total Points for All Groups

Rank	Points	Category
1	341	Continuity of care; within the clinic, between clinic and hospital, and among various clinics.
2	207	Ensuring good patient care in the clinic.
3	177	Financial--cost problems; especially cost to the patient.
4	172	Scheduling of patients, faculty, and students, including "no-shows."
5	134	Logistics, including transportation, parking, records, and efficiency of performing diagnostic procedures.
6	133	Acquisition and selection of appropriate patients for a teaching clinic.
7	113	Physician-patient relationships (rapport) in the clinic setting.
8	106	Esprit de corps in the clinic; student interest and academic atmosphere.
9	105	Faculty; including acquisition, time commitment, and adequacy for supervision of residents and students.
10	80	Nature of ambulatory care; lack of research base and proven value.
11	56	Definition of students' roles and responsibilities.
12	48	Communications between the clinic and referring physicians.
13	36	Utilization and training of allied health personnel in the clinic.
14	0	Planning of the ambulatory clinic's role in the medical curriculum.

Table 4.7

Number of Problems, Total Points, and Average Points per Problem for the Problems in Different Variable Groups

Variable Group	Number of Problems	Total Points	Average Points per Problem
Patient	16	257	16
Faculty	6	97.5	16
Student	6	73	12
Process	89	1,272.5	14
Total	117 ^a	1,700	15

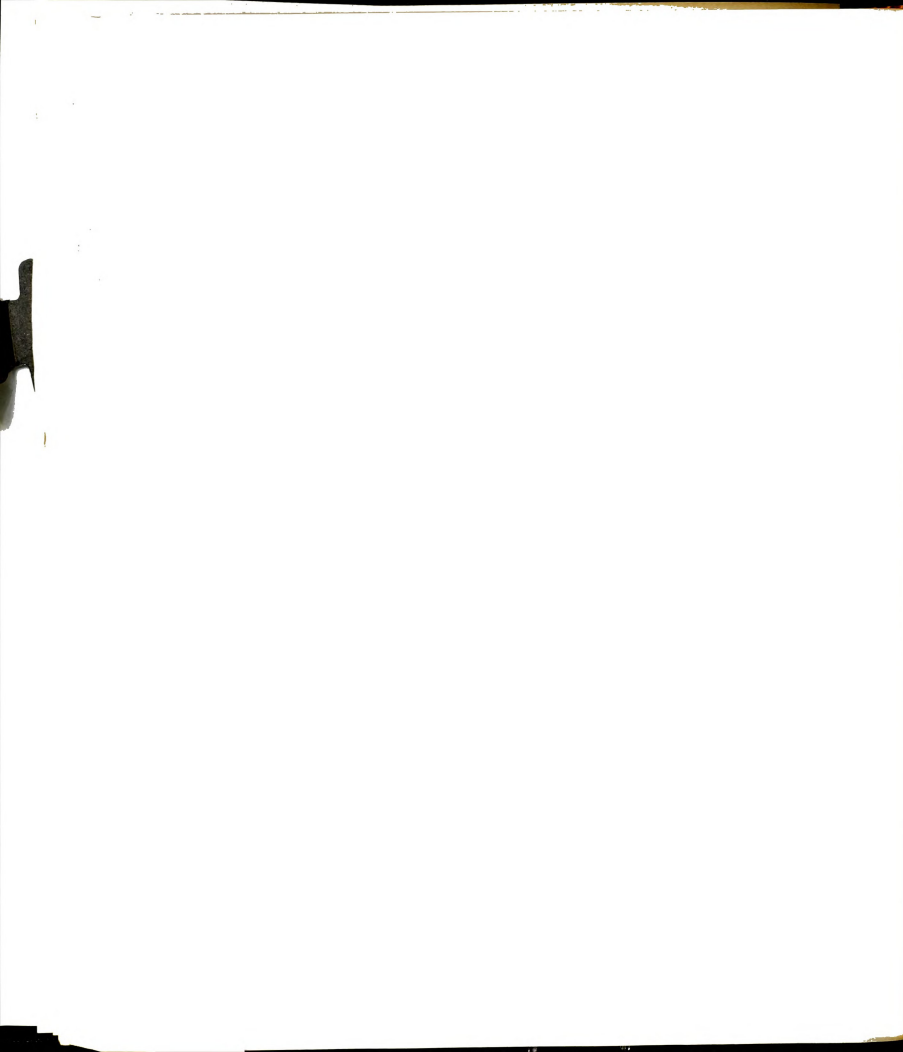
^aOne problem was assigned to both Student and Faculty Variable groups.

Table 4.8

Number of Problems, Total Points, and Average Points per Problem for Different Variables by Student and Faculty Groups

Variable Group	Students			Faculty		
	Number of Problems	Total Points	% of Student Points	Number of Problems	Total Points	% of Faculty Points
Patient	8	171	28	8	86	8
Faculty	2	27.5	5	4	70	6
Student	0	0	0	6	73	7
Process	32	401.5	67	57	871	79
Total	42	600	100	75	1,100	100

and Three of this study. One faculty group and one student group at each of two medical schools participated in the problem identification process. One hundred sixteen problem statements were produced. The problem statements and assigned priorities were presented for each participant group. Problems regarding concern for the continuity of patient care and continuity of the student-patient relationship received the largest number of points. Problems included among the Process Variable group of the model presented in Chapter 1, received the most attention from both students and faculty. Students demonstrated more concern than faculty with the Patient Variables, while faculty showed more concern with the Student Variables.



Chapter 5

THE TEACHING OF ADULT AMBULATORY PATIENT CARE IN THREE MEDICAL SCHOOLS

During March, 1973, the adult ambulatory care teaching programs at three medical schools were studied. The specific nature of the issues investigated was guided by the results of the problem identification process reported in Chapter 4. The main purpose of this second phase of the study was to clarify what areas were to be investigated in the final, questionnaire phase of the study. This chapter consists of brief case studies of the adult ambulatory care teaching at three medical schools and their ten programs, which were selected to demonstrate the diversity of approaches used in this teaching. Table 5.1 contains selected comparative data on the nine clinic programs.

Adult Ambulatory Care Teaching at University A

University A is an independent, nonsectarian institution whose medical school is more than fifty years old. The current ambulatory care teaching programs relate

Table 5.1
Comparative Data on Clinic Programs

University & Clinic	Patients			Duration ^a of Exper.	Stu. Time With New Patients	Fac: Stu. Ratio	Conf.	Student Ratings of the Clinic ^b		
	Age Group	Socio-Econ. Group	Pred. Type of Illness					% of Appts. Missed	Educational Value	Student Enjoyment
University A										
"Spec. Clin."	Older	Lower	Chronic	20-35%	1 sess./wk x 9 mo.	90 min.	1:2	1/sess.	High	Moderate
Medical Clinic	Older	Lower	Chronic	20%	1 sess./wk x 9 mo.	90 min.	1:2	None	Moderate	Moderate
Fam. Med. Program	Mixed	Mixed	Acute, Minor	10%	1 sess./wk x 9 mo.	60 min.	1:1	None	Moderate	High
Adolesc. Clinic	Teens	Middle Upper	Psych.	20%	1 sess./wk x 9 mo.	60 min.	1:2	1/sess.	Moderate	Low
University B										
"Univ. Hosp. Spec. Clin."	Older	Lower	Chronic	10-20%	2 mos.	90-120 min.	1:2-3	1/wk.	Moderate	High
"Co. Hosp. Spec. Clin."	Older	Lower	Chronic	15%	2 mos.	120 min.	1:1-2	Numerous ^c	Very High	Very High
University C										
"Fac. Clin."	Mixed	Upper	Mixed	Very Small	1-2 sess/wk x 1 mo.	----	1:1	None	Moderate	Low
Gen. Med. Clinic	Older	Lower	Chronic	30-40%	2 sess./wk x 1 mo.	30-90 min.	1:2	None	Low	Low
Fam. Med. Clinic	Younger	Lower-Middle	Acute, Minor	No. Appts.	1 sess./wk x 1-2 mo.	15-30 min.	1:2	None	High	Moderate

^aThe duration of the student's experience is in months of full-time experience or the number of sessions per week for the number of months, i.e. ____ sess/wk x ____ mo.

^bThese ratings are relative to the other clinics listed and based on the student questionnaire survey included in Phase Three of this study.

^cThis program includes approximately two days per week of "Special Studies" of the pathophysiology of various chronic illnesses.

back to the late 1950's when the school instituted a comprehensive ambulatory care teaching program that was a required experience for all students. A special clinic was established for this program. It was coordinated by the Department of Preventive Medicine and the faculty was obtained from virtually all clinical departments. Medical students devoted one half-day per week to this experience during their senior year. The teachers were predominantly from the Department of Medicine, but consultants in psychiatry, gynecology, and surgery were available in the clinic. The clinic was organized so that each student saw a new patient one week and follow-up patients the next week.

This program, demonstrating a genuine concern for ambulatory care teaching, had the support of the chairmen of clinical departments and was considered to be an important experiment in medical education. The physicians actually involved in the clinic-based teaching were somewhat less enthusiastic, but the "experimental atmosphere" was maintained and the program worked very well for about five years. During the next ten years the program persisted, but enthusiasm was less vigorous. The consultants in psychiatry, gynecology, and surgery were "on call," and later, available by appointment. Other clinics, such as rheumatology, hematology, community-based clinics, and preceptorships with individual physicians became available

as options to fulfill the required comprehensive ambulatory care experience. The enthusiasm of working in an experimental clinic seemed to have run down.

In 1972 the requirement of a prolonged (one year) experience in ambulatory medicine remained, but the operation of the special clinic had been assumed by the Department of Medicine and two-thirds of the students were having their ambulatory care experiences in settings other than this clinic. Table 5.2 indicates where the students were obtaining their continuity ambulatory care experiences during the academic year 1972-73. Nearly 10 percent of the students were completing this requirement with a more intensive, shorter duration, block time experience rather than the original half-day per week for an academic year. This block time experience is considered by program supervisors to be less desirable, but it is considered necessary for some students who spend much of their senior year away from the university medical center. The faculty is considering revising the curriculum so that the students have more experience in history taking and physical examination during their second year, thus facilitating the introduction of ambulatory care experiences in the students' third year of medical school.

The "Special" Clinic

This clinic was developed and operates as a medical student teaching clinic. Approximately five students

and two or three faculty members participate in each clinic session. There are four half-day sessions per week, each with different students and faculty.

Table 5.2

Location of Ambulatory Care Teaching for
University A Senior Students, 1972-73

Location	Percentage of Class
"Special" Clinic	32
Preceptorships with Community or University Physicians	22
Specialty Clinics and University Health Service	14
Family Medicine Program	12
Medical Clinic	9
Adolescent Clinic	7
Neighborhood Health Center	4
Total	100

Patients. The patient population using this clinic is predominantly from the lower socio-economic classes. The patients seen by the students undergo no formal screening or selection process, however, one observer stated that they tend to be the patients that are not selected for continuing care by the house staff (interns and residents). The students described the patients as mostly elderly, obese women with hypertension, diabetes, and/or arteriosclerotic heart disease. In about half of the patients the primary problem is a

psychosomatic or emotional disorder. Twenty to 25 percent of the patients fail to keep their scheduled appointments.

Faculty. All of the faculty who participate in this clinic volunteer for it, and three-quarters of them are full-time university faculty. There is a core of faculty participants who are full-time faculty primarily interested in ambulatory care teaching.

Clinic Operations. At the beginning of the year, the students are given an orientation to the clinic operation by the clinic nurse. Each student sees a new patient and, perhaps, a follow-up patient, or three to four follow-up patients each clinic session. The students spend about one and one-half hours with new patients and forty-five minutes with follow-up patients. The typical student sees twenty to thirty different patients over the year, and on the average sees each patient about three times.

A faculty member sometimes observes part of the student's history taking and physical examination, but always reviews the patient's problems with the student and talks with the patient. During a typical clinic session, each student spends about forty-five minutes with a faculty member. The student may review a new patient with any one of the faculty members present, but with follow-up patients he sees the same faculty member

that previously saw the patient. In this way, students are exposed to different faculty members, but with a specific patient the student-faculty relationship is consistent over the entire year.

If a patient telephones or comes to the clinic when his student-faculty team are not there and the problem cannot wait until the next regular clinic session, the student and/or faculty member are contacted. On about half of these occasions the student sees the patient. The faculty members are also available on call during nights and weekends to handle these "out-of-clinic hours" patient coverage situations.

Either prior to, or following, each clinic session a conference is held. These are lecture/discussion sessions conducted by one of the faculty participants or another faculty member. The majority of the conferences are on medical conditions common in ambulatory care. Some conferences are devoted to discussions of common psychosomatic problems, the economics of office practice, and other related subjects. When the conference is at the end of the clinic session there is some difficulty created by the fact that the students do not all finish with their patients at the same time.

Student Reactions. The students' main complaints about the clinic experience concern the lack of variety among the patients with regard to age, socio-economic

class, and type of medical problems. The students rated this clinic experience as moderately enjoyable and of significantly greater educational value than the average of their clinical experiences.

Medical Clinic

In contrast to the "Special" Clinic, which operates primarily to teach medical students, the Medical Clinic's main functions are to provide patient care and teach interns and residents. Although the clinic functions throughout the week, medical students are assigned to it for only four half-day sessions per week. There are usually two students assigned to each of these sessions. In addition to the student there is a nurse practitioner, an intern, and several residents working in the clinic. They are all supervised by the one or two faculty members assigned for that session, but the faculty spend more time with the students than with the house staff.

The patients in the Medical Clinic are from the same population as those in the "Special" Clinic, but since there are several types of "practitioners" in the Medical Clinic it is possible to select the appropriate types of patients for each type of "practitioner." Patients with common, chronic medical problems who have not been seen in the clinic for more than one year are usually assigned to the medical students. Patients with

obvious psychosomatic complaints are assigned to the nurse practitioner, and the patients with more complex or unusual problems are referred to the residents.

Since the program goals, patient population, student characteristics, and participating faculty are the same, or nearly the same, in both clinics, it is not surprising that the clinics' operations are very similar. The only major differences in the clinics' operations are that the Medical Clinic program does not include conferences or the "out of clinic hours" patient coverage system.

Student reactions to the Medical Clinic experience are nearly the same as their reactions to the "Special" Clinic. Their complaints are similar and their ratings of the enjoyment and educational value of the program were not significantly different.

Family Medicine Program

The Family Medicine Program, although an integral part of the university's programs, is geographically located at an urban community hospital. The continuity ambulatory care teaching is only one of several teaching programs carried out by this family medicine education group. Students in the continuity program spend one half-day per week in the Family Medicine clinic.

Patients. The patients in the Family Practice Program approximate a cross section of the community population. In fact, there is a slightly higher percentage of the upper socio-economic classes than in the general population. Only 15 percent of patients have emotional or psychosomatic problems as their chief complaints, and only 10 percent of patients fail to keep their appointments. Patients present more acute, but relatively minor, problems in this clinic, most of which can be managed during a single clinic visit. The patients include children as well as adults.

Clinic Operation. Each student in the continuity program is assigned to work with one staff physician. Eight or nine patients are scheduled to see this team during a half-day. Suitable patients are assigned to the student. The staff physician sees patients while the student is taking medical histories and doing physical examinations. The student usually sees about half of the patients, spending approximately one hour with each new patient. The student and staff physician confer for about ten minutes regarding each of the student's patients. Although conferences are held for trainees in this clinic, they do not necessarily coincide with the times that the continuity program students are in the clinic.

Student Reactions. Students commented that the relatively simple nature of the patients' problems in this clinic resulted in few follow-up visits. This lack of a continuing relationship with the patients resulted in a level of rapport with the student that was less than his expectations. Students also complained of the lack of an arrangement to see their patients when problems occurred outside the student's clinic hours. Students rated the Family Medicine experience as more enjoyable than the "Special" Clinic and Medical Clinic, but of equal, or slightly lower, educational value.

Adolescent Clinic

The Adolescent Clinic was founded about ten years ago in response to the need for a referral clinic to deal with problems of adolescents. Since that time the clinic has become increasingly involved in teaching. Currently participating in the clinic are trainees from nursing, social work, and clinical psychology, as well as five medical students.

Patients. The patients are predominantly upper middle class adolescents referred by private physicians or school counselors. The primary diagnosis is an organic disease in only one-quarter of cases, the remainder being psycho-social disorders. Approximately 20 percent of patients fail to keep their appointments.

Faculty. The participating faculty, drawn from the area of pediatrics, psychiatry, psychology, and social work, are, in general, very enthusiastic about the clinic program.

Clinic operation. This clinic is currently held one evening each week. It previously met on Saturday mornings. Each medical student sees a new patient and a follow-up patient, or two to three follow-up patients during each clinic session. The student spends about one hour with new patients and one-half to one hour with follow-up patients. During the year each student sees about fifteen to twenty different patients, and sees each patient an average of five to six times. The ratio of trainees to faculty in the clinic is two to one.

The students devote considerable time to this program outside of regular clinic hours. A few days before the clinic session the student receives a list of his appointments and the referring diagnosis and/or a brief history. He is expected to do some reading on the subject prior to the clinic session. The student's records of clinic visits are usually written outside of clinic hours, and he is expected to visit the home and/or school of many of his patients.

Prior to each clinic session a one-hour conference is held on a subject related to problems of adolescence.



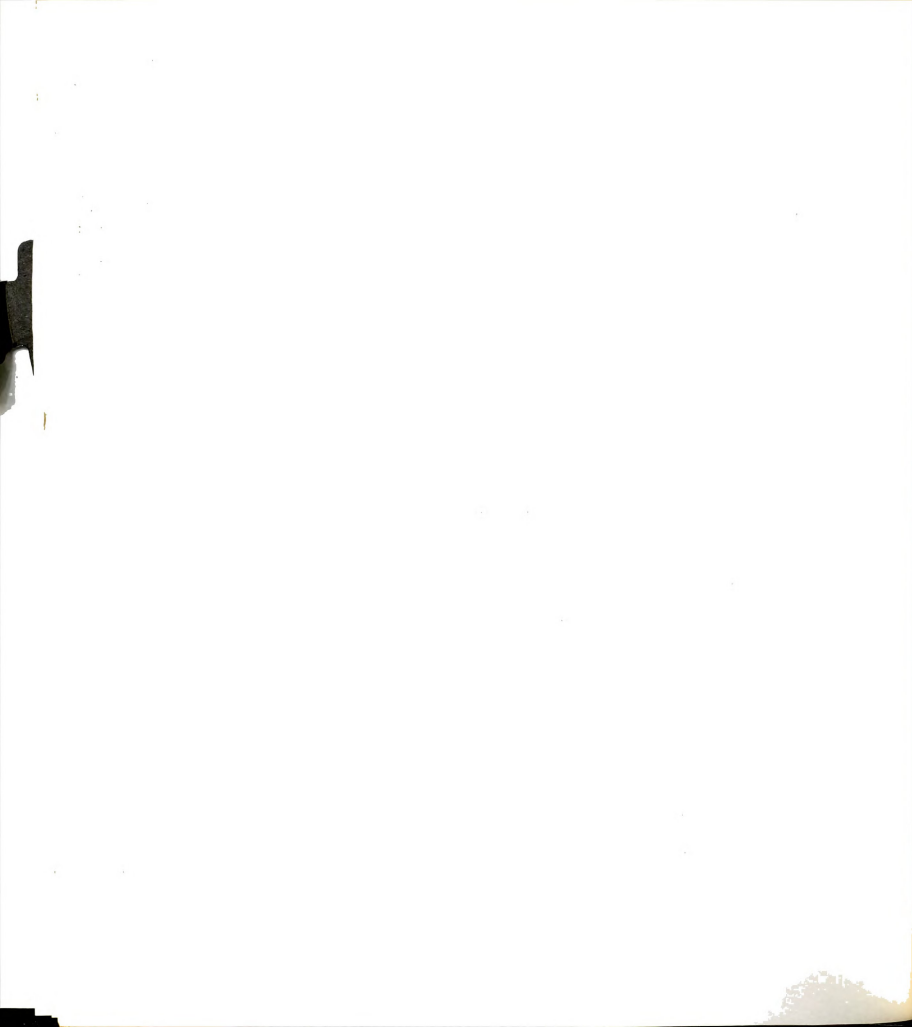
Student Reactions. Students seem to view this clinic as a unique opportunity to deal with adolescents, but some students find their own proximity to this age group and its problems somewhat stressful. Some students complained that the advanced information sheets on new patients were not adequately complete and accurate to be useful in studying or planning prior to seeing the patients. It was pointed out that the varied backgrounds and interests of the different types of trainees in this clinic presented some difficulty in making the conferences valuable to all trainees. Students rated this program as having educational value equivalent to the programs previously described, but, on the average they rated their enjoyment of this program somewhat lower than students did in the other clinics.¹

Other Programs

Half of the students at University A have their required ambulatory care experiences in a variety of settings other than the programs described previously. These settings were listed in Table 5.1 (page 84) but were not included in this study.

In addition to the required ambulatory care experience, each student must spend one month in the

¹The reliability of these observations can be questioned because of the small number of students involved in this program.



university hospital Emergency Department. Approximately half of this time is spent in dealing with acute, minor problems in the fields of internal medicine and pediatrics. An intensive series of teaching sessions are included in the Emergency Department program.

Adult Ambulatory Care Teaching
at University B

University B is a privately endowed institution whose School of Medicine is over one hundred years old. In the 1950's the School of Medicine instituted a three-part program for the teaching of ambulatory care. During their first two years all students participated in the Family Study Program. This Program consisted of each student becoming acquainted with a woman late in pregnancy and following the development and medical care of the infant. The second component of the ambulatory care teaching was a Continuity Program in which the student participated in the care of a group of selected, chronically ill patients during one-half day per week for one and one-half years. The third part of the overall program was a two-month experience for fourth-year students in a special ambulatory care clinic.

Since the inauguration of the three-part program, the Family Study Program and the "Special" Clinic experience have undergone only minor modifications. After about fifteen years the Continuity Program was

made an elective experience. Since that time student participation in the Program has gradually decreased, and it is anticipated that the Program will be discontinued after the current year.

The demise of the Continuity Program appears to have been due to two factors. Although the segment of the faculty who were intimately involved in the Program were quite enthusiastic, a sizable proportion of the faculty, including some key departmental chairmen questioned its value relative to other clinical experiences. The second factor, which was no doubt related to this faculty attitude, was that students found the Continuity Program competing for time and effort with their other, concurrent assignments. Since the other assignments consumed the vast majority of their time, it is not surprising that students tended to assign second priority to the Continuity Program.

Although many members of the faculty and administration value ambulatory care teaching highly, the general attitude of the faculty seems to be that student experiences with hospitalized patients are more important and that teaching students on the wards is more prestigious than ambulatory care teaching.

The Family Study Program will not be discussed in detail since it involves students in their "pre-clinical" years working in the areas of pediatrics and

obstetrics, which is beyond the scope of this study. The remainder of this section deals with some of the details of the organization and operation of the two major "Special" Clinics, one at "University Hospital" and the other at "County Hospital."

"Special" Clinic at "University Hospital"

"University Hospital Special Clinic" was designed and operates primarily for the teaching of medical students. Approximately two-thirds of the senior students have their "Special Clinic" experience at "University Hospital." During the two months that students spend on this rotation they devote five mornings per week to seeing patients in the clinic, four afternoons per week in ophthalmology, otolaryngology, and dermatology clinics, and one afternoon per week in the "Special" Clinic Conference. The students may elect to spend one day a week in a specialty clinic, rather than the "Special" Clinic.

Patients. The patients served by this clinic consist predominantly of the medically indigent, inner-city black population. Patients are referred to this clinic from other clinics on the basis of the need for a thorough evaluation of a condition which is commonly seen in ambulatory patients. About 10 to 20 percent of the patients fail to keep their appointments.

Faculty. The faculty in this clinic are described as "loyal, dedicated semi-volunteers." (The majority of the participating faculty select this clinic to fulfill the teaching requirement for maintaining hospital admitting privileges.) The faculty is composed of one-quarter full-time faculty, one or two senior residents, and physicians in private practice (volunteer faculty). In addition to internists, there is a psychiatrist present at each clinic session and consultants in surgery, gynecology, and dermatology are available "on call."

Clinic operation. A student sees one new patient, or two or three follow-up patients, each morning. One and one-half to two hours are spent with each new patient, plus about thirty minutes discussing the patient with a faculty member. The student performs a white blood cell count, hematocrit, blood cell morphology, and urinalysis on each new patient. On alternate days the student sees follow-up patients. If a student's schedule is not filled, he may see a patient with an acute, minor illness referred by the "Screening Clinic." The scheduling of patients is arranged so the student sees patients for follow-up on the same day of the week as he saw them the first time. This permits the same faculty member to follow the patient with the student. During two months the student sees fifteen to twenty new patients and sees each patient an average of about three times.

There are two or three students per faculty member in the clinic with a different group of faculty each day of the week.

The weekly clinic conference is of about two hours duration and is attended by the students, two internists, and a psychiatrist. The session is organized around one of the student's patients, or a group of patients with similar problems. Frequently a student role-plays his patient and the remainder of the group obtains the patient's medical history from the student as though he were the patient.

Student reactions. The student's reactions to this experience were, in general, quite favorable. Some students stated that they would have liked to see more patients, and that the quality of the faculty input was quite variable. Some also complained of prolonged waiting to discuss a patient with a faculty member. The students rated the experience as being of slightly greater educational value than the average of their clinical experiences, and as being moderately enjoyable.

"Special" Clinic at "County Hospital"

Approximately one-third of the medical students at University B have their required ambulatory care experience at the "County Hospital Special Clinic." This clinic is held in a specially designed area with

a large library-conference room, extensive laboratory space, and specially designed examination rooms. The students' experiences in this clinic are of three types. Two mornings per week are devoted to clinical sessions during which the students see patients and make management decisions. Approximately four half-days per week are spent in ophthalmology, otolaryngology, and dermatology clinics. The remainder of the student's time is devoted to special study sessions, which are described below.

Special Study Sessions. These sessions center around the student's studies of selected patients with chronic diseases. During the two-month experience, sessions are held for the study of allergy-immunology, gastroenterologic physiology and pharmacology, cardiovascular physiology, pulmonary physiology, neurophysiology et cetera. Patients demonstrating various abnormalities of the system under study are selected and a patient is assigned to each student. In addition to a complete history and physical examination, the student performs the appropriate physiologic studies and other laboratory procedures. The student prepares a case report, including a literature review, and presents his case to the other students and the appropriate specialists. A variety of teaching conferences is integrated into this program.

Clinical sessions. During the first six weeks of the program each student sees two new patients a week plus follow-up patients. The clinical sessions during the last two weeks are devoted to completing the workup and management of patients seen earlier in the program.

The patients in this clinic are mostly medically indigent, and are selected for study on the basis of the presence of a common chronic condition such as diabetes mellitus, hypertension, or arteriosclerotic disease. Approximately 15 percent of patients fail to keep their appointments.

An internist devotes nearly full time to the supervision of this clinic. The faculty are half full-time faculty/staff of the county hospital and half volunteer physicians. These participating faculty members are described as "energetic and eager teachers." There is a psychiatrist and a surgeon in attendance during clinical sessions, as well as internists.

The students spend about two hours with new patients and one hour with follow-up patients. Approximately thirty to forty-five minutes are devoted to discussing each new patient with a faculty member. The faculty frequently observe students performing histories and physical examinations. Including the psychiatrist and surgeon, there are almost as many faculty as students

in the clinic. During this program each student sees nine to twelve new patients, and sees each patient two or three times.

Laboratory studies, including a twelve-channel blood chemistry screen, hemogram, urinalysis, serologic test for syphilis, chest X-ray, and electrocardiogram, are performed on new patients prior to being seen in the clinic.

Student reactions. Students seemed quite satisfied with the "County Hospital Special Clinic" program. They rated it higher on both educational value and enjoyment than any of the other programs described in this chapter. The only complaint mentioned by a student was that the clinic functioned in isolation from the health care delivery system and did not provide the students with a realistic picture of ambulatory care.

Adult Ambulatory Care Teaching at University C

University C is a state-supported institution whose medical school was established more than fifty years ago. A recent curriculum revision at this institution included a sizable increase in the students' exposure to ambulatory care programs. Students must have four months of ambulatory care experiences and a month of community medicine as part of their twenty months of clinical experiences.

For the typical student, the ambulatory care program consists of a month in medical clinics, a month in pediatric clinics, a month in miscellaneous clinics, and a month of a preceptorship or an additional month of community medicine. During his month in medical clinics the student usually spends two mornings per week in the General Medicine Clinic, one or two afternoons per week in the "Faculty Clinic," and the remainder of his time in medical subspecialty clinics. The miscellaneous clinics experiences include family medicine, emergency room, and surgical specialty clinics. The remainder of this section is devoted to brief descriptions of the "Faculty Clinic," the General Medicine Clinic, the Family Medicine Clinic, and the Community Medicine Program. Conferences are not a part of the activities in any of the clinics described.

The "Faculty Clinic"

In the "Faculty Clinic" students are assigned to Department of Medicine faculty members on a one-to-one basis. The clinic is housed in a setting where each student-faculty team is assigned to a suite of two examination rooms and one consultation room (office).

Patients. The patients in this clinic are the private patients of the "geographic full-time" faculty. These patients are mostly from the upper and upper-middle



socio-economic classes with problems suitable for management by a medical sub-specialist. Virtually all patients keep their appointments.

Faculty. All full-time Department of Medicine faculty members participate in this clinic. For about eight months out of the year each faculty member is available to teach in this clinic.

Clinic operation. Since the student's role in the clinic is determined by the faculty member to whom he is assigned, it is difficult to describe the typical student's activities. With one faculty member the student may be only an observer, while with a different faculty member the student may play a significant role in the patient's care. A "typical" session might be that the student would examine three of the faculty member's six patients and discuss them with the faculty member, but have little, if any, participation in management decisions. The student rarely sees a patient on more than one occasion in this clinic. Different students may see anywhere from ten to one hundred patients.

Student reactions. Because student experiences in the "Faculty Clinic" depend upon individual faculty members, student reactions to this clinic are quite variable. Some students complain that they are only permitted to be observers. On the average students

rated this clinic experience as not being particularly enjoyable, but of slightly greater educational value than the average of their clinical experiences.

General Medicine Clinic

This clinic operates (a) to provide care to non-private patients, and (b) for the teaching of interns and residents, as well as medical students. Only about 20 percent of the patients seen in this clinic are seen by medical students.

Patients. Most patients in this clinic are medically indigent. A large proportion of them are "chronically dissatisfied" with their medical care and drift from one health care facility to another. Approximately 60 percent of the patients present with problems which are primarily psychological or psychosomatic in nature. Many patients come to this clinic for medical workups to qualify for welfare programs. Thirty to 40 percent of patients fail to keep their appointments.

Faculty. The students in this clinic are supervised by four faculty members during each session. Half of the participating faculty are full-time university faculty and half are volunteer physicians. If a regularly assigned faculty member is unable to attend a clinic session, a medicine resident may be called upon to assist

1

in supervising the students. The faculty members are not eager to teach in this clinic.

Clinic operation. During a clinic session each student spends thirty to ninety minutes performing a history and physical examination on a new patient and an average of fifteen to thirty minutes reviewing the patient with a faculty member. The student may also see one or two follow-up patients. The typical student sees half of his patients on only one occasion, and sees half of them twice.

There are two students per faculty member in the clinic, but students are not assigned to a specific faculty member. In this clinic the student makes patient care decisions under supervision and feels that he is the patient's physician.

Student reactions. Both faculty and students find the patients in this clinic to be less than optimal for use in teaching. Students appreciate the responsibility they are given, but complain that there are too many students in the clinic each session, thus diluting the benefits to be gained from both patients and faculty. They also complain about frequently having to perform medical workups which are more extensive than the patients' complaints would justify. On the average



students rated this clinic as not particularly enjoyable, and as being of slightly less educational value than the average of their clinical experiences.

Family Medicine Clinic

This is an evening, nonappointment clinic designed primarily to manage minor, acute illnesses. Most of the patients seen in this clinic are seen by medical students.

Patients. The patients in this clinic are younger than those in the other clinics described, with the highest age frequency being in the twenties and thirties. Most patients are in the lower or lower-middle income groups, but are not indigent. Many of the patients in this clinic are graduate students and their families.

Faculty. The clinic is directed by a full-time faculty member from the Department of Medicine, but the supervision of the students in the clinic is done by local family physicians who attend the clinic. These physicians seem to enjoy teaching and the students appear to appreciate the opportunity to work with them.

Clinic operation. Students spend fifteen to thirty minutes evaluating each new patient and about ten minutes consulting with a physician about the patient. The students are encouraged to perform selective, abbreviated histories and physicals and to keep their

workups to no more than thirty minutes in most cases. Typically a student sees five to ten patients per evening session. One-third of the patients are seen more than once. The student-to-faculty ratio in the clinic is two-to-one.

Student reactions. Although the students sometimes complain about the clinic's evening hours, they seem to appreciate the sense of accomplishment produced by seeing a number of patients with problems amenable to short-term therapy. Students rated this clinic higher than either the "Faculty Clinic" or the General Medicine Clinic. It was rated as having significantly more educational value than their typical clinical experience, and as being moderately enjoyable.

Community Medicine Program

The Community Medicine Rotation affords the student an opportunity to spend a minimum of one month, full-time, at a location away from the College of Medicine to participate in and study in-depth a selected aspect of the community health system.²

After discussing the types of experiences available with a faculty advisor, the student submits a report of his objectives and plans for this one-to-two-month experience. Half of the students elect to work in, and study, a private medical practice. The other students

²Unpublished data provided by the Coordinator of the Community Medicine Rotation.

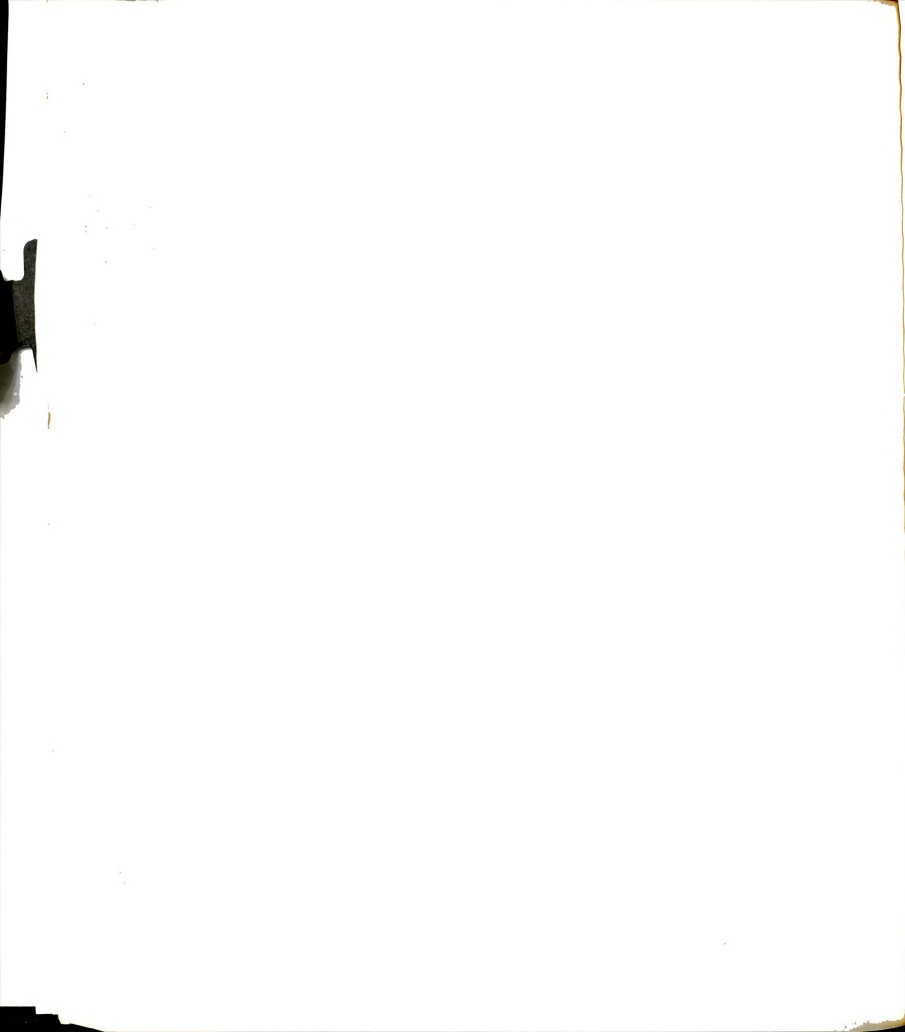
take a variety of experiences ranging from participating in a public health study to working at Indian Health Service facilities. Approximately half of the students receive some stipend support during this off-campus rotation. At the end of the rotation the students submit an evaluation of their experience and a report on a community health topic studied during the rotation. The student's participation in the program is concluded by a seminar session in which the students report on their experiences.

A study of student reactions to this program showed that 80 percent of students found their experiences to be good or excellent, and 85 percent found them to be relevant or very relevant.³

Cost of Adult Ambulatory Care Teaching

Good ambulatory care teaching is expensive. This point was made at all three medical schools studied. Experts stated that if a medical student is working with a physician on a one-to-one basis and the physician provides good teaching, the student-physician team can only see half as many patients as the physician alone could have managed. The long period of time that the student takes in evaluating a patient leads to high overhead costs for space and ancillary personnel. Also a student

³Unpublished data provided by the Coordinator of the Community Medicine Rotation.



tends to order more laboratory studies than does an experienced physician. These added cost factors account for the fact that the cost per patient visit at one university was nearly \$48 in clinics used for teaching medical students, while this cost was only \$17 in clinics staffed by interns, residents, and faculty.⁴ At another university the comparison between costs for teaching with hospitalized patients was contrasted with the costs of teaching clinics. The university hospital's operating costs for in-patients were 3 percent greater than the patient care revenues, but in the teaching clinics costs were 22 percent greater than revenues.

Summary

University A requires students to have a continuity experience in adult ambulatory care. The student spends one half-day per week during his senior year in one of several different ambulatory care settings. The "Special Clinic" was specifically designed for teaching medical students. Here each student follows and manages an average of twenty to thirty patients with chronic diseases. The Medical Clinic operates in a very similar manner, but its primary purposes are the delivery of care and the teaching of interns and residents, rather than the teaching of medical students. In the continuity

⁴This cost per patient visit included laboratory and pharmacy costs.

program in Family Medicine each student works with a family practitioner and sees patients whose problems are usually acute, minor illnesses. Students in the Adolescent Clinic gain experience in dealing with the medical and behavioral problems of middle-class adolescents.

At University B all students spend two months in a special teaching clinic during their final medical school year. These clinics are interdepartmental with faculty from internal medicine, surgery, and psychiatry, plus other specialists available on call. In the "University Hospital Special Clinic," each morning the student performs extensive evaluations of patients with chronic diseases and the afternoons are devoted to ambulatory care conferences or experiences in ophthalmology, otolaryngology, and dermatology. The "County Hospital Special Clinic" includes the basic clinical activities of the "University Hospital Special Clinic" but at the "County Hospital" the equivalent of two days per week are devoted to the clinical and laboratory study of the pathophysiology of chronic diseases of various organ systems.

University C requires students to spend five months in a wide variety of ambulatory care and community medicine experiences. Students devote one month each to (a) general and sub-specialty medical clinics, (b) pediatric clinics, (c) surgical and miscellaneous

clinics, (d) a community medicine experience, and (e) a private practice preceptorship or a second month of community medicine. In the "Faculty Clinic" the student is a participant-observer as the faculty member cares for his private patients. In the General Medicine Clinic the student acts under supervision as the physician to patients with a variety of problems. The student gains experience in the management of acute, minor illnesses in the Family Medicine Clinic. The Community Medicine Program provides the student with experiences outside the university medical center.

All of the universities studied demonstrated the fact that good ambulatory care teaching is expensive.

Chapter 6

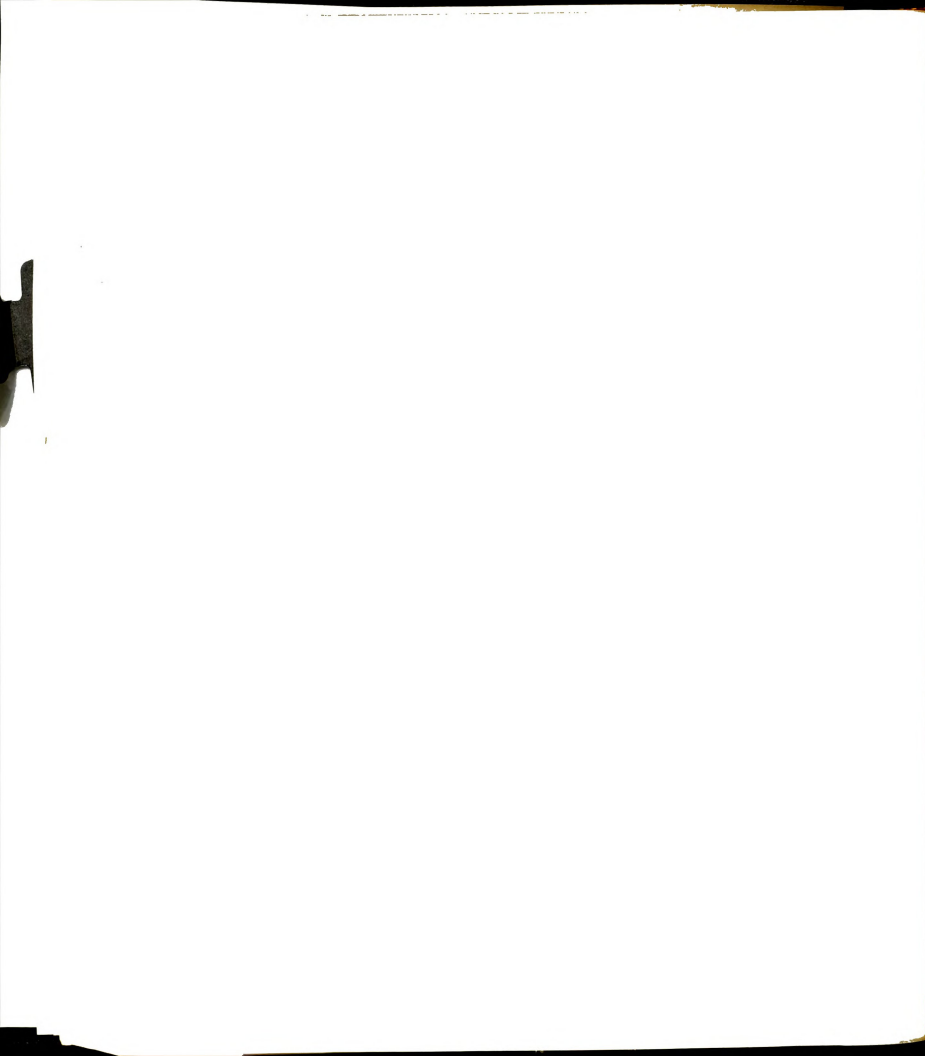
RESULTS OF THE QUESTIONNAIRE SURVEY

Extensive analyses were carried out on the data obtained from the national survey of adult ambulatory care teaching programs. A profile of clinic programs is followed by a comparison of clinic and preceptorship programs. Comparisons between different groups of programs and between student and faculty responses are presented. The relationships between variables, particularly those factors relating to program goals and success, are reported and discussed. Three research hypotheses were accepted.

Questionnaire Responses

Of the sixty-two clinic programs selected for further study, adequate data for use in analysis were obtained on fifty programs.¹ Twenty-three of the twenty-six preceptorship programs were used in the analysis. Table 6.1 contains the questionnaire response rates by

¹One additional "clinic program" was eliminated when it was determined to be an in-patient clerkship.



source.² Of the fifty clinic programs used in the analysis, faculty responses were lacking for two programs and nurse responses were lacking for seven programs.

Table 6.1
Questionnaire Response Rates by Source

Source	Number of Questionnaires Mailed	Number of Responses	Percentage Responding
Faculty	62	49	79
Nurses	62	43	69
Students	487	280 ^a	57
Preceptorship Coordinators	26	23	88

^aBecause of multiple questionnaires per student at one institution, a total of 320 responses was received from 280 students.

Missing Data Elements

The consolidated data on each of the fifty clinic programs consisted of forty-eight data elements. A total of 211 data elements was missing, which represents a missing data rate of less than 9 percent. The only variables on which data were missing on 20 percent or more of the programs were concerning the "no-show" rate of patients in the clinics. Because of these missing data the number of programs varies in the analysis of different variables.

²Student response rates for individual programs are presented in Appendix E, Table E.1.

Data on the twenty-three preceptorship programs were complete except that one respondent did not rate the outcome variables, and another respondent failed to indicate whether the program was required, selective, or elective.

Profile of Clinic Programs

Questionnaire results were analyzed to characterize the clinic programs on all of the variables studied.

Patient Variables

The profile of clinic programs on six of the patient variables is presented in Table 6.2. Sixty-five percent of respondents indicated that patients seen in the clinic by medical students were selected or screened. The commonest criteria reported as being used in this selection/screening process were (1) patients with a variety of common "out-patient type" problems, and (2) patients with "learning value" or "potential" for the student.³

In 54 percent of the clinics, the students saw only adult patients and in the remaining clinics the students saw both children and adults.

³Appendix E, Table E.2 contains a tabulation of all of the patient selection criteria reported.

Table 6.2

Profile of Clinic Programs on Patient Variables

Variable	Median (%)	Coded Values ^a		
		Mean	Standard Deviation	N
1. Percentage of patients medically indigent.	41-60	3.7	1.3	41
2. Percentage of patients over age 60.	21-40	2.9	1.1	41
3. Percentage of patients with primarily psychological or psychosomatic problems.	21-40	2.9	.9	45
4. Percentage of patients with problems not previously diagnosed.	21-40	3.3	1.3	46
5. Percentage of patients failing to keep appointments.	11-15	3.8	2.4	38
6. Percentage of patients cancelling appointments and failing to schedule new appointments.	0-5	1.3	.7	30

^aResponses were coded for analysis as follows:

Variables 1 - 4

Code	1	2	3	4	5	6	7
Percentage	0	1-20	21-40	41-60	61-80	81-99	100

Variables 5 & 6

Code	1	2	3	4	5
Percentage	0-5	6-10	11-15	16-20	21-25

Code	6	7	8	9
Percentage	26-30	31-35	36-40	41+

Faculty Variables

The willingness of the participating faculty to teach in the clinics was rated on a five-point scale (1 = Teach in clinic only because it is required; 3 = Willing, but not eager; 5 = Extremely eager and enthusiastic). The mean of responses was 3.8 with a standard deviation of 1.0, indicating that the typical faculty were not only willing, but somewhat eager to teach in the clinic. In only six of the forty-eight programs were the faculty participants rated as less than "willing" to participate. The seniority of the faculty teaching students in the clinics was rated as equivalent to, or slightly greater than, the seniority of faculty teaching students on the wards. (Mean of 3.2 and standard deviation of 0.7, on a five-point scale.)

Table 6.3 presents data on two of the faculty variables.

Student Variables

In 50 percent of the clinic programs all students were in their fourth year of medical school. All of the participating students were in their third year in 20 percent of the programs. In the remaining 30 percent, both third- and fourth-year students participated.

The clinic programs were almost equally divided among required, selective, and elective programs.⁴

The number of students per year who participated in each program varied from four to over one hundred with a mean of forty-nine and a standard deviation of thirty-five.

The career choice preferences indicated on the 320 student responses are presented in Table 6.4.

Table 6.3

Profile of Clinic Programs on Faculty Variables

Variable	Median (%)	Coded Values ^a		
		Mean	Standard Deviation	N
1. Percentage of faculty who are full-time faculty, rather than part-time or volunteer faculty.	41-60	4.6 ^b	1.9	48
2. Percentage of teaching done by house staff.	1-20	1.8	0.8	48

^aCode 1 2 3 4 5 6 7
Percentage 0 1-20 21-40 41-60 61-80 81-99 100

^bThe distribution on this variable was skewed with 30 percent of the responses being 100 percent (coded value of 7)

⁴Required (student must take it without other options) - 17 programs. Selective (student must take it or "an equivalent") - 18 programs. Elective (an optional experience) - 13 programs.



Process Variables

Results of responses to questions regarding the amount of time students spent per patient visit in various clinic activities are presented in Table 6.5. In 70 percent of the programs the students usually wrote new patients' medical records during clinic hours, in 15 percent this was done after clinic hours, and in another 15 percent some record writing was done during, and some after, clinic hours.

Table 6.4

Career Choice Preferences of Student Respondents

Career Choice	Number of Responses	Percentage of Responses
General Practice or Family Practice	48	15
Internal Medicine	115	36
Pediatrics	21	7
Surgical Specialties	94	29
Other Specialties ^a	29	9
Undecided	13	4

^aOther specialties were predominantly psychiatry, radiology, and pathology.

Number of patients seen and number of visits per patient. In 60 percent of the programs studied the students saw a total of thirty patients, or less. In over half of the programs the students saw less than 20 percent of their patients three or more times, and students saw

more than 40 percent of their patients three or more times in only one-third of the programs.

Purpose of clinics, and conferences. Tables 6.6 and 6.7 contain data on the primary purposes of the clinics, and the subjects of conferences included in the clinic programs. Two-thirds of the programs studied had conferences or seminars as part of the clinic teaching program for medical students.

Table 6.5
Student Times Per Patient Visit

Average Time per Patient Visit	Time (minutes)		
	Mean	Standard Deviation	N
1. With new patients	72	29	49
2. With follow-up patients	28	12	47
3. Conferring with a faculty member regarding the patient.	22	14	49
4. Writing a new patient's medical record.	29	19	46

Student time in the program. In twelve programs the students spent one half-day per week in the clinic, and in fifteen programs the students spent nine or more half-days per week in the clinic. In the remaining nineteen programs the number of half-days per week was quite evenly distributed between these extremes. Half of the programs were of six weeks or less duration, and 80 percent were twelve weeks or less in length.



Table 6.6

Primary Purpose of the Clinics

Primary Purpose	Number of Responses	Percentage of Responses
1. Teach medical students	18	38
2. Provide patient care and/or teach house staff	27	56
3. Both	3	6
Total	48	100

Table 6.7

Subjects of Conferences

Conferences Organized Around	Percentage of Conferences on This Subject			
	Median (%)	Coded Values ^a		
		Mean	Standard Deviation	N
1. Diseases or medical problems	21-40	2.9	2.1	31
2. Discussion of current clinic patients.	21-40	2.4	2.0	31
3. Psychological, psychosomatic, environmental, or clinical practice problems	21-40	3.3	2.4	31

^aCode 1 2 3 4 5 6 7
Percentage 0 1-20 21-40 41-60 61-80 81-99 100

Students' patient care responsibility. In over 75 percent of the programs the students made patient care decisions consistent with their expertise under supervision. In most of the remaining programs there was a mixture of student responsibilities including observation only, performing medical workups, and making patient care decisions. In only one program were the students described as observers only, and in only two programs did the students do only medical workups with little input in patient management decisions.

Faculty-student ratio and nonteaching activities of the faculty. In nearly 80 percent of the programs there were no more than two students per faculty member involved in teaching in the clinic. In only four programs were there three or more students per faculty member. In 46 percent of programs, however, faculty members saw patients without students during the same clinic session that they were teaching students. In these programs, an average of approximately half of the patients were seen by these faculty members without student participation.⁵

⁵In 50 percent of clinic programs, 20 percent, or less, of the patients seen in the clinic were seen by medical students. The other 80 percent of the patients were seen by faculty, staff physicians, or house staff.

Program Goals

Program directors rank ordered the goals of their programs. The mean ranking of the goals with the goals listed in order of their average ranking is presented in Table 6.8.

Outcome Variables

All clinic programs were rated by program directors on three outcome measures; (a) the educational value of the clinic experience to the typical student as compared with all other clinical experiences; (b) the students' enjoyment of the clinic experience; and (c) the degree to which the programs' goals were achieved. Table 6.9 contains the means and standard deviations of responses.

Comparison of Preceptorship and Clinic Programs

Data obtained on preceptorship programs were analyzed to characterize these programs on the variables included in the study. The analagous data for clinic programs are also presented to permit comparisons.

The clinic programs studied were almost equally divided among required, selective, and elective programs, but over half of the preceptorship programs were elective.⁶

⁶Preceptorship programs: Required - 6; Selective - 3; Elective - 13.



Table 6.8

Average Ranking of Clinic Program Goals in Order of
Mean Ranks^a (N = 47)

Goal	Mean Rank	Standard Deviation
1. Demonstrate the continuity of the doctor-patient relationship.	6.9	2.2
2. Provide experience with diseases which do not commonly lead to hospitalization.	6.4	2.6
3. Demonstrate the natural history of chronic diseases.	5.6	2.7
4. Demonstrate the pathophysiology of disease at a given point in time.	5.1	2.6
5. Goal statements added by individual program directors. ^b	4.2	4.3
6. Involvement in a health care delivery system other than a university medical center.	3.4	3.1
7. Provide student with experience to assist in career choice decisions.	3.1	2.5
8. Provide students with instruction and experience in abbreviated workups and seeing a volume of patients.	2.7	2.9

^aTop-ranked goal = 9; Second-ranked goal = 8;
. . . Nonranked = 0.

^bThese goal statements are listed in Appendix E,
Table E.3.



Program Goals

Table 6.10 lists program goals in the order of their average ranking in preceptorship programs, the mean and standard deviation of the rankings for both preceptorship and clinic programs, and the level of significance of the difference between the two groups of programs.

Table 6.9

Faculty Ratings of Clinic Programs on Outcome Variables
(N = 50)

Variable	Mean of Responses	Standard Deviation of Responses
1. Educational Value	5.5	1.1
2. Student Enjoyment	5.4	1.0
3. Goal Achievement	5.2	1.1

Note: The rating scales were as follows: Educational Value--1 = A waste of time; 4 = As good as other clerkships; 7 = An extremely valuable educational experience. Student Enjoyment--1 = Hate it; 4 = So-So; 7 = Extremely enjoyable. Goal Achievement--1 = Goals achieved much less than in typical clerkship; 4 = Same as typical clerkship; 7 = Goals achieved much more than in typical clerkship.

Outcome Variables

Preceptorship program coordinators rated their programs on two outcome measures; (a) the educational value of the program to the typical student; and (b) the degree to which the goals of the program were achieved.

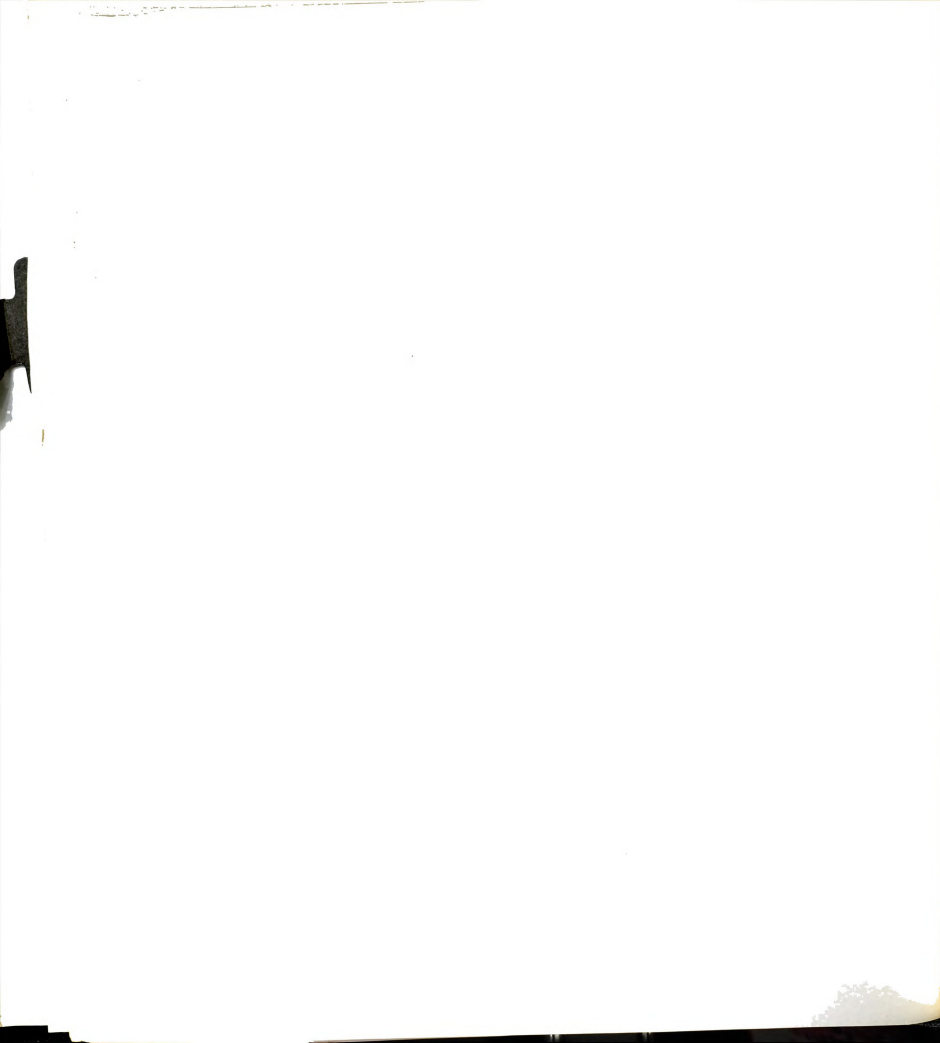


Table 6.10
Ranking of Program Goals for Preceptorship and Clinic Programs

Goal	Preceptorship Programs (N=23) Mean Rank ^a and (S.D.)	Clinic Programs (N=47) Mean Rank ^a and (S.D.)	Significance of Difference (p <:)
1. Demonstrate the continuity of the doctor-patient relationship.	6.7 (2.7)	6.9 (2.2)	.40
2. Involvement in a health care delivery system other than a university medical center.	6.5 (3.3)	3.4 (3.1)	.0005
3. Provide experience with diseases which do not commonly lead to hospitalization.	6.2 (1.9)	6.4 (2.6)	.40
4. Provide students with experience to assist in career choice decisions.	5.7 (2.7)	3.1 (2.5)	.0005
5. Demonstrate the natural history of chronic diseases.	4.0 (3.1)	5.6 (2.7)	.025
6. Goal statements added by individual respondents. ^b	2.7 (3.3)	4.2 (4.3)	.10
7. Demonstrate the pathophysiology of disease at a given point in time.	2.5 (2.6)	5.1 (2.6)	.0005
8. Provide students with instruction and experience in abbreviated work-ups and seeing a volume of patients.	2.5 (2.9)	2.7 (2.9)	.40

^aTop-ranked goal = 9; Second-ranked goal = 8; . . . Nonranked goal = 0.

^bThese goal statements are listed in Appendix E, Table E.3 (clinic programs) and E.4 (Preceptorship programs).

The means and standard deviations of these ratings are presented in Table 6.11, as well as the comparable data on clinic programs and the level of significance of the differences.

Discussion

Preceptorship programs usually involve students working with practitioners away from the university medical center. The inclusion of such activities in post-Flexnerian medical education is a relatively recent development. It is to be expected, therefore, that the majority of these programs are elective experiences for students. Such programs can provide students with experiences in a health care delivery system other than a university medical center and, therefore, expose the students to a wider perspective of the practice of medicine. This can be of value to them in making career choice decisions. That these factors are reflected in the goals of preceptorships indicates a recognition of these merits.

The more traditional goals of medical education, an understanding of the pathophysiology of diseases and the natural history of chronic diseases, are not surprisingly more frequently associated with clinic programs, which are more closely tied to the university medical centers.

Table 6.11

Faculty Ratings of Preceptorship and Clinic Programs on Outcome Variables

Variable	Preceptorship Programs (N=22) Mean and (S.D.) of Responses	Clinic Programs (N=50) Mean and (S.D.) of Responses	Significance of Difference ($p < .1$)
1. Educational Value	5.8 (1.0)	5.5 (1.1)	.15
2. Goal Achievement	5.3 (1.2)	5.2 (1.1)	.40

Note: The rating scales were as follows: Educational Value--1 = A waste of time;
 4 = As good as other clerkships; 7 = An extremely valuable educational
 experience. Goal Achievement--1 = Goals achieved much less than in typical
 clerkship; 4 = Same as typical clerkship; 7 = Goals achieved much more than in
 typical clerkship.

The supervisors of clinic and preceptorship programs rate their programs as being equally successful. That they consider their programs, on the average, to be more successful than typical student clerkships may represent a bias on the part of the respondents.

Comparison of Clinic Programs With
(SQ) and Without (NSQ) Student
Questionnaire Data

There may be limited general interest in the differences between the clinic programs in which student questionnaire data were obtained (SQ programs) and programs without this data (NSQ programs). However, rather striking differences were found so it was considered appropriate to separate these two groups of programs for some of the subsequent analyses. For other analyses only the SQ programs could be used. It is appropriate, therefore, to describe these differences and thus facilitate an understanding of the results of the analyses in later sections of this chapter.

Most of the clinic programs on which student questionnaire data were obtained were selected because more than 50 percent of the schools' students participated in the program. This bias in favor of larger programs would be expected to result in differences between programs with and without student questionnaire data on several variables. This was demonstrated in most

variable groups.⁷ No significant differences between the two groups of programs were detected among the patient variables.

Faculty Variables

In SQ programs the median proportion of participating faculty who were full-time faculty was 40 to 60 percent, and in NSQ programs the median was 60 to 80 percent. This difference was statistically significant.⁸ No important differences were detected on other faculty variables.

Student Variables

In SQ programs the median percentage of participating students who were in their fourth medical school year was 40 to 60 percent, while in NSQ programs the median was 100 percent.

The average number of students per year in SQ programs was sixty-eight and in NSQ programs, thirty-three. There was a wide range of program size in both groups (standard deviations of thirty-three and thirty), but the difference was significant ($p < .0005$).

⁷Appendix E, Tables E.5 and E.6, contains the basic data and results of the statistical tests carried out on the differences presented in this section.

⁸The terms "significant" or "statistically significant" are used throughout this report to indicate a difference which is shown to be significant at the 95 percent confidence level ($p < .05$) by an accepted statistical test.



Ninety-five percent of SQ programs were required or selective, but only 55 percent of the NSQ programs were in these categories.

Process Variables

In over half of the SQ programs the primary purpose of the clinic was reported as being to teach medical students; but this was the reported purpose in only a quarter of NSQ programs.⁹

Students spent less time per week and more weeks in the SQ programs than in the NSQ programs. Students spent two half-days per week or less in the clinic in over 50 percent of the SQ programs, but only 16 percent of the NSQ programs. The median duration of the students' experience was ten to twelve weeks in SQ programs and four to six weeks in NSQ programs.

In clinics associated with SQ programs, as compared with clinics associated with NSQ programs, more of the patients were seen by medical students and fewer programs had faculty members seeing patients independent of students during the time they were supervising students.

Program Goals

The ranking of goals of SQ and NSQ programs differed significantly only for the goal, "involve students

⁹A Chi-square analysis of the reported purposes of clinics in the two groups was not significant at the 95 percent confidence level.



in a health care delivery system other than a university medical center." The average ranking of this goal was about fifth in NSQ programs and seventh in SQ programs.

Outcome Variables

The faculty ratings of the educational value of NSQ programs were significantly higher than this rating of SQ programs. Although the ratings of student enjoyment and program goal achievement were also somewhat higher for NSQ programs, these differences were not statistically significant.

Discussion

The criteria used to select programs for study by student questionnaires produced a difference between the SQ and NSQ programs. The SQ programs were larger, more frequently required, and more frequently involved the student for less time per week over more weeks. Required programs are expected to be larger, and more likely to involve third-year students because of the large proportion of elective experiences in the fourth year at most schools. Larger programs involve more participation by part-time or volunteer faculty and clinics that are organized for teaching. Elective programs are usually "block time" experiences, therefore more intensive and of shorter duration. Required programs are usually held in university medical centers so that



involvement in other health care delivery systems is a less common component of these programs.

One of three outcome measures differed significantly between the two groups. Smaller, elective programs might be expected to be more satisfying to both faculty and students, thus accounting for this difference.

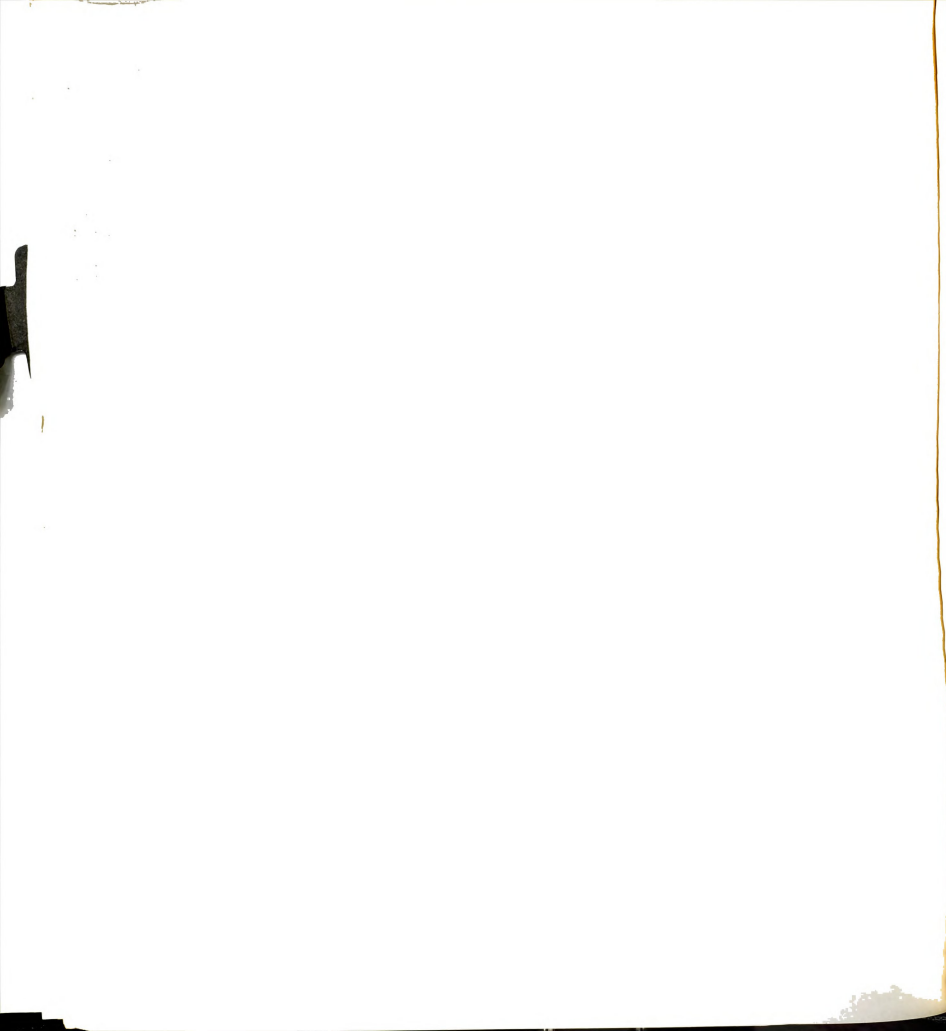
Comparison of Student and Faculty Responses

As was reported in Chapter 3, there was no meaningful difference between faculty responses and the individual program means of student responses on the descriptive, or independent, variables. On the outcome or dependent, variables there was no significant correlation between the faculty ratings of program success and the means of student ratings.¹⁰ Table 6.12 shows the relationship between student and faculty responses on the outcome variables as reflected by the assignment of programs to the Faculty and Student Success Groups.

Discussion

The lack of a significant relationship between student and faculty rating of program success has importance for two reasons; one involves this study, and the other is of more general importance. Regarding

¹⁰These correlations are presented in Appendix C, Table C.4.



this study, it indicates that the factors associated with "successful" programs must be explored using student and faculty ratings separately. The more general conclusion is that students and faculty judge programs differently and presumably use different criteria for these judgments. Student and faculty perspectives should, therefore, be considered separately in program evaluation procedures.

Table 6.12

Chi-square Test of Numbers of Programs in Student
Success Group by Faculty Success
Group Matrix

Faculty Success Group	Student Success Group		Results of Analysis
	Low	High	
Low	4	6	Chi-square = 1.61 df = 2 p < .50
Middle	4	5	
High	0	2	

Clinic Programs' Strengths and
Weaknesses as Reported by
Students

Students, who had participated in fourteen different programs, were asked to indicate the major area of strength and the major area of weakness of their programs from among the areas of (a) the type and number of patients, (b) the faculty participation, and (c) the clinic and/or curriculum organization. Responses from students were consolidated for each program such that

areas were rated as "weak," "strong," or "in the middle."

Table 6.13 presents the results of this analysis.

Table 6.13

Numbers of Clinic Programs in Each "Strength-Weakness Category" Based on Student Responses

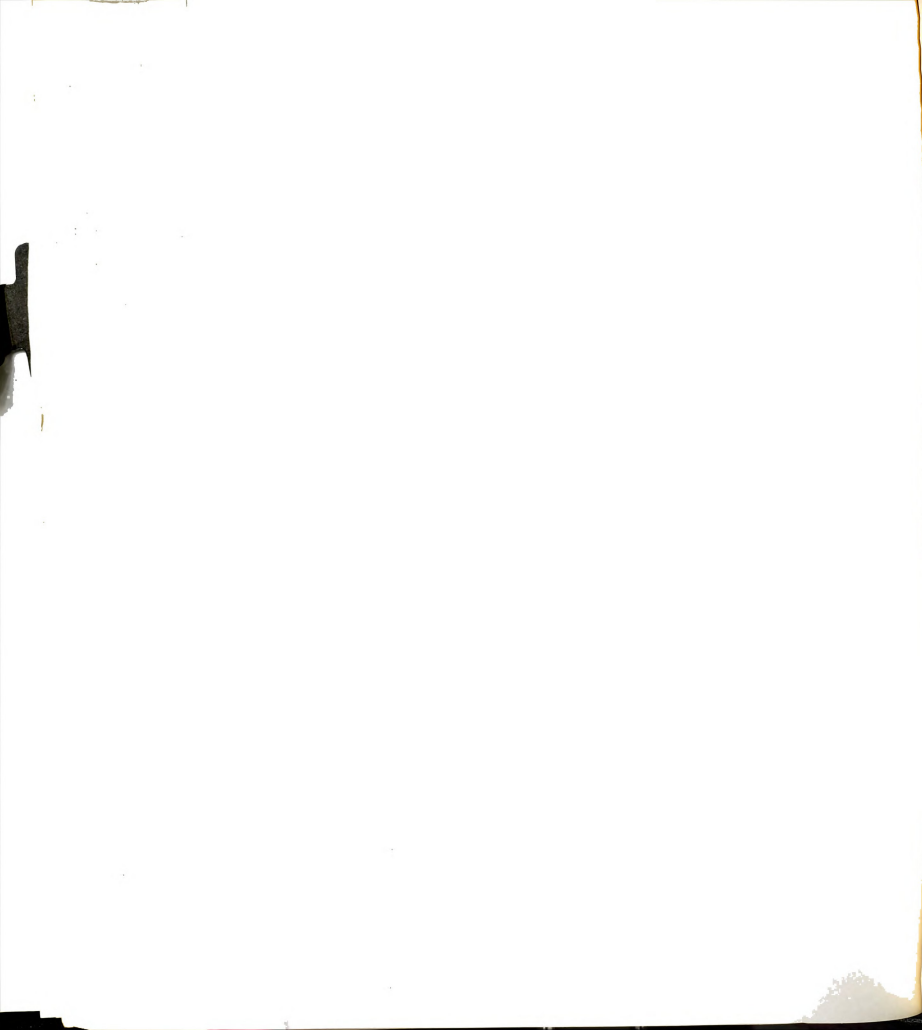
	Type and Number of Patients	Faculty Participation	Clinic and/or Curriculum Organization
Weak Area	5	3	8
"Middle" Area	4	6	6
Strong Area	5	5	0
Total	14	14	14

Even though a Chi-square analysis of Table 6.13 failed to demonstrate significance in the distribution of these student ratings,¹¹ the "weak and middle areas" ratings of the "clinic and/or curriculum organization" suggest that this is a major area of weakness from the students' perspective.

This impression is substantiated by student comments on questionnaires. Each student was asked to comment on the clinic program's strengths and weaknesses.¹² These comments were categorized as being

¹¹A Chi square analysis of Table 6.12 revealed p of less than .50 and greater than .30.

¹²Of 320 student responses, 106 (33%) included such comments.



(a) general, (b) regarding the patients, (c) regarding the faculty, or (d) regarding the clinic and/or curriculum organization. Each comment was also categorized as reflecting a program strength or weakness. The results of this analysis of student comments are presented in Table 6.14.

Table 6.14

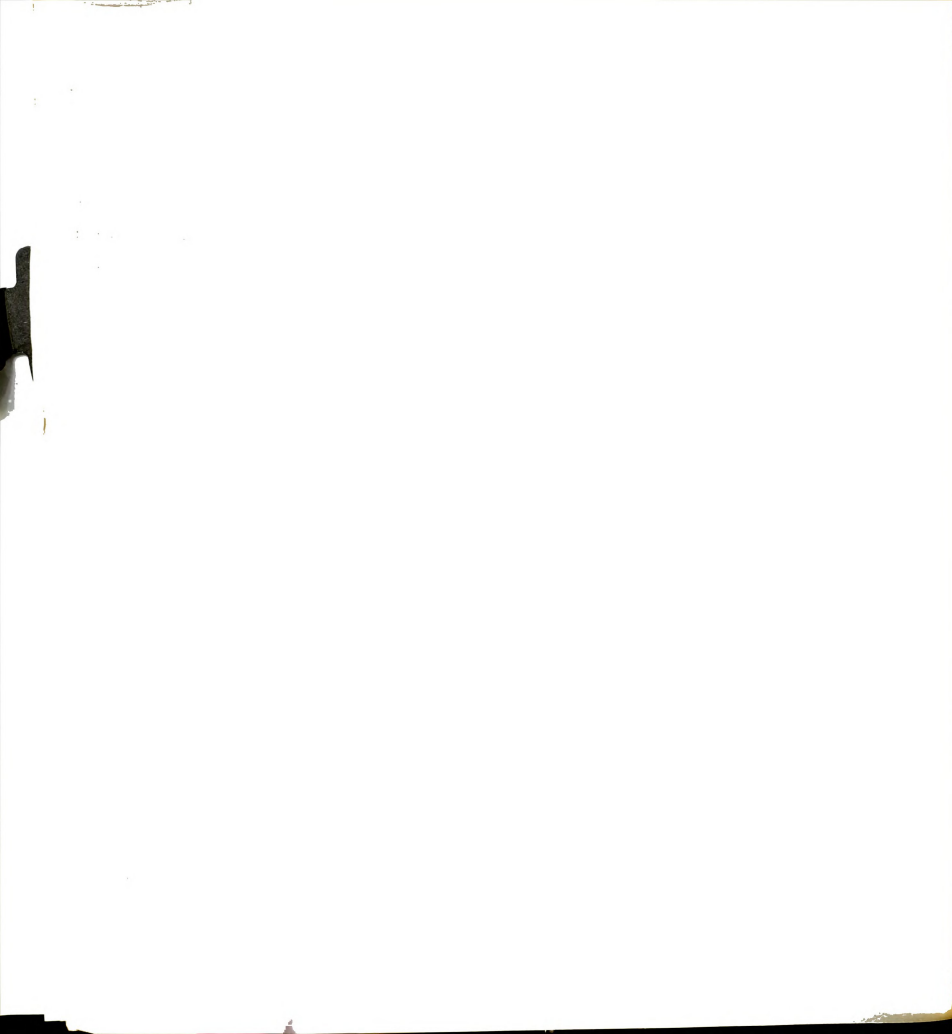
Student Comments on Clinic Programs'
Strengths and Weaknesses

Category of Comment	Comment Implied			
	Weakness		Strength	
	No. of Comments	% of Comments	No. of Comments	% of Comments
General	4	2	19	12
Patients	32	20	8	5
Faculty	28	17	15	10
Clinic/curriculum organization	53	32	4	2
Total	117	72 ^a	46	28

^aPercentage of total, not sum of columns.

Discussion

This documentation of the "clinic and/or curriculum organization" as an area of major concern corroborates the finding of the problem identification phase of this study that process variable problems



account for a large proportion of the perceived problems in adult ambulatory care teaching.¹³

Relationships Between Variables--
Clinic Programs

The relationships between the variables included in the study were examined using three methods. Based on program goals and the Faculty Success Index each program was assigned to two goal groups and one Faculty Success Group. Programs with student questionnaire data were also assigned to a Student Success Group based on the Student Success Index.¹⁴ Each group was characterized on each variable, and the appropriate groups compared to determine relationships between the patient, faculty, student and process variables, and program goals or faculty estimates of program success.

The relationships between most of the variables in the study were examined by forming an intercorrelation matrix for all programs combined and separate matrices for programs with and without student questionnaire data.¹⁵

¹³See Chapter 4.

¹⁴The method of forming these groups is described in Chapter 3.

¹⁵Only correlations with programs' goals and outcome variables will be reported in this chapter. All significant correlations are presented in Appendix E, Tables E.7 through E.10.

Those variables which appeared to have the more meaningful correlations with the outcome variables were then used in a series of stepwise regression analyses using the Faculty and Student Success Indices as dependent measures.

Relationships Between Program Goals and Other Variables

Each program was assigned to one of a set of primary goal groups, titled Continuity, Clinical, and Practical, based on its top-ranked goal. It was also assigned to one of a comparable set of tertiary goal groups based on goals which were ranked as being of low priority or not applicable. By comparing the characteristics of the programs in the primary goal group with those in the comparable tertiary group, it was possible to identify characteristics which might be expected to be related to the goals used in assigning the programs to these groups, i.e. continuity goals, clinical goals, or practical goals.¹⁶

Variables related to continuity goals. Significant differences were found between the Primary and Tertiary Continuity Goal Groups on four variables. The Primary Continuity programs had: (1) A larger percentage

¹⁶General information on the comparison of appropriate groups follows. More detailed data are contained in Appendix E, Tables E.11 and E.12.

of patients with problems which were primarily psychological or psychosomatic; (2) A larger percentage of patients seen three or more times by the same student; (3) Each student in the clinic fewer half-days per week; and (4) Each student in the program for a greater number of weeks.

Variables related to clinical goals. Program characteristics on five variables were found to be significantly different between the Primary and Tertiary Clinical Goal Groups. A focus on clinical goals was related to: (1) Having a larger percentage of patients whose primary problems had not been previously diagnosed; (2) Having only adult patients in the clinic, rather than adults and children; (3) Having faculty who were rated as less willing to teach in the program; (4) Having students conferring with faculty members for a longer period of time per patient; and (5) Having a smaller percentage of conferences organized around psychological, psychosomatic, environmental, or clinical practice problems.

Variables related to practical goals. Significant differences were found between the Primary and Tertiary Practical Goal Groups on six variables. Programs in the Primary Practical Group had: (1) Fewer patients over age sixty; (2) Faculty rated as more willing to teach in the program; (3) Students spending less time per



patient conferring with faculty members; (4) Students spending less time per new patient writing the medical record; (5) Students seeing more patients during their clinic experience; and (6) A larger proportion of conferences dealing with psychological, psychosomatic, environmental, or clinical practice problems.

Relationships between Goal Groups and Faculty Success Groups. Matrices were formed of (a) the Primary Goal Groups and Faculty Success Groups and (b) the Tertiary Goal Groups and Faculty Success Groups. No significant relationship was demonstrated between goal groups and outcome as measured by the Faculty Success groupings.¹⁷

Relationships between individual goals and other variables. Table 6.15 contains the significant correlations between the rankings of individual program goals and other variables when all programs were studied. Two goals had positive correlations with outcome variables. Two other goals had no significant correlations with any of the other variables.

¹⁷The matrices and results of the Chi-square analyses are presented in Appendix E, Table E.13.



Table 6.15

Correlations Between the Ranking of Goal Statements
and Clinic Program Characteristics

Goal and Other Variable		r	p <
1.	Goal: Demonstrate the continuity of the doctor-patient relationship.		
a.	Percentage of faculty who are full-time.	.33	.05
b.	Percentage of students who are fourth year.	-.36	.05
c.	Student hours per week in the clinic.	-.44	.01
d.	Duration of program for typical student.	.32	.05
2.	Goal: Demonstrate the pathophysiology of disease at a given point in time.		
a.	Student time per patient conferring with a faculty member.	.35	.05
3.	Goal: Provide experience with diseases which do not commonly lead to hospitalization.		
a.	Educational Index.	.34	.05
4.	Goal: Provide students with experience to assist in career choice decisions.		
a.	Percentage of faculty who are full-time.	.49	.01
b.	Percentage of teaching by house staff.	-.33	.05
c.	Students' role involves making patient care decisions under supervision.	-.43	.01
d.	Students' role is mainly to do workups.	.48	.01
5.	Goal: Involvement in a health care delivery system other than a university medical center.		
a.	Student hours per week in the clinic.	.49	.01
b.	Duration of program for typical student.	-.46	.01
c.	Goal achievement.	.39	.05

Notes: Correlations are Pearson's product-moment correlation coefficients.
 The ranking of goals was coded as follows:
 Top ranking = 9; second ranking = 8; . . .
 Unranked = 0.



Relationships Between Outcome
Variables and Other Variables

The relationships between the outcome variables and other variables were studied by (a) examining the characteristics of the High, Middle, and Low Faculty Success Groups¹⁸ and the High and Low Student Success Groups;¹⁹ (b) inspecting the correlations between the outcome variables/indices and other variables; and (c) performing stepwise regression analyses with the Faculty and Student Success Indices as dependent variables.

Contrasts between Faculty Success Groups. The High, Middle, and Low Faculty Success Groups were characterized on each of the variables included in the study. Comparing the High Faculty Success Group with the Low Faculty Success Group revealed that the High Faculty Success Group had significantly: (1) Fewer patients over

¹⁸The Faculty Success Index, an average of faculty ratings of the program's educational value, enjoyment by the students, and goal achievement, was used to assign each program to the High, Middle, or Low Faculty Success Group. The composition of these groups is reported in Appendix C, Table C.5.

¹⁹The Student Success Index, an average of the students' mean ratings per program on educational value and student enjoyment, was used to assign each program to the High or Low Student Success Group. The composition of these groups is reported in Appendix C, Table C.5. The relationship between Faculty and Student Success Groups was reported in Table 6.12.

age sixty;²⁰ (2) Greater willingness on the part of faculty to participate in the program; (3) More of the program's conferences organized around diseases or medical problems; and (4) The typical student in the clinic more hours per week.²¹

Contrasts between Student Success Groups. Only one of the independent variables differed significantly between the programs rated highly by students and those programs that students rated lower. The highly rated programs had an average of about one and one-half students per faculty member in the clinic, while the lower rated programs had between two and two and one-half students per faculty member.²²

Correlations between outcome variables and other variables. Intercorrelation matrices were formed between faculty ratings of outcome variables and independent variables for (a) all programs, (b) programs without student questionnaire data (NSQ), and (c) programs with

²⁰The Middle Faculty Success Group had a lower percentage of patients over age sixty than either the High or Middle Groups, but the difference between the High and Middle group was not significant.

²¹More detailed results of these analyses are presented in Appendix E, Table E.14.

²²High Student Success Group (code units) $\bar{X} = 2.3$; S.D. = 1.2; N = 12; Low Student Success Group (code units) $\bar{X} = 3.5$; S.D. = 1.8; N = 8; $p < .05$.

student questionnaire data (SQ). The significant correlations are presented in Table 6.16. No significant correlations were identified between student ratings on the outcome variables (Student Success Index) and other variables.²³

Regression analyses on the Faculty Success Index (FSI) and the Student Success Index (SSI). The correlations between the independent variables and the FSI for all clinic programs, NSQ programs, and SQ programs were examined and those variables with larger correlations were used in stepwise multiple regression analyses. Different combinations of variables and different orderings of the variables were used to identify those variables which accounted for the greatest amount of the variance of the FSI.

In an analysis of all clinic programs, two variables accounted for 26 percent of the variance of the FSI (Table 6.17). The rating of faculty willingness to participate in the program accounted for 21 percent of the variance. In NSQ programs this variable contributed 28 percent out of the total variance accounted for of 39 percent. No variables were identified which significantly accounted for the variance of the FSI in SQ programs.

²³Because of the small sample size (N=15) used in this intercorrelation matrix, a correlation coefficient of .51 was required to achieve significance.

Table 6.16

Correlations Between Faculty Ratings on Outcome Variables and Independent Variables for Three Program Groups

Independent Variable	Faculty Ratings of Outcome Variables								
	Educational Value			Student Enjoyment		Goal Achievement			
	Programs ^a			Programs ^a		Programs ^a			
	All	NSQ	SQ	All	NSQ	SQ	All	NSQ	SQ
1. Willingness of faculty to teach in the clinic.	.44	.64	-	-	-	-	.45	-	-
2. Percentage of faculty who are full-time faculty, rather than part-time or volunteer faculty.	-	-	-	.36	-	.54	-	-	-
3. Percentage of students who are in their fourth year.	-	-.43	-	-	-	-	-	-	-
4. Required, selected, or elected program. Coded: 1 = required, 2 = selected, 3 = elected.	-	-	-	-	-	.69	-	-	-
5. Number of students per year in the program.	-	-	-	-.38	-	-	-	-	-
6. Student-faculty interaction time per patient.	-	-	-	-	-	.60	-	-	.55
7. Presence of teaching conferences. (Coded: 1 = no, 2 = yes)	-	-	-	-	-	-	.33	-	-
8. Number of hours per week each student spends in the clinic.	-	-	-	-	-	-	.49	.49	-
9. Number of weeks the typical student spends in the program.	-	-	-	-	-	-	-.32	-	-
10. Involvement in a health care delivery system other than a university medical center.	-	-	-	-	-	-	.39	-	-

^aNSQ = Those programs without student questionnaire data; SQ = Those programs with student questionnaire data; All = All clinic programs.

Notes: Correlations are Pearson's product moment correlation coefficient; Only significant ($p < .05$) correlations are shown; Sample sizes: All (N=42); NSQ (N=24); SQ (N=15).



Table 6.17

Results of Analyses of the Predictors of Success of
Adult Ambulatory Care Teaching Programs

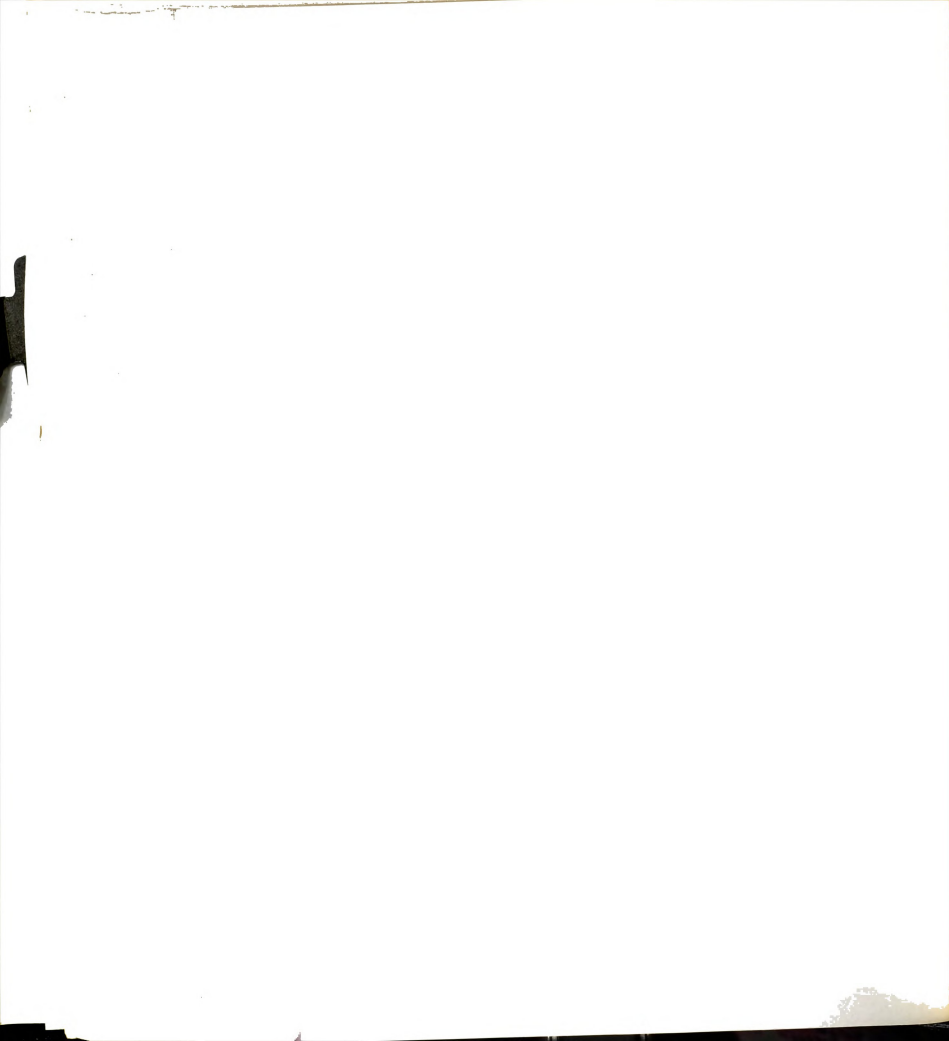
Program Group and Variables	r	Multiple Regression Analysis	
		% of Variance Accounted for	p <
A. <u>All programs</u> ; (N=47) FSI and:			
1. Rating of willingness of faculty to participate in the program.	.45	21	.002
2. Ranking of Goal: Involvement in a health care delivery system other than a university medical center.	.32	5	.085
Total		26	.002
B. <u>NSQ programs</u> ; (N=27) FSI and:			
1. Rating of willingness of faculty to participate in the program.	.53	28	.005
2. Ranking of Goal: Involvement in a health care delivery system other than a university medical center.	.45	11	.05
Total		39	.003
C. <u>SQ programs</u> ; (N=19) FSI and: No significant results.			
D. <u>SQ programs</u> ; (N=19) SSI and:			
1. Ranking of Goal: Demonstrate the pathophysiology of disease at a given point in time.	.49	24	.035
2. Number of students per year in the program.	-.41	19	.04
Total		43	.02

Notes: The "percentage of variance accounted for" is from a stepwise multiple regression analysis performed in the order in which the variables are listed. The percentage assigned to the second variable in each group is, therefore, the additional variance accounted for by adding that variable.
 r = Pearson's product moment correlation coefficient.
 FSI = Faculty Success Index (the average of the faculty ratings of the program on three dependent variables).
 SSI = Student Success Index (the average of students' ratings of the program on two dependent variables).
 NSQ = programs with no student questionnaire data.
 SQ = programs with student questionnaire data.



Multiple regression analysis of SQ programs identified two variables which accounted for a total of 43 percent of the variance of the Student Success Index. The ranking of the goal, demonstrate the pathophysiology of disease at a given point in time, accounted for 24 percent of the variance. The number of students in the program per year was negatively correlated with the SSI, and accounted for an additional 19 percent of the variance.

Relationships between "faculty willingness" and other variables. Faculty willingness to participate in the program was shown to be significantly related to outcome variables by comparison of Faculty Success Groups, by correlation coefficients, and by regression analysis. Since the rating of faculty willingness is a subjective measure, it was appropriate to carry out additional analyses in an attempt to identify objective measures related to the rating of faculty willingness. When all programs were analyzed, no significant correlations were found between "faculty willingness" and other variables. However, when the SQ and NSQ programs were analyzed separately, it was discovered that in both groups "faculty willingness," correlated significantly with one variable, the number of students per faculty member in the clinic, but the correlations were in opposite directions (SQ programs, $r = +.58$; NSQ programs, $r = -.39$).



Discussion

Only two goal statements and none of the goal groupings demonstrated significant relationships to faculty ratings of success. This suggests that there is no strong relationship between the degree of program success and the nature of the program's goals. Perhaps this is due to program goals being selected on the basis of the chance of succeeding with those goals.

The presence of an enthusiastic faculty is undoubtedly a key element in the success of any educational program. It is not surprising, therefore, that the rating of faculty willingness to participate in the program accounts for a large percentage of the variance of the Faculty Success Index. The fact that "faculty willingness" and the FSI are both subjective, and were rated by the same individual, raises some question as to the validity of this finding. The high correlation is, perhaps, only a result of the raters' biases, but the findings cannot be discounted without more concrete evidence.

The search for objective correlates of "faculty willingness" was disappointing. The conflicting, large correlations in the SQ and NSQ programs cannot be explained with the information available.

The variables of value in predicting students' ratings of success suggest that students feel that



experiences in smaller programs and dealing with the more traditional aspects of clinical medicine are most valuable and enjoyable. Another possible explanation for the high correlation between students' ratings of program success and the program's emphasis on the pathophysiology of diseases is that faculty are more adept at teaching in this area than in the more practice-oriented aspects of medicine.

Relationships Between Variables--
Preceptorship Programs

The relationships between the variables used in studying preceptorship programs were examined by two methods. Each program was assigned to a Goal Group, based on the nature of the program's top-ranked goal, and an Educational Group, based on the program's Educational Index (an average of the ratings on educational value and goal achievement).²⁴ The distribution of programs assigned to these two sets of groups was analyzed using the Chi-square test. In addition, an intercorrelation matrix was formed using all of the variables studied to identify the relationships between individual variables.²⁵

²⁴The method of forming these groups is described in Chapter 3 and Appendix C, Table C.5.

²⁵The correlations between the rankings of individual goal statements are of limited value and there were no significant correlations between the "required-selective-elective" status of programs and their goals or outcome measures. These correlations will, therefore, not be reported.



Goal Group by Educational Group Matrix

Programs were assigned to a High or Low Educational Group and a Continuity, Clinical, or Practical Goal Group.²⁶ Because only one program was in the Clinical Goal Group, this group was eliminated from the analysis. A Chi-square test of the distribution of programs in the two sets of groups failed to show significance.²⁷

Correlations Between Rankings of Individual Goals and Outcome Measures

The rankings of the goal, demonstrate the natural history of chronic diseases, correlated negatively with the preceptorship coordinators' ratings of the programs' degree of goal achievement ($r = -.55$, $p < .01$).²⁸ No other significant correlations between goal rankings and outcome measures were identified.

²⁶This set of goal groups is analogous to the Primary Goal Groups for clinic programs. The lower priority goals were not in the "clinical" area for only two preceptorship programs. The "tertiary goal grouping" was, therefore, not used in analyzing these programs.

²⁷This analysis is presented in Appendix E, Table E.17.

²⁸Top-ranked goal coded as 9; Second ranking = 8;
. . . Unranked = 0.

Tests of Hypotheses

Three of the seventeen research hypotheses were accepted after performing the appropriate statistical tests.²⁹

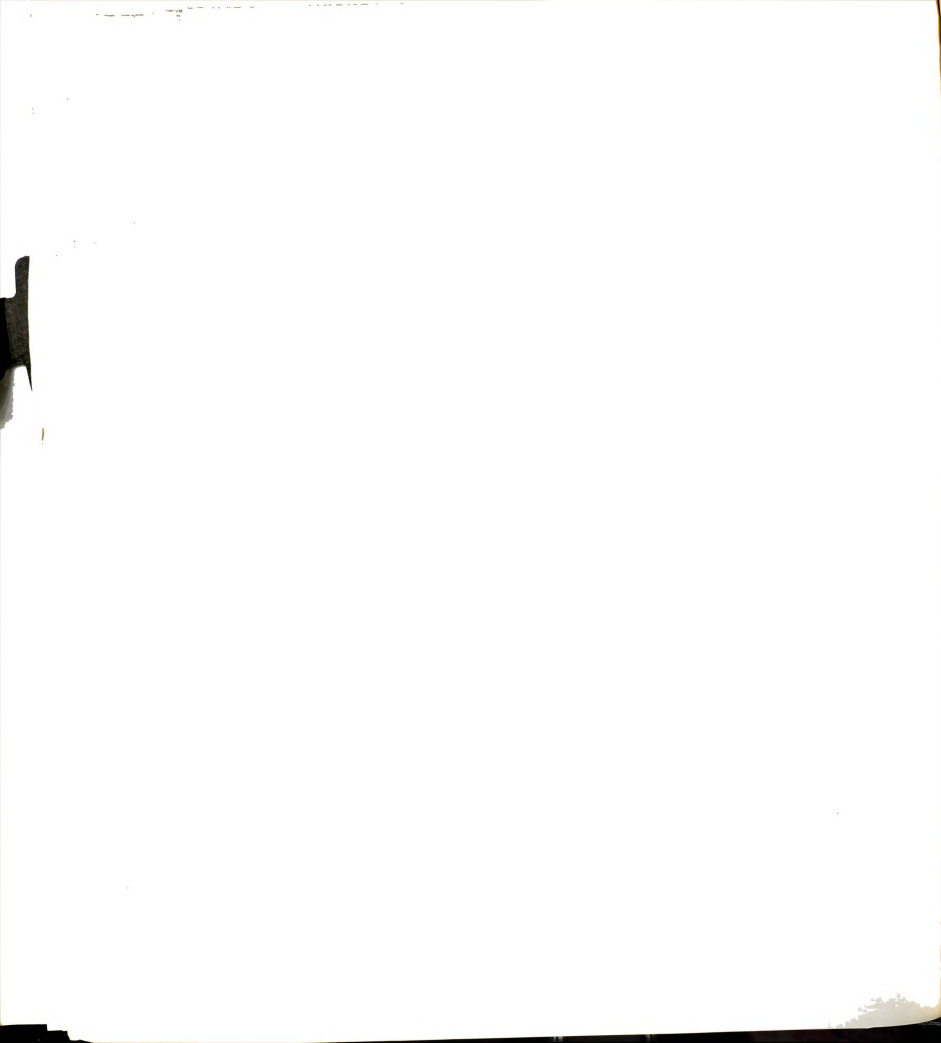
Medical students planning to enter the primary care specialties did rate adult ambulatory care clinic teaching programs as being of greater educational value than did students planning to enter other specialties.

Faculty ratings of the success of clinic programs (Faculty Success Index) were (a) positively correlated with the percentage of participating faculty who were full-time faculty ($r = .31$), and (b) positively correlated with the rating of the willingness of faculty to teach in the clinic ($r = .48$).

Discussion

Students planning to enter primary care specialties were expected to rate the clinic programs as more valuable than other students since the clinics studied were predominantly devoted to primary care. This finding raises the issue as to whether or not ambulatory care teaching programs should be required for all students. Experiences in these programs can provide the students with a greater understanding of the practice of medicine in general,

²⁹The list of hypotheses, the tests used, and the results of the tests are contained in Appendix E, Table E.18.



and may well be vital for all students regardless of their career plans. If all students are required to participate in clinic programs, however, it would appear to be essential that the program emphasize the factors considered vital for all students and that the importance of these factors be adequately demonstrated to the students. If students do not see the program as being relevant to their personal futures, it is doubtful that the program will succeed in its intended purpose.

Summary

Adequate data for analysis were obtained on fifty of the sixty-two clinic programs surveyed and twenty-three of the twenty-six preceptorship programs.

Questionnaire results were analyzed and a profile of clinic programs was presented characterizing the programs on each of the variables studied. A comparison of clinic and preceptorship programs revealed that:

(a) preceptorships were more commonly elective experiences; (b) they had a higher priority on two goals, student involvement in a health care delivery system other than a university medical center and experience to assist the student in making career choice decisions; (c) they had a lower priority on goals relating to knowledge of the pathophysiology of diseases and the



natural history of chronic diseases; and (d) there was no difference in the faculty ratings of success of the two types of programs.

A comparison of the programs with and without student questionnaire data revealed that those programs selected for study with student questionnaires (a) had a smaller percentage of full-time faculty teaching in the clinic, (b) involved more third-year students, (c) were larger, (d) were more commonly required, and (e) were rated lower by faculty on the educational value of the programs.

There was no meaningful difference between the faculty and student responses to questions on the descriptive, or independent, variables. On the outcome variables, however, there was no significant relationship between faculty and student responses. Students' ratings of program strengths and weaknesses confirmed the earlier finding that clinic and/or curriculum organization was a major problem area.

The relationships between variables were studied (a) by comparing the characteristics of groups of programs with different goals and different success ratings, (b) by correlations between variables, and (c) by multiple regression analyses using the success indices as dependent variables. A number of program characteristics was found to be significantly related to program goals.

The ratings of the willingness of faculty to participate in the programs bore the strongest relationship to the faculty ratings of program success, accounting for over 20 percent of the variance of the Faculty Success Index for all clinic programs and programs without student questionnaire data. Student ratings of success were positively correlated with high ranking of the goal, demonstrate the pathophysiology of disease at a given point in time, and negatively correlated with the number of students in the program.

Three of the seventeen research hypotheses were accepted. (1) Students planning careers in the primary care specialties rated clinic programs as being of greater education value than did other students. The Faculty Success Index was positively correlated with both (2) faculty willingness to participate in the program and (3) the percentage of participating faculty who were full-time faculty.

Chapter 7

SUMMARY AND CONCLUSIONS

This chapter provides a general overview of the study, including brief descriptions of seven models of ambulatory care teaching and two suggested areas for further research.

Summary

Approximately half of the student's time in medical school is devoted to clinical instruction, learning through supervised experiences with patients. The current rapid increase in the number of medical students without an accompanying increase in the number of university hospital beds suggests that new or modified approaches to clinical instruction are going to be needed. One way that this impending shortage of hospitalized patients might be alleviated would be to increase the utilization of ambulatory patients for clinical instruction. This seems particularly appropriate since the vast majority of clinical instruction in U.S. medical schools involves experiences with hospitalized patients, but the greater proportion of medical practice involves the care of ambulatory patients.

As a first step in stimulating research in this area, a descriptive and exploratory study of the teaching of adult ambulatory patient care in U.S. medical schools was conducted. The information produced is expected to be valuable to medical schools in planning and conducting ambulatory care teaching programs, and to researchers by suggesting topics for further study. The research was intended to produce information with which to answer the following questions:

1. What are the major problems which faculty and students perceive in current adult ambulatory care teaching?
2. Which characteristics of current adult ambulatory care teaching programs are associated with the success or failure of the program?
3. Does the degree of success of programs vary with differing program goals?
4. Are preceptorship programs more successful than clinic programs for some types of goals?

A model was proposed for use in the study of clinical instruction. Patient, Student, and Faculty Variables are largely beyond the control of program designers. Program Goals are determined by the curriculum. Process Variables, i.e. operations variables, are controlled by the program director within the



constraints imposed by the previously listed groups of variables. The Outcome Variables are dependent upon Program Goals and Patient, Student, Faculty, and Process Variables.

The available literature on the teaching of ambulatory patient care provided a number of case studies, but proved to be inadequate to guide the design of the present study.

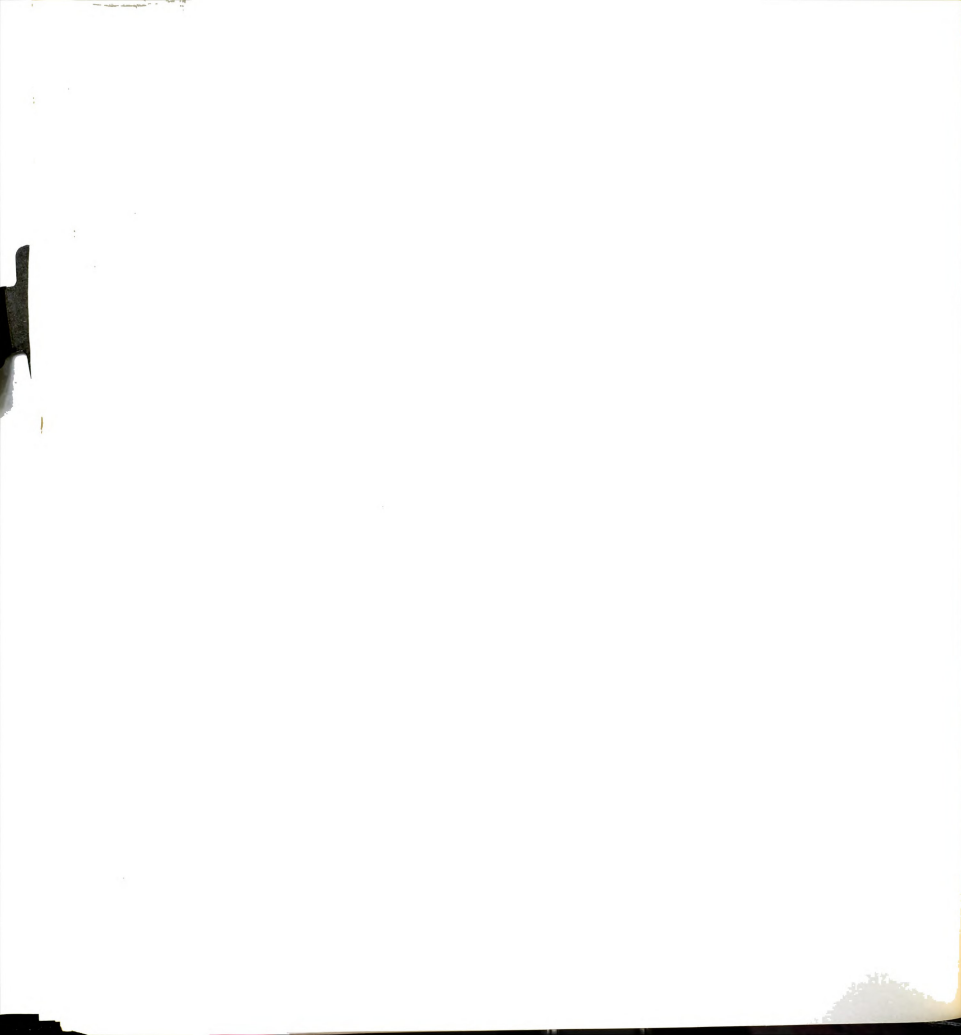
Methodology

A three-phase methodology was used in which the results of the earlier phases were used to assist in the design of the later phases.

The first phase of the study consisted of a series of problem identification sessions with medical school faculty and students.

The next phase of the study involved interviews at three medical schools with administrators, faculty, nurses, and students representing ten adult ambulatory care teaching programs. This phase resulted in a series of case studies and assisted in the identification of appropriate variables and hypotheses for use in the questionnaire phase.

The first component of the questionnaire phase was a survey of the ninety-six established United States medical schools which identified sixty-two clinic programs and twenty-six preceptorship programs appropriate



for further study. These programs were selected because they dealt with medical students working with adult ambulatory patients in the fields of general medicine or family medicine. Questionnaires were designed for completion by faculty supervisors of clinic programs, clinic nurses, participating students in selected programs, and preceptorship coordinators.

Responses were coded and consolidated for computer analysis. Each program was assigned to a series of groups based on (a) faculty and (b) student ratings of the programs' success, and (c) on faculty indication of the program's goals.

The data analysis was of three types: the description of all programs and subsets of programs on relevant variables; the determination of the degree of association between variables; and the testing of seventeen hypotheses generated during the first two phases of the study.

Problem Identification Phase

A problem identification process to identify areas of difficulty in adult ambulatory care teaching was carried out primarily to assist in the design of Phases Two and Three of this study. One faculty group and one student group at each of two medical schools participated in the problem identification process.



One hundred sixteen problem statements were produced. Problems regarding concern for the continuity of patient care and continuity of the student-patient relationship received the highest priorities. Problems included among the Process Variable group of the model presented received the most attention from both students and faculty. Students demonstrated more concern than faculty with the Patient Variables, while faculty showed more concern with the Student Variables.

Case Study Phase

Descriptions of nine clinic programs and one preceptorship program at three medical schools were presented. All of the clinic programs used a similar method of operation. An ambulatory patient's medical history, physical examination, and perhaps laboratory studies were performed by a student. The student conferred with a faculty member and the patient's diagnosis and recommended management were discussed and decided. The patient was then advised of the findings and recommendations. In one clinic program, in addition to the process described above, a significant proportion of the student's time was devoted to the study of the pathophysiology of selected disease processes. All of the programs studied demonstrated the fact that good ambulatory care teaching is expensive.

Questionnaire Survey Phase

Adequate data for analysis were obtained on fifty of the sixty-two clinic programs surveyed and twenty-three of the twenty-six preceptorship programs.

Questionnaire results were analyzed and a profile of clinic programs was presented characterizing the programs on each of the variables studied. A comparison of clinic and preceptorship programs revealed that:

(a) preceptorships were more commonly elective experiences; (b) they had a higher priority on two goals, student involvement in a health care delivery system other than a university medical center and experience to assist the student in making career choice decisions; (c) they had a lower priority on goals relating to knowledge of the pathophysiology of diseases and the natural history of chronic diseases; and (d) there was no difference in the faculty ratings of success of the two types of programs.

A comparison of the programs with and without student questionnaire data revealed that those programs selected for study with student questionnaires (a) had a smaller percentage of full-time faculty teaching in the clinic, (b) involved more third-year students, (c) were larger, (d) were more commonly required, and (e) were rated lower by faculty on the educational value of the programs.



There was no meaningful difference between the faculty and student responses to questions on the descriptive, or independent, variables. On the outcome variables, however, there was no significant relationship between faculty and student responses. Students' ratings of program strengths and weaknesses confirmed the earlier finding that clinic and/or curriculum organization was a major problem area.

The relationships between variables were studied (a) by comparing the characteristics of groups of programs with different goals and different success ratings, (b) by correlations between variables, and (c) by multiple regression analyses using the success indices as dependent variables. A number of program characteristics were found to be significantly related to program goals. The ratings of the willingness of faculty to participate in the programs bore the strongest relationship to the faculty ratings of program success, accounting for over 20 percent of the variance of the Faculty Success Index for all clinic programs and programs without student questionnaire data. Student ratings of success were positively correlated with high ranking of the goal, to demonstrate the pathophysiology of disease at a given point in time, and negatively correlated with the number of students in the program.



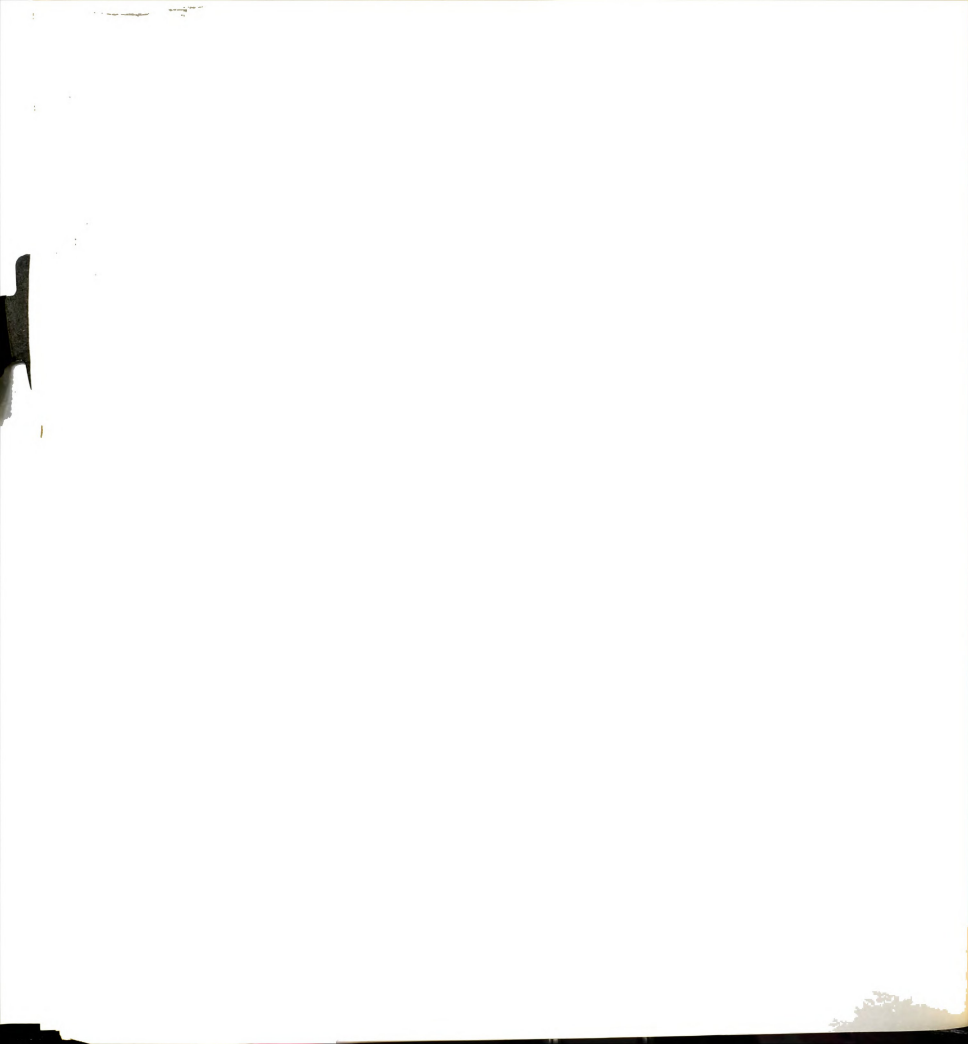
Three of the seventeen research hypotheses were accepted: (1) Students planning careers in the primary care specialties rated clinic programs as being of greater educational value than did other students. The Faculty Success Index was positively correlated with both (2) faculty willingness to participate in the program and (3) the percentage of participating faculty who were full-time faculty.

Discussion

The majority of the findings of this study consisted of descriptions of existing ambulatory care teaching programs. These findings require little interpretive discussion. The more important findings of the final phase of the study were discussed in Chapter 6. This section consists of brief discussions of the use of the study, the research questions and the usefulness of the model presented in Chapter 1.

Use of the Study

The study was intended to provide information to assist educational planners in decision-making, and to identify fruitful areas for further research. The descriptive and correlational information provided is expected to be of value in both of these areas. Three cautions should be observed in using the findings reported.



The findings in the survey phase of the study are based on data obtained by questionnaires, therefore, the reliability of these data is subject to some question. The questionnaire data for programs studied by interviews and the data on selected variables obtained from more than one source per program proved to be quite reliable, however.

The programs studied were not a random sample of all adult ambulatory care teaching programs. The generalizability of the findings to other programs is, therefore, dependent upon ensuring that these other programs are similar to the programs studied.

A number of analyses were carried out to study the relationships between variables, particularly the relationships between descriptive variables and outcome variables. These relationships are correlational and not necessarily causal. Experimental studies would be necessary to show causality.

Research Questions

1. What are the major problems which faculty and students perceive in current adult ambulatory care teaching?

Three-quarters of the problems listed in the program identification sessions related to the Process Variables, those aspects of clinic operations at least

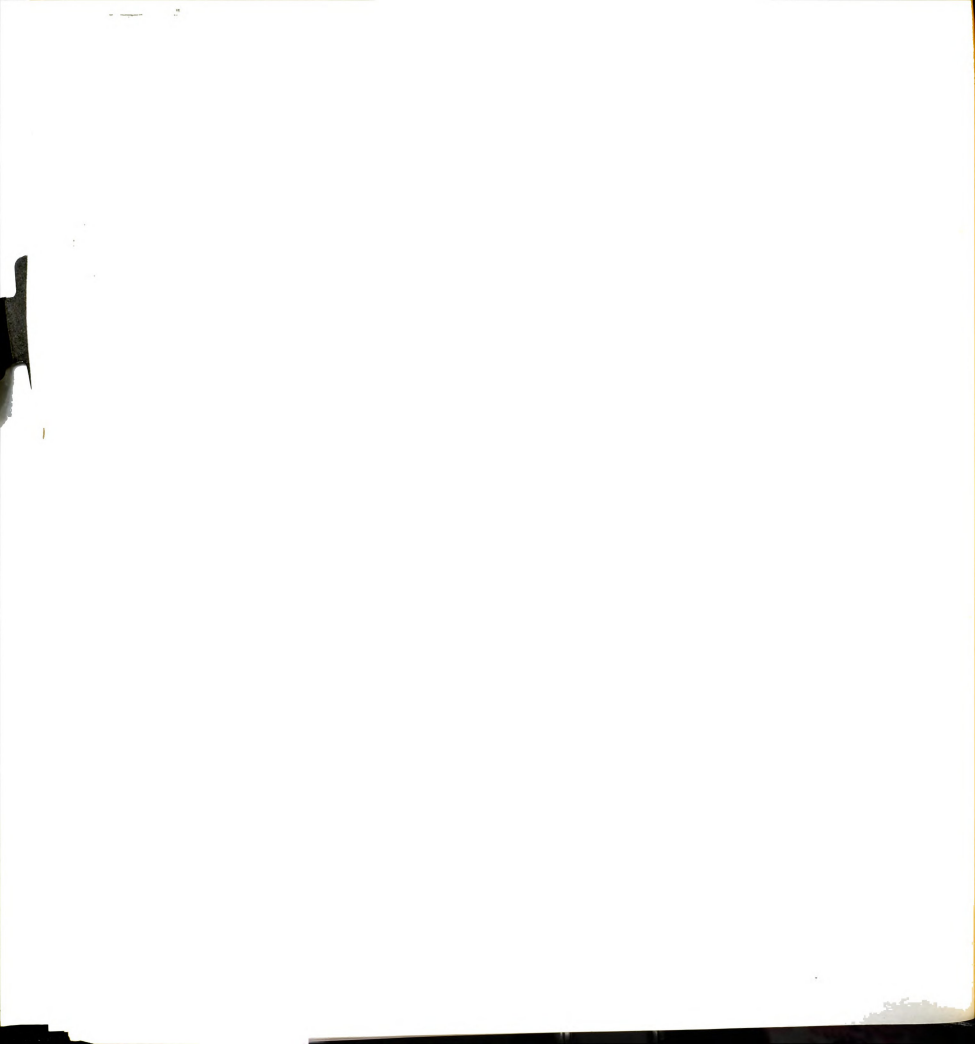


partially controlled by the program director. Student comments on programs' weaknesses confirmed that this was the major problem area. That the recognized problems are concentrated in an area which is, at least theoretically, amenable to modification has two implications. Perhaps problems in this area are more readily recognized because a solution seems possible, but also it is more important to identify problems which can be solved than those without ready solutions.

2. Which characteristics of current adult ambulatory care programs are associated with the success or failure of the programs?

By comparing the characteristics of groups of programs rated high and low on the outcome variables and correlational/multiple regression analyses a number of program characteristics were identified which were significantly associated with success. For example, ratings of the willingness of faculty to participate in the program accounted for over 20 percent of the variance of faculty ratings of the success of clinic programs. In applying these findings, however, it must be recognized that a causal relationship was not proven.

3. Does the degree of success of programs vary with differing program goals?



Although specific goal rankings correlated with a rating of success for some program groups, no significant relationship was demonstrated between program success and any goal grouping. Since a number of program characteristics varied between goal groups, it seems appropriate to conclude that program goals have a greater influence upon program characteristics (or the reverse) than upon program success.

4. Are preceptorship programs more successful than clinic programs for some types of goals?

The only significant evidence on this question is that a negative correlation was demonstrated between the ranking of the goal, demonstrate the natural history of chronic diseases, and the rating of the degree of goal achievement of preceptorship programs.

Usefulness of the Model

The model described in Chapter 1 was used to organize portions of the study. As a system of classification of variables it appeared to work well. It was proposed that the model might also have value in suggesting areas, and perhaps strategies, for more in-depth research with a limited scope. The value of the model for that purpose was not tested.

Conclusions

1. A three-phase methodology consisting of problem identification, case studies, and questionnaire surveys, permits the sequential design of an exploratory study in a complex, poorly researched area.
2. A model for the study of clinical teaching programs, in which the multiple, interacting variables are separated into groups (Patient Variable, Student Variables, Faculty Variables, Process Variables, Program Goals, and Outcome Variables) is useful as a classification system in a descriptive and exploratory study of clinical instruction.
3. In the area of adult ambulatory care teaching both faculty and students perceive more problems among the Process Variables (clinic operations) than among the Patient, Faculty, and Student Variables combined.
4. The lack of a significant correlation between faculty and students' ratings of program success should serve as a warning to program planners and researchers. Student and faculty perspectives must both be considered.



5. Of the forty-six program characteristics studied, the willingness of faculty to participate was the most important predictor of program success. This suggests that supervisors of adult ambulatory care teaching programs should concentrate on acquiring enthusiastic teachers.
6. Students tend to see programs with more traditional goals, such as learning pathophysiology, as being of more value to them than programs which emphasize the more practice-oriented aspects of medicine. In programs dealing with these practice-oriented goals, the students should understand the value to them of these aspects of medicine, and the faculty should be adept at teaching in this area.
7. Medical students planning to enter primary care specialties rate adult ambulatory care clinic teaching programs as being of greater educational value than do students planning to enter other specialties. If all students are expected to participate in such programs, it would appear to be essential that the program emphasize the factors considered vital for all students and that the importance of these factors be adequately demonstrated to the students.



Alternative Models of Clinical Instruction with Ambulatory Patients

An argument was made in Chapter 1 for greater use of ambulatory patients in the clinical instruction of medical students. Although the description of alternative models to accomplish this was not a primary aim of this study, information was obtained in the case study phase which suggested some alternative models. These models will be briefly presented in this section.

Observation Model

Although there are educational advantages to students being active participants in the health care delivery process, there is much that the student can learn before he has acquired the necessary knowledge and skills to be a meaningful participant. First- or second-year students could acquire a better understanding of the role of the physician and the scope of medical practice by observing ambulatory care in different types of health care settings and in different medical specialties. This would be expected to aid the student in understanding the relevance of his studies, and to assist him in his future career choice decisions.

Family Study Model

Another model which is suitable for the relatively unsophisticated student is the Family Study Program.

A medical student, usually in his first year, is assigned to one or two families. The student studies the health problems of the family and serves as a "health advocate" or "middleman" between the family and the health care delivery system during his medical school years. This model is sometimes combined with the study of growth and development in which case the student is assigned to a family in which the mother is pregnant.

History-Taking and Physical Examination

Although hospitalized patients are more commonly used for the student to master the skills of history-taking and physical examination, ambulatory patients could be used for this purpose. Simulation techniques could be well utilized along with ambulatory patients during this portion of the student's education. Simulation devices, e.g. heart sound simulators and eye models, could supplement patients in providing practice with selected physical examination procedures, or trained personnel could simulate some aspects of the patient and thus permit a greater degree of control over the students' experiences. The student's experience might be made more interesting by providing diagnostic and management exercises to match the patients' findings, thus providing the student with early experience in interpreting and using the cues obtained in the history and physical examination.



Early Experience with Patient Management

During his early experiences with patient management it might be advantageous for the student to have one or two days advance notice of the major problems of the patients he is to see. He could then study these areas and be better prepared to deal with the case. This could be combined with a program such as the "Special Study Sessions at the County Hospital Special Clinic, University B" (Chapter 5), in which intensive study of the pathophysiology of disease processes is incorporated into the ambulatory care clinic program.

Management of Acute Minor Illnesses

The management of acute minor illnesses is an important part of medical practice, but receives little attention in most medical school curriculums. Some emergency departments and clinics, such as the "Family Medicine Clinic, University C" (Chapter 5) provide such experience with diseases not commonly seen on hospital wards.

Management of Chronic Diseases

Programs which permit students to follow ambulatory patients with chronic diseases for a period of several months provide experience in the continuity of care not usually possible with hospitalized patients.



Such programs usually consist of the students devoting one half-day per week for a year to following their patients in an ambulatory care clinic.

Advanced Patient Management

For advanced students, selected patients with more complex problems can provide more challenging experiences. This type of ambulatory care experience would probably be restricted to a specialty in which the student chooses to obtain special competencies.

Summary

Seven models involving the use of ambulatory patients in medical education were presented. Most of these types of instruction were observed during the case study phase of this research. Various combinations of these basic models, as well as numerous modifications to each, could be used.

Implications for Further Research

Many of the findings reported raise questions suitable for further study. Two examples are given to represent different types of studies that seem particularly important.

Further Study of "Faculty Willingness"

The rating of the willingness of faculty to participate in the program was shown to be the best predictor

of the faculty ratings of the success of clinic programs. More detailed study of this relationship and the factors contributing to the willingness of faculty to participate could be of great value in program planning.

Study of Appropriate Experiences for All Students

The finding that students planning careers in the primary care specialties rated clinic programs as being of greater educational value than did other students was not surprising, but raises a question as to the appropriate type and amount of instruction in ambulatory care which should be required of all students. A study of this question would involve identifying the knowledge, skills, and attitudes acquired in various types of ambulatory care teaching programs, the knowledge, skills, and attitudes acquired in other programs, and the knowledge, skills, and attitudes which students are expected to acquire during the course of their educational program. Such a study would be complex and extensive, but appears crucial for the rational planning of medical education.



APPENDICES

APPENDIX A

CHECKLISTS USED IN INTERVIEWS,
CASE STUDY PHASE



APPENDIX A

Checklists Used in Interviews Case Study Phase

1. Check-list of items covered in interviews with Associate Deans.
 - a. What is the history of adult ambulatory care teaching at this school?
 - b. What are the past and current administrative problems regarding adult ambulatory care teaching programs?
 - c. What is the priority of adult ambulatory care teaching programs as opposed to other educational programs?
 - d. Are there plans for future changes in these programs? If so, what?
 - e. Describe the interdepartmental relationships in ambulatory care teaching.
2. Check-list of items covered in interviews with Program Directors (Supervising Faculty).
 - a. Give an overview of the program's organization.
 - b. What is the history of the program? What are the future plans?
 - c. What is the perceived priority of the program among other school activities?
 - d. Are participating faculty full-time, part-time, or volunteer faculty?
 - e. What is the average academic rank or seniority of participating faculty?
 - f. What are the clinical specialties of participating faculty?
 - g. How does the faculty view the prestige of out-patient clinic teaching?
 - h. Are house staff used as teachers in the program?
 - i. What is the faculty-to-student ratio in the clinic?
 - j. How is faculty scheduling handled? Does it insure continuity of the faculty-student-patient relationship?
 - k. How is faculty participation obtained? Is it adequate? What is the time commitment per faculty member?
 - l. Is student supervision adequate?
 - m. What is the source of patients for the clinic? Are they selected or taken at random? Do they represent a "cross-section" of the population?
 - n. Does the student "follow" his patients in other clinics and on the ward if hospitalized?
 - o. Are the patients satisfied with the care they receive?
 - p. Do you consider the "quality of care" in the clinic to be adequate?
 - q. Are the students satisfied with the program?
 - r. How is student performance evaluated?
 - s. How is faculty teaching time financed?
 - t. How are laboratory studies or other diagnostic studies, performed primarily for educational purposes, financed?
3. Check-list of items covered in interviews with Participating Faculty Members.
 - a. What is the operating routine of the clinic?
 - b. The students in the program are at what level of training?
 - c. What role and responsibilities are given to the student?
 - d. What orientation does the student receive to clinic operations?
 - e. How much time does the student spend per patient visit?
 - f. How much time do you spend with each student per patient visit?



- g. How many patients does each student see per clinic session?
 - h. How many patients does each student see during his clinic experience?
 - i. What percent of patients does the student see in follow-up visits?
How many times?
 - j. What are the students' levels of interest in and satisfaction with this clinic experience?
 - k. How do you perceive the prestige of teaching in an out-patient clinic?
 - l. What is the faculty-to-student ratio in the clinic?
 - m. How satisfied are you with your role as a teacher in an out-patient clinic?
 - n. Do you see patients without students being involved while you are also teaching in the clinic?
 - o. Do you believe that the students are adequately supervised in the clinic?
 - p. What allied health professionals (nurses, dieticians, social workers, etc.) are involved in the clinic? Are they adequately trained? What role, if any, do they assume in teaching medical students?
 - q. Are the patients a cross-section of the general population?
 - r. Are they selected for this teaching clinic? If so, by what criteria?
 - s. What percent of patients have an organic disease as their major problem?
 - t. How satisfied are the patients with this setting and with their care?
 - u. How would you judge the quality of care that the patients receive in this clinic?
 - v. Do students order laboratory studies that are not essential for the care of the patient? If so, how are these studies funded?
 - w. Are conferences a part of the program? If so, how are they organized?
4. Check-list of items covered in interviews with Clinic Nurses or Secretaries.
- a. What is the patient's routine in the clinic? How long do patients spend in the clinic?
 - b. What percent of patients wait for laboratory studies or consultation?
 - c. How would you describe the age, race, sex, and socio-economic class status of the clinic's patient population?
 - d. What are the sources of patients for the clinic? How are they selected?
 - e. Describe the patients' satisfaction with their care. What are their complaints?
 - f. What percent of patients fail to keep appointments? What percent arrive late?
 - g. What allied health professionals are there in the clinic? How do they participate in teaching the medical students? Are they satisfied with their roles?
 - h. What percent of clinic patients are seen by medical students?
 - i. How are patients handled when students are unable to keep clinic appointments?
 - j. Are medical records and laboratory reports readily available? Is there a summary of the medical record? What type of record forms are used?
 - k. Are there adequate facilities and personnel in the clinic to do necessary diagnostic studies?
 - l. Are there adequate time and personnel available to carry out indicated patient education programs?



5. Check-list of items covered in interviews with Students.
 - a. What was your role and responsibility in the clinic?
 - b. How were you oriented to the clinic's operation?
 - c. Did the clinic interfere with other educational activities?
 - d. Describe your satisfaction with your clinic experiences?
 - e. What was the faculty-to-student ratio in the clinic?
 - f. How much time did you spend conferring with a faculty member about each patient?
 - g. Did you have to wait for faculty to discuss patients? If so, how long?
 - h. Did faculty members see patients without students while they were supervising your clinic activities?
 - i. What was the involvement of allied health personnel in teaching you in the clinic?
 - j. Describe the age, race, sex, and socio-economic class distribution of your clinic patients.
 - k. What percent of your patients presented with an organic disease as their major problem?
 - l. What percent of your patients failed to keep appointments? Arrived late?
 - m. What percent of your patients did you see on follow-up visits? How many times?
 - n. How would you describe the adequacy of your rapport with clinic patients?
 - o. Were you able to carry out adequate patient education in the clinic setting?
 - p. How many patients did you see per clinic session? How many new patients? How many follow-up patients?
 - q. How many patients did you see during your clinic experience?
 - r. How much time did you spend per patient visit?
 - s. Did you "follow" your patients that were referred to other clinics or admitted to the hospital?
 - t. Were conferences a part of the clinic program? If so, how were they organized? Were they worthwhile?
 - u. Were medical records and laboratory reports readily available?
 - v. Were there adequate personnel and facilities to perform necessary diagnostic studies without admitting the patient to the hospital?



APPENDIX B

SURVEY INSTRUMENTS



SURVEY OF ADULT AMBULATORY CARE TEACHING
OFFICE OF MEDICAL EDUCATION RESEARCH AND DEVELOPMENT
MICHIGAN STATE UNIVERSITY

Instructions

Careful attention to the instructions listed below and the completed sample form which follows will permit comparable data to be obtained from all schools. The compilation and analysis of these data is expected to be of interest to all U. S. medical schools. Please complete the identifying data at the top of the form.

COLUMN 1. By following the three steps listed below, you will include all clerkships and programs being studied. Clerkships or other programs which are offered at more than one hospital should be listed separately for each hospital involved. Preceptorships should be listed only once, however.

Step 1. List all clerkships or programs, required or elective, in which at least 10% of the students participate and that deal exclusively, or near exclusively, with ambulatory patients, including but not necessarily limited to adults. (Examples: Preceptorships, Family Medicine, Ambulatory Care Clerkships).

Step 2. List all required clerkships not included in Step 1 above, in the fields of general medicine, internal medicine and its subspecialties, primary care, and family, community or comprehensive medicine, which include some student experiences with adult ambulatory patients (out-patients). Do not include clerkships in pediatrics, psychiatry, or surgical fields.

Step 3. List all elective clerkships in the fields included in Step 2 above which are taken by 25% or more of your students.

COLUMN 2. Indicate the name of the hospital where the clerkship is offered. If the same clerkship is offered at more than one hospital, list it separately by the hospital. Leave this space blank for preceptorships.

COLUMN 3. Indicate the medical school year or years (1st, 2nd, 3rd, 4th) in which this clerkship is offered or required.

COLUMN 4. Indicate whether the clerkship is required or elective by circling the R or the E.

COLUMN 5. Indicate the approximate percent of students in a class who take this clerkship. For a required clerkship offered at three different hospitals, for example, the three listings should total 100%.

COLUMN 6. Indicate the number of hours per week that the student devotes to working with ambulatory patients in this clerkship and the length of the clerkship in weeks.

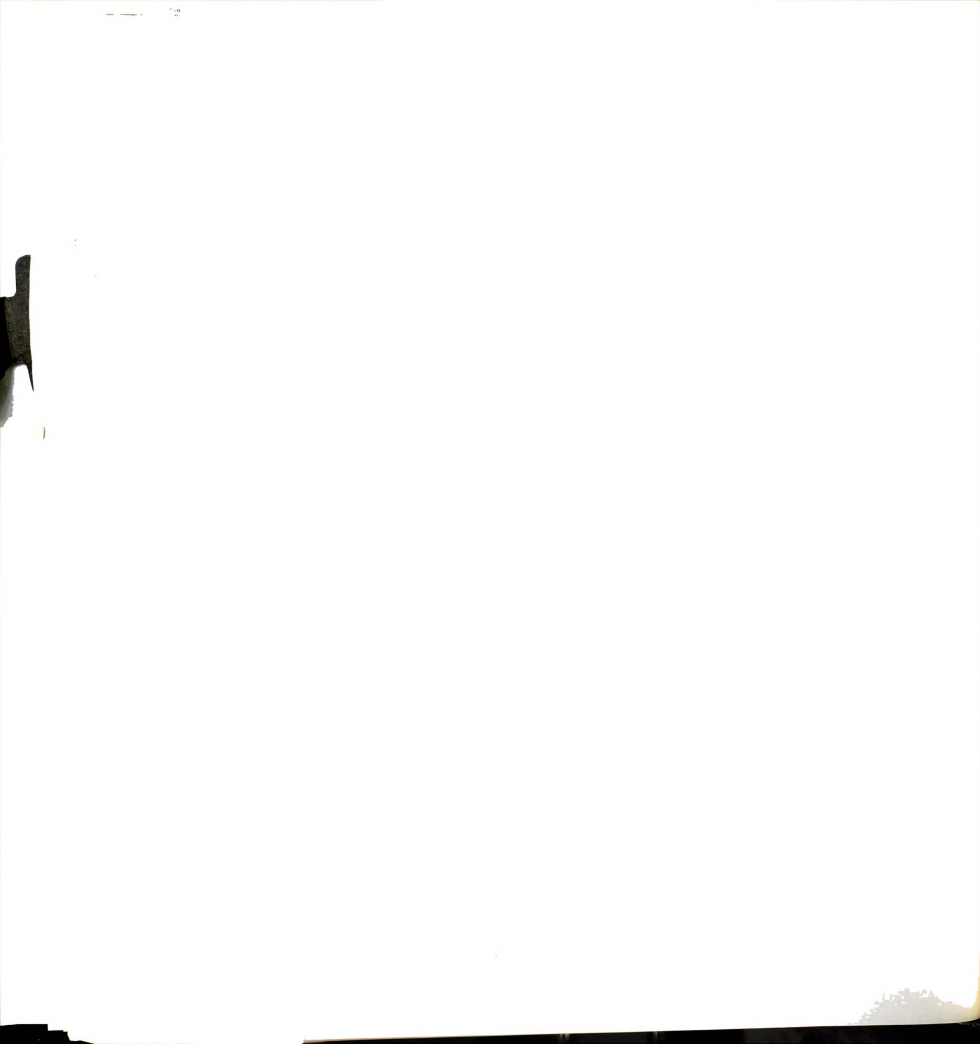
COLUMN 7. List the name and mailing address of a faculty member with responsibility for the ambulatory care portion of this clerkship, who would be able to respond to a short questionnaire regarding a few details of the ambulatory care experience involved.

COLUMN 8. List the name and mailing address of a nurse familiar with the ambulatory (out-patient) portion of this clerkship, who could respond to a short questionnaire concerning the operations in the ambulatory care setting. Leave this space blank for preceptorships.

PLEASE ENCLOSE A LIST OF YOUR SENIOR MEDICAL STUDENTS INCLUDING MAILING ADDRESSES.

PLEASE RETURN FORMS NO LATER THAN MARCH 23, 1973.

Thank you for your patience in completing these forms.



S A M P L E F O R M

NAME OF SCHOOL <u>A typical University</u>		NAME OF PERSON COMPLETING FORM <u>John Smith, Assoc. Dean, Curr.</u>			PHONE NO. (<u>111</u>) <u>222-3333</u>	
1	2	3	4	5	6	7
NAME OF CLERKSHIP	NAME OF HOSPITAL OR LOCATION	MED. SCHOOL YR. (1st, 2nd, 3rd, 4th)	REQUIRED OR ELECTIVE	APPROX. % OF CLASS	AMB. (OUT-PT) TEACHING TIME HRS/WK	NAME AND ADDRESS OF FACULTY SUPERVISOR
<u>Preceptorship</u>		<u>4th</u>	R (E)	<u>20 %</u>	<u>30</u>	<u>J. E. Doaks, M.D.</u>
					<u>6</u>	<u>Dept. of Family Medicine</u>
						<u>Atypical Univ., Col. of Med.</u>
						<u>Midtown, State 11234</u>
<u>Ambulatory Care</u>	<u>University</u>	<u>4th</u>	R (E)	<u>15 %</u>	<u>30</u>	<u>A. B. Smith, M.D.</u>
						<u>University Hospital</u>
						<u>2211 Hospital Drive</u>
						<u>Midtown, State 11234</u>
<u>Medicine</u>	<u>University</u>	<u>3rd</u>	R (E)	<u>60 %</u>	<u>3</u>	<u>C. D. Jones, M.D.</u>
						<u>University Hospital</u>
						<u>2211 Hospital Drive</u>
						<u>Midtown, State 11234</u>
<u>Medicine</u>	<u>Metropolitan</u>	<u>3rd</u>	R (E)	<u>40 %</u>	<u>6</u>	<u>A.A. Allen, M.D.</u>
						<u>Metropolitan Hospital</u>
						<u>7451 Oak Avenue</u>
						<u>Midtown, State 11234</u>

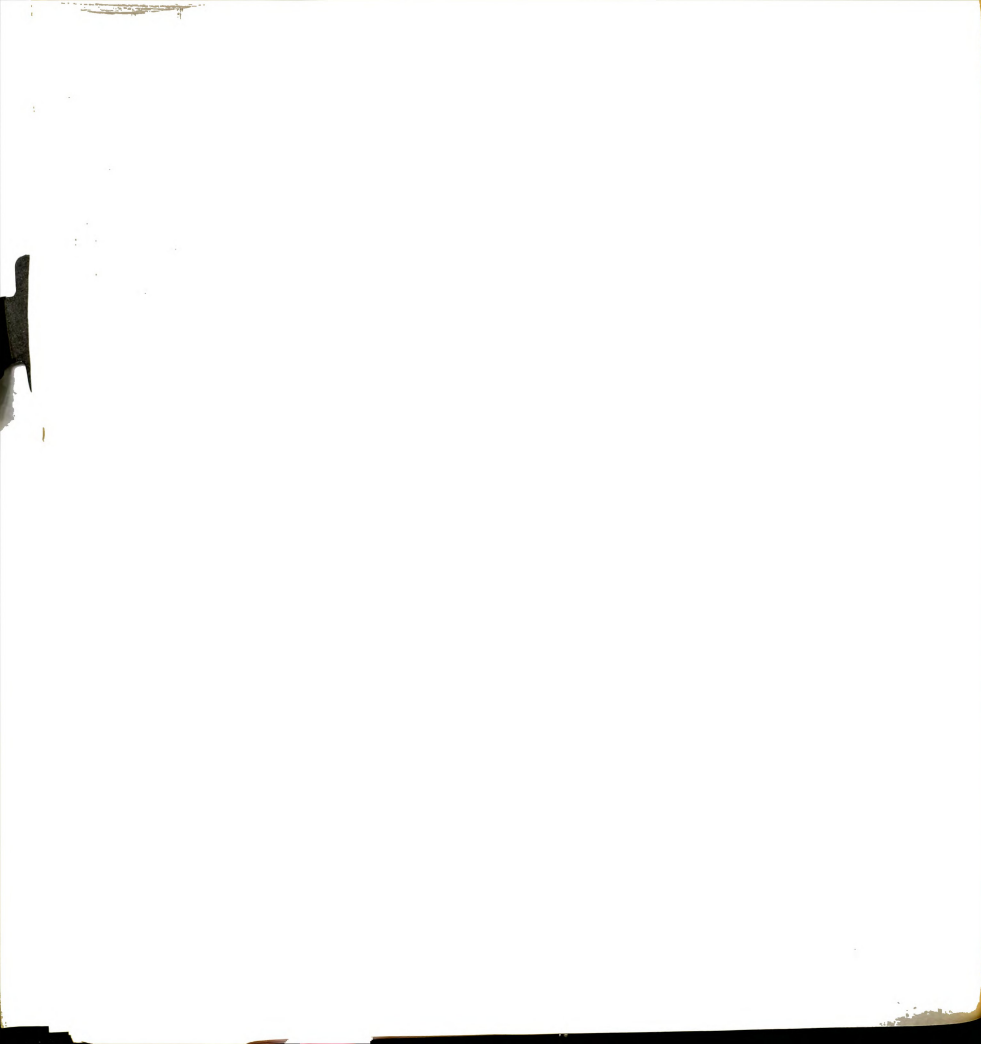
PLEASE ENCLOSE CURRENT SENIOR CLASS LIST

S A M P L E F O R M



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PLEASE ENCLOSE CURRENT SENIOR CLASS LIST



PILOT

Faculty Questionnaire

Please respond to the following questions to the best of your knowledge. Your best estimate is of great value. Your answers should concern only

1. Is this experience (Check appropriate response)

- ☐ Required? - Student must take it without other options.
☐ Selective? - Student must take it, or "an equivalent."
☐ Elective? - An optional experience.

2. During which year, or years, of medical school do the students usually participate in this clinic? (Check appropriate year or indicate the approximate percent of students in each year.)

☐ Second year ☐ Third year ☐ Fourth year

3. How much time does the typical student spend in the clinic program? (Fill in the blanks.)

☐ half-days per week, amounting to ☐ hours per week for ☐ weeks.

4. How much patient care responsibility does the medical student have in the clinic? (Check appropriate response. If it varies, indicate the approximate percent of the time that the student has each role, so that the total is 100%)

- ☐ Makes patient care decisions consistent with his expertise.
☐ Mostly observes and discusses patients with little input in decision-making.
☐ Does workups, but has little input in patient management decisions.

5. What percent of patients (to the nearest 10%) in this clinic present with problems which are primarily psychological or psychosomatic? ☐%

6. What percent of new patients (to the nearest 10%) present with a primary problem which has not been previously diagnosed? ☐%

7. What is the average number of students in the clinic per faculty member (including house staff) primarily involved in teaching students? (Circle the appropriate response.) 1 1 1/2 2 2 1/2 3 More than 3

8. What percent of the teaching of students in the clinic (to the nearest 10%) is done by house staff (interns, residents, or fellows)? ☐%

9. What percent (to the nearest 10%) of the faculty, excluding house staff, are full time faculty, rather than part-time or volunteer faculty? ☐%

10. How does the seniority of the faculty in the clinic compare with the seniority of the faculty involved in the teaching of medical students on the wards? (Circle the appropriate number.)

Clinic faculty
much more senior

Same

Ward faculty
much more senior

1

2

3

4

5

11. Indicate your estimate of the willingness of the participating faculty to teach in this clinic by circling the appropriate number.

Extremely eager and enthusiastic.		Willing, but not eager.		Teach in clinic only because it is required.
5	4	3	2	1

12. The clinic is primarily operated for what purpose:

☐ Primarily operated for teaching medical students.
☐ Primarily operated to provide patient care and/or to teach interns and residents.

13. Are conferences/seminars a part of the clinic teaching program for medical students? (Circle response.) Yes No If yes, are the conferences (indicate type, or percent of each.)

☐ Organized around diseases or medical problems?
☐ Organized around a discussion of current clinic patients?
☐ Organized around psychological, psychosomatic, environmental, or clinical practice problems?

14. How many students per year participate in this clinic program? _____

15. How much time do students spend per patient visit on the average?

_____ minutes with new patients. _____ minutes conferring with a faculty member regarding a patient.
 _____ minutes with followup patients. _____ minutes writing a new patient's medical record.*

*(This writing is done: _____ during clinic hours. _____ after clinic hours.)

16. On approximately what percent of patients do the students do a complete medical workup? _____%

17. Indicate your estimate of the educational value of this clinic experience to the typical student. (Circle the appropriate number.)

An extremely valuable educa- tional experience.		As good as other clerkships.		A waste of time.
7	6	5	4	3
				2
				1

18. Do the students find the experience enjoyable while working in the clinic? (Circle the appropriate number.)

Extremely enjoyable.		So-So.		Hate it.
7	6	5	4	3
				2
				1

19. Listed below are seven goals attributed to ambulatory care teaching programs. Please do the following:

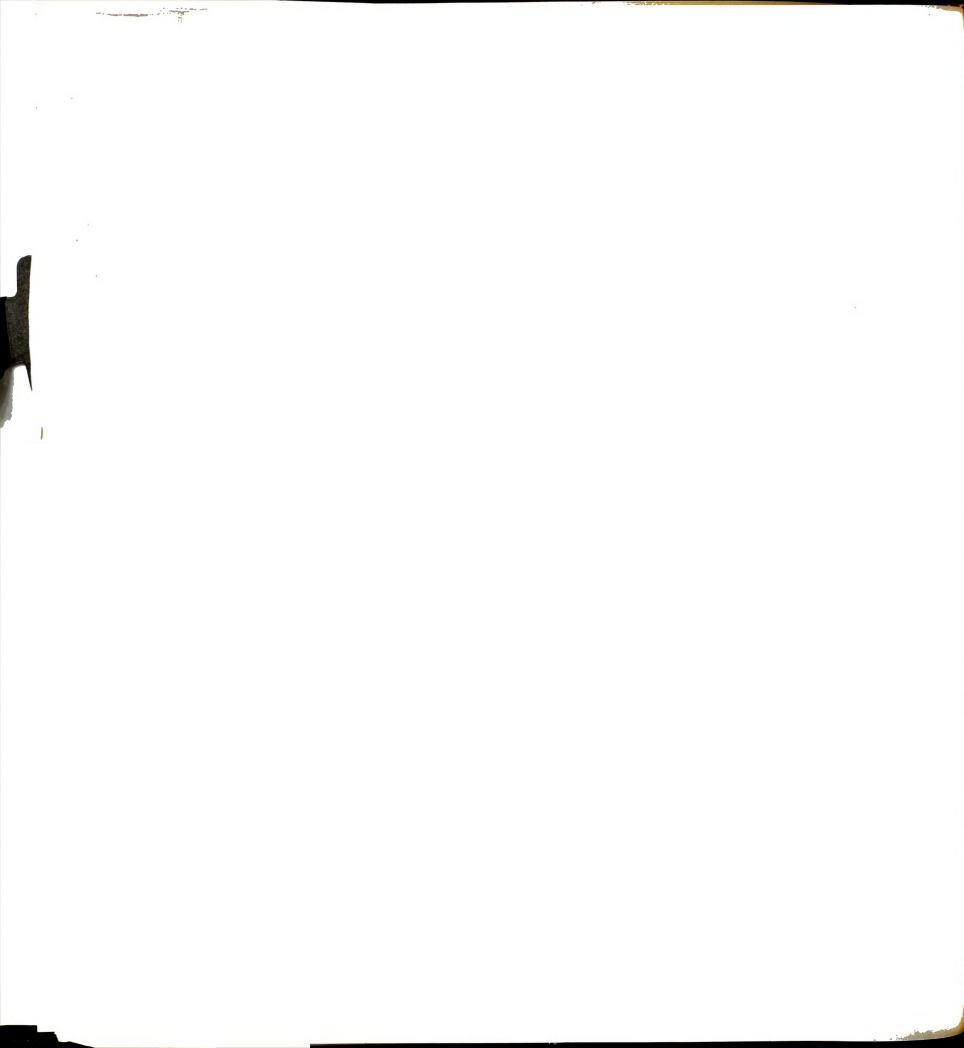
- (a) Check those goals which apply to this program and add others if desired.
- (b) Indicate the relative priorities of the checked goals, including your additions, by ranking them with one being the top priority goal.

<u>Goals</u>	<u>(a)</u> <u>Applicable</u>	<u>(b)</u> <u>Ranking</u>
(1) Demonstrate the continuity of the doctor-patient relationship.	_____	_____
(2) Demonstrate the natural history of chronic diseases.	_____	_____
(3) Demonstrate the pathophysiology of disease at a given point in time.	_____	_____
(4) Provide experience with diseases which do not commonly lead to hospitalization.	_____	_____
(5) Provide student with experience to assist in career choice decisions.	_____	_____
(6) Provide student with instruction and experience in abbreviated workups and seeing a volume of patients.	_____	_____
(7) Involvement in a health care delivery system other than a university medical center.	_____	_____
(8) _____ _____	_____	_____

20. Indicate the degree to which the goals of this program are achieved, relative to a typical clerkship's achievement of its goals.

Goals achieved <u>much more</u> than in typical clerkship.			Same as typical clerkship.			Goals achieved <u>much less</u> than in typical clerkship.
7	6	5	4	3	2	1

A questionnaire similar to this will be used to obtain information on a number of ambulatory care teaching programs. Your comments and suggestions regarding ambiguous or difficult questions will be appreciated.



Student Questionnaire

Please respond to the following questions to the best of your ability. Your best estimate is of great value. Your answers should concern only the

1. How much patient care responsibility did you have in the clinic? (Check appropriate response. If it varied, indicate the approximate percent of the time that you had each role, so that the total is 100%.)

- ☐ Made patient care decisions consistent with my expertise.
☐ Mostly observed and discussed patients with little input in decision-making.
☐ Did workups, but had little input in patient management decisions.

2. How much time did you spend per patient visit on the average?

- minutes with new patients. minutes writing a new patient's medical record.
 minutes with followup patients. minutes conferring with a faculty member regarding a new patient.

3. What was the total number of patients that you saw during your rotation in the clinic? (Count the same patient seen on several occasions as one.)

4. On the average, how many times did you see each patient? (Circle the appropriate response.) 1 1 1/2 2 2 1/2 3 More than 3 times

5. On approximately what percent of patients did you do a complete medical workup? %

6. What field of medicine do you plan to enter?

7. Estimate the educational value to you of this clinic experience. (Circle the appropriate number.)

- | | | | | | | | | |
|---|---|---|---|------------------------------------|---|---|--|---------------------|
| An extremely
valuable educa-
tional experience. | | | | As good
as other
clerkships. | | | | A waste
of time. |
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |

8. While you were working in the clinic, was the experience enjoyable to you? (Circle the appropriate number.)

- | | | | | | | | | |
|-------------------------|---|---|---|--------|---|---|--|-----------|
| Extremely
enjoyable. | | | | So-So. | | | | Hated it. |
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |

A questionnaire similar to this will be used to obtain information on a number of ambulatory care teaching programs. Your comments and suggestions regarding ambiguous or difficult questions will be appreciated. (Please write on the other side of this sheet.)



Nurse/Staff Questionnaire

Please respond to the following questions to the best of your knowledge. Your best estimate is of great value. Your answers should concern only the

1. What percent of patients using this clinic are "medically indigent" (Medicaid or other welfare type program, but not Medicare)? _____%

2. What percent of patients using this clinic are over age 60? _____%

3. Are the patients seen by medical students selected or screened? (Circle response) Yes No If yes, what criteria are used in selecting patients for medical students?

4. What percent of all patients seen in this clinic are seen by medical students? _____% If less than 100%, do faculty members usually see patients without students during the same half-day that they are teaching students? (Circle response) Yes No If yes, what percent of the patients are seen by these faculty without being seen by students? _____%

5. How much time do the medical students spend per patient visit on the average?

_____minutes with new patients.

_____minutes with followup patients.

6. What is the approximate average total number of patients seen by a student during his rotation in the clinic? (Count the same patient seen on several occasions as one patient.) _____

7. On the average, how many times does a student see each patient? (Circle the appropriate response) 1 1 1/2 2 2 1/2 3 More than 3 times

8. The clinic is primarily operated for what purpose? (Check appropriate response)

_____Primarily operated for teaching medical students.

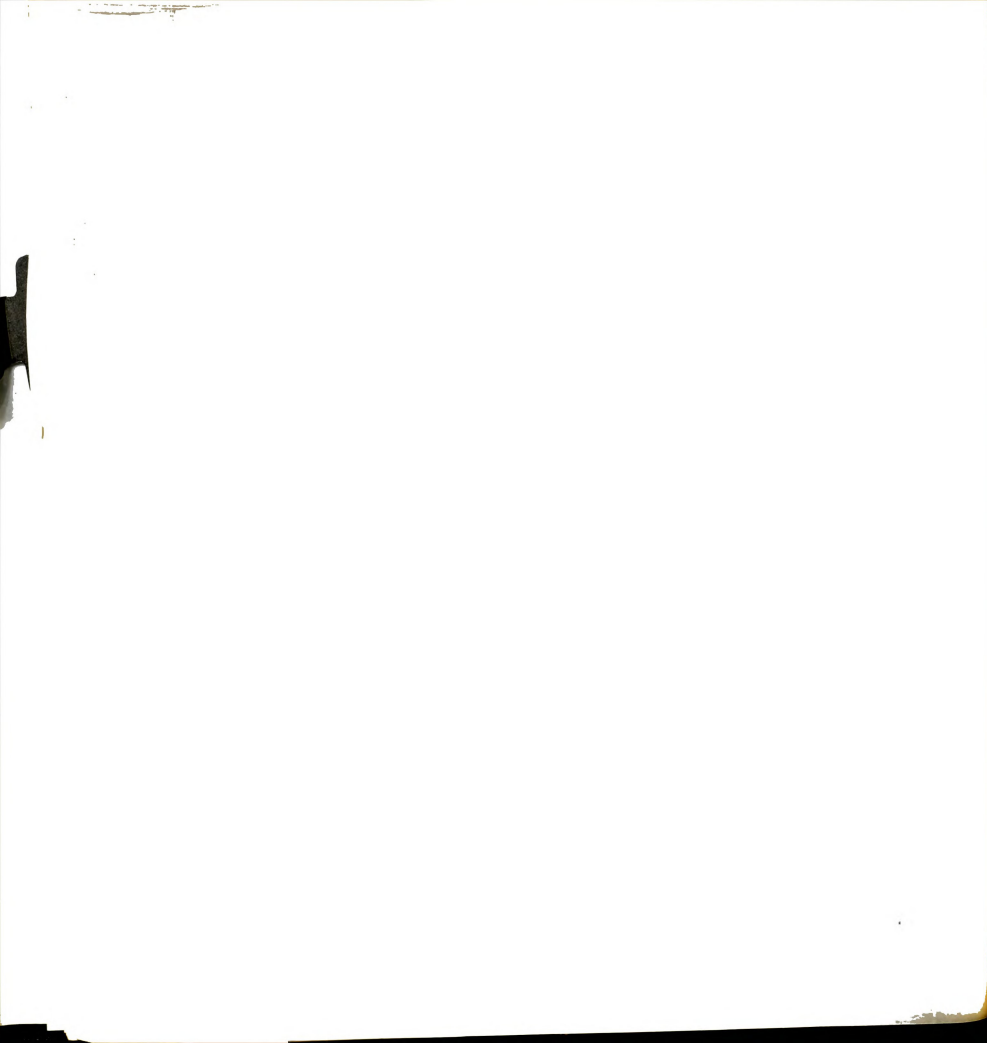
_____Primarily operated to provide patient care and/or to teach interns and residents.

9. What is the "no-show" rate for patients with appointments?

_____ % of patients with appointments fail to keep the appointment or to cancel.

_____ % of patients cancel appointments without scheduling a new appointment.

A questionnaire similar to this will be used to obtain information on a number of ambulatory care teaching programs. Your comments and suggestions regarding ambiguous or difficult questions will be appreciated. (Please write on the other side of this sheet.)



Preceptorship Questionnaire

Please respond to the following questions to the best of your knowledge. Your best estimate is of great value. Your answers should concern only the

1. Is this experience (Check appropriate space.)

- ☐ Required - Student must take it without options?
☐ Selective - Student must take it or "an equivalent?"
☐ Elective - An optional experience?

2. Indicate your estimate of the educational value of this program to the typical student. (Circle the appropriate number.)

An extremely valuable educa- tional experience.				As good as other clerkships.			A waste of time.
7	6	5	4	3	2	1	

3. Listed below are seven goals attributed to ambulatory care teaching programs. Please do the following:

- (a) Check those goals which apply to this program and add others if desired.
(b) Indicate the relative priorities of the checked goals, including your additions, by ranking them with one being the top priority goal.

<u>Goals</u>	(a) <u>Applicable</u>	(b) <u>Ranking</u>
(1) Demonstrate the continuity of the doctor-patient relationship.	_____	_____
(2) Demonstrate the natural history of chronic diseases.	_____	_____
(3) Demonstrate the pathophysiology of disease at a given point in time.	_____	_____
(4) Provide experience with diseases which do not commonly lead to hospitalization.	_____	_____
(5) Provide student with experience to assist in career choice decisions.	_____	_____
(6) Provide student with instruction and experience in abbreviated workups and seeing a volume of patients.	_____	_____
(7) Involvement in a health care delivery system other than a university medical center..	_____	_____
(8) _____	_____	_____
_____	_____	_____

4. Indicate the degree to which the goals of this program are achieved, relative to a typical clerkship's achievement of its goals.

Goals achieved
much more than in
typical clerkship.

Same as
typical
clerkship.

Goals achieved
much less than in
typical clerkship.

7

6

5

4

3

2

1

A questionnaire similar to this will be used to obtain information on a number of ambulatory care teaching programs. Your comments and suggestions regarding ambiguous or difficult questions will be appreciated.



Survey of Adult Ambulatory Care Teaching
Office of Medical Education Research and Development
Michigan State University
Faculty Questionnaire

Please respond to the following questions to the best of your knowledge. Your best estimate is of great value. Your answers should concern only

1. Is this experience (Check appropriate response)

- ☐ Required? - Student must take it without other options.
☐ Selective? - Student must take it, or "an equivalent."
☐ Elective? - An optional experience.

2. During which year, or years, of medical school do the students usually participate in this clinic? (Check appropriate year or indicate the approximate percent of students in each year.)

☐ Second year ☐ Third year ☐ Fourth year

3. How much time does the typical student spend in the clinic program? (Fill in the blanks.)

☐ half-days per week, amounting to ☐ hours per week for ☐ weeks.

4. Patients in this clinic are (Check one)

- ☐ adults only (age 14 or over).
☐ adults and children.

5. How much patient care responsibility does the medical student have in the clinic? (Check appropriate response. If it varies, indicate the approximate percent of the time that the student has each role, so that the total is 100%.)

- ☐ Makes patient care decisions consistent with his expertise.
☐ Mostly observes and discusses patients with little input in decision-making.
☐ Does workups, but has little input in patient management decisions.

6. What percent of patients (to the nearest 10%) in this clinic present with problems which are primarily psychological or psychosomatic? ☐ %

7. What percent of new patients (to the nearest 10%) present with a primary problem which has not been previously diagnosed? ☐ %

8. What is the average number of students in the clinic per faculty member (including house staff) primarily involved in teaching students? (Circle the appropriate response.) 1 1½ 2 2½ 3 More than 3

9. What percent of the teaching of students in the clinic (to the nearest 10%) is done by house staff (interns, residents, or fellows)? ☐ %

10. What percent (to the nearest 10%) of the faculty, excluding house staff, are full time faculty, rather than part-time or volunteer faculty? ☐ %



11. How does the seniority of the faculty in the clinic compare with the seniority of the faculty involved in the teaching of medical students on the wards? (Circle the appropriate number.)

Clinic faculty much more senior		Same		Ward faculty much more senior
5	4	3	2	1

12. Indicate your estimate of the willingness of the participating faculty to teach in this clinic by circling the appropriate number.

Extremely eager and enthusiastic.		Willing, but not eager.		Teach in clinic only because it is required.
5	4	3	2	1

13. The clinic is primarily operated for what purpose? (Check one.)

☐ Primarily operated for teaching medical students.
☐ Primarily operated to provide patient care and/or to teach interns and residents.

14. Are conferences/seminars a part of the clinic teaching program for medical students? (Circle response.) Yes No If yes, are the conferences (indicate type, or percent of each.)

☐ Organized around diseases or medical problems?
☐ Organized around a discussion of current clinic patients?
☐ Organized around psychological, psychosomatic, environmental, or clinical practice problems?

15. Approximately how many students per year participate in this clinic program? _____

16. How much time do students spend per patient visit on the average?

_____ minutes with new patients.	_____ minutes writing a new patient's medical record.
_____ minutes with followup patients.	This writing is done:
_____ minutes conferring with a faculty member regarding a patient.	_____ during clinic hours.
	_____ after clinic hours.

17. Indicate your estimate of the educational value of this clinic experience to the typical student as compared with all other clinical experiences both in-patient and out-patient. (Circle the appropriate number.)

An extremely valuable educa- tional experience.		As good as other clerkships.		A waste of time.
7	6	5	4	3
				2
				1

18. Do the students find the experience enjoyable while working in the clinic?
(Circle the appropriate number.)

Extremely
enjoyable.

So-So.

Hate it.

7

6

5

4

3

2

1

19. Listed below are seven goals attributed to ambulatory care teaching programs.
Please do the following:

- (a) Check those goals which apply to this program and add others if desired.
- (b) Indicate the relative priorities of the checked goals, including your additions, by ranking them with one being the top priority goal.

<u>Goals</u>	(a) <u>Applicable</u>	(b) <u>Ranking</u>
(1) Demonstrate the continuity of the doctor-patient relationship.	_____	_____
(2) Demonstrate the natural history of chronic diseases.	_____	_____
(3) Demonstrate the pathophysiology of disease at a given point in time.	_____	_____
(4) Provide experience with diseases which do not commonly lead to hospitalization.	_____	_____
(5) Provide student with experience to assist in career choice decisions.	_____	_____
(6) Provide student with instruction and experience in abbreviated workups and seeing a volume of patients.	_____	_____
(7) Involvement in a health care delivery system other than a university medical center.	_____	_____
(8) _____	_____	_____
_____	_____	_____

20. Indicate the degree to which the goals of this program are achieved, relative to a typical clerkship's achievement of its goals.

Goals achieved
much more than in
typical clerkship.

Same as
typical
clerkship.

Goals achieved
much less than in
typical clerkship.

7

6

5

4

3

2

1



Comments regarding the clinic's strengths and weaknesses may be written on the reverse of this sheet.



Survey of Adult Ambulatory Care Teaching
Office of Medical Education Research and Development
Michigan State University
Nurse/Staff Questionnaire

Please respond to the following questions to the best of your knowledge. Your best estimate is of great value. Your answers should concern only the

1. What percent of patients using this clinic are "medically indigent" (Medicaid or other welfare type program, but not Medicare)? _____%
2. What percent of patients using this clinic are over age 60? _____%
3. Are the patients seen by medical students selected or screened? (Circle response.) Yes No If yes, what criteria are used in selecting patients for medical students?

4. What percent of all patients seen in this clinic are seen by medical students? _____% If less than 100%, do faculty members usually see patients without students during the same half-day that they are teaching students? (Circle response.) Yes No If yes, what percent of the patients are seen by these faculty without being seen by students? _____%
5. How much time do the medical students spend per patient visit on the average?
_____ minutes with new patients.
_____ minutes with followup patients.
6. What is the approximate total number of patients seen by a typical student during his rotation in the clinic? (Count the same patient seen on several occasions as one patient. Circle the appropriate numbers.)
15 or less 16-30 31-45 46-60 61-75 76-90 More than 90
7. What percent of patients (to the nearest 10%) are seen three or more times by the same student? _____%
8. The clinic is primarily operated for what purpose? (Check one.)
_____ Primarily operated for teaching medical students.
_____ Primarily operated to provide patient care and/or to teach interns and residents.
9. What is the "no-show" rate for patients with appointments?
_____ % of patients with appointments fail to keep the appointment or to cancel.
_____ % of patients cancel appointments without scheduling a new appointment.



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Survey of Adult Ambulatory Care Teaching
Office of Medical Education Research and Development
Michigan State University
Preceptorship Questionnaire

Please respond to the following questions to the best of your knowledge. Your best estimate is of great value. Your answers should concern only the

1. Is this experience (Check appropriate space.)

- ☐ Required - Student must take it without options?
☐ Selective - Student must take it or "an equivalent?"
☐ Elective - An optional experience?

2. Indicate your estimate of the educational value of this program to the typical student as compared with all other clinical experiences both in-patient and out-patient. (Circle the appropriate number.)

An extremely valuable educa- tional experience.				As good as other clerkships.			A waste of time
7	6	5	4	3	2	1	

3. Listed below are seven goals attributed to ambulatory care teaching programs. Please do the following:

- (a) Check those goals which apply to this program and add others if desired.
(b) Indicate the relative priorities of the checked goals, including your additions, by ranking them with one being the top priority goal.

Goals

(a) Applicable

(b) Ranking

(1) Demonstrate the continuity of the doctor-patient relationship.

(2) Demonstrate the natural history of chronic diseases.

(3) Demonstrate the pathophysiology of disease at a given point in time.

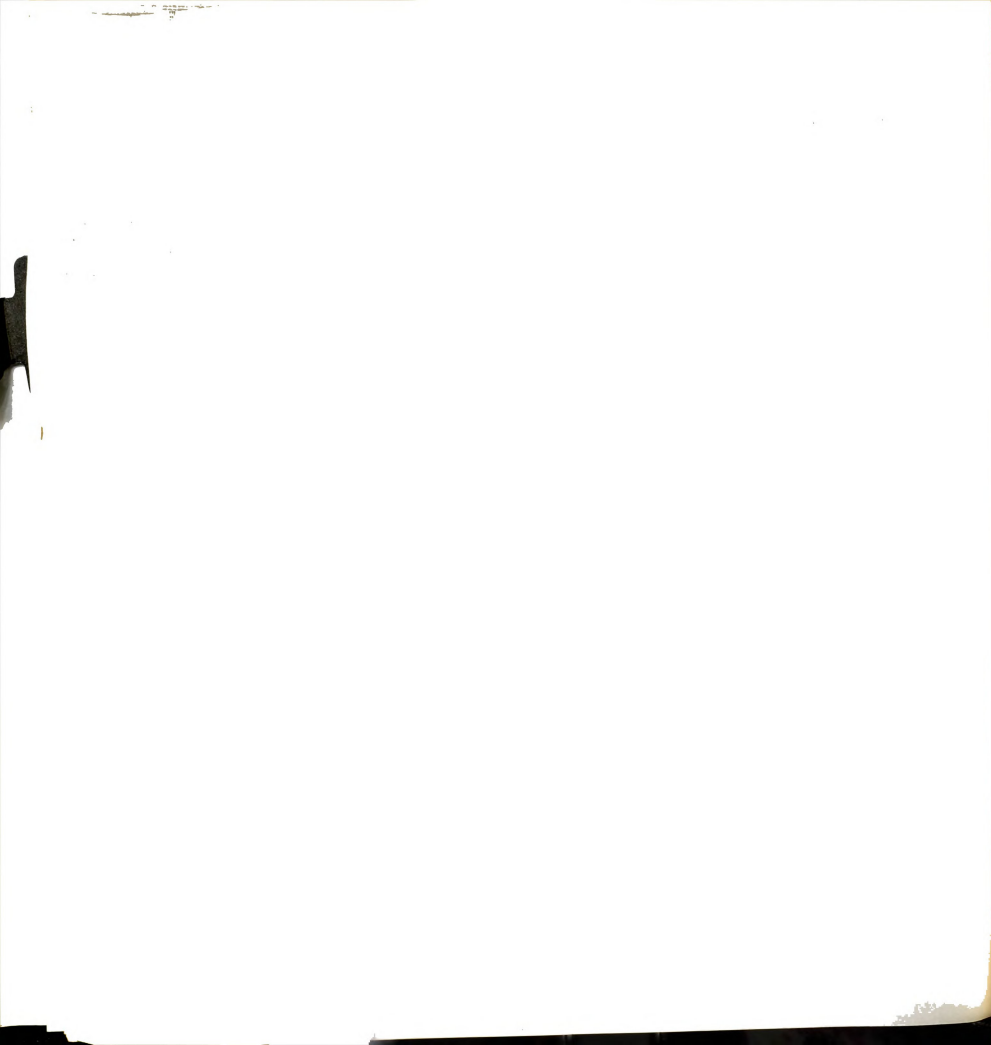
(4) Provide experience with diseases which do not commonly lead to hospitalization.

(5) Provide student with experience to assist in career choice decisions.

(6) Provide student with instruction and experience in abbreviated workups and seeing a volume of patients.

(7) Involvement in a health care delivery system other than a university medical center.

(8) _____



4. Indicate the degree to which the goals of this program are achieved, relative to a typical clerkship's achievement of its goals.

Goals achieved
much more than in
typical clerkship.

Same as
typical
clerkship.

Goals achieved
much less than in
typical clerkship.

7

6

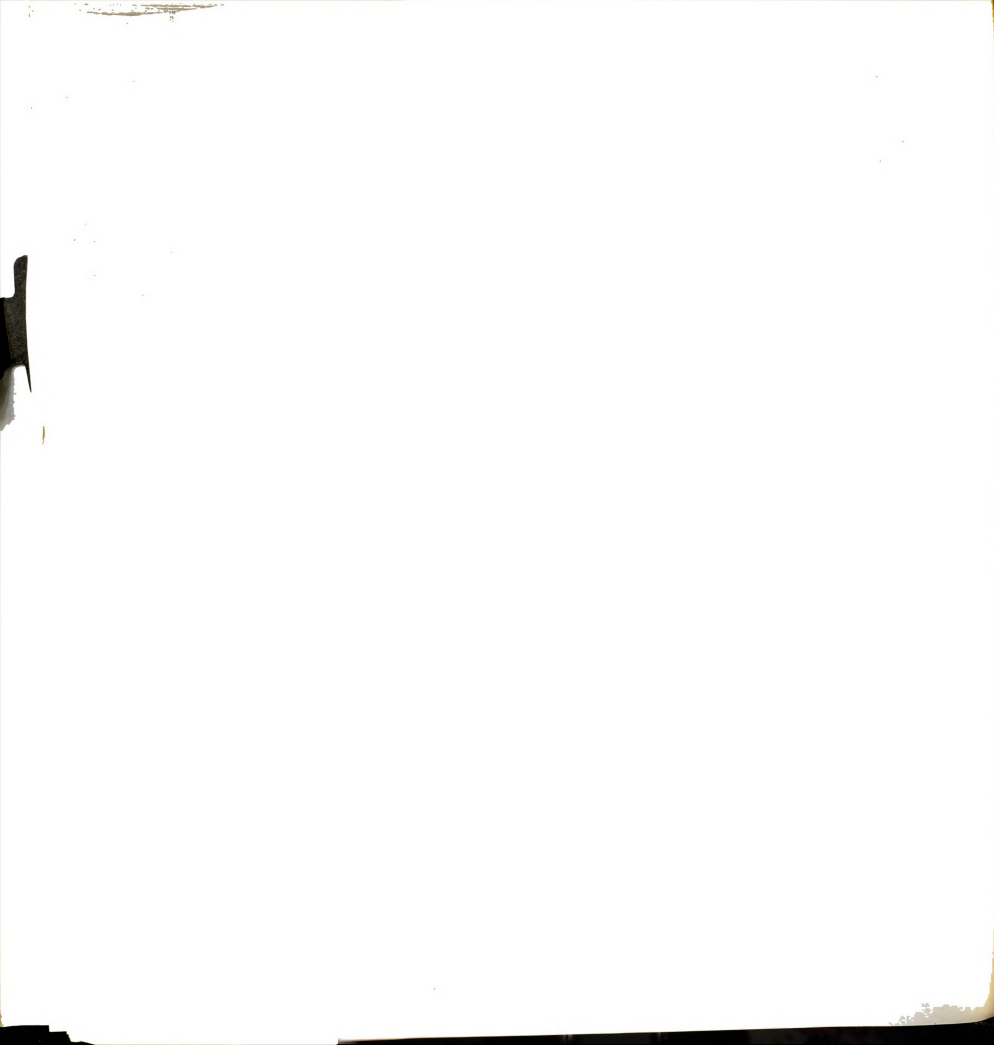
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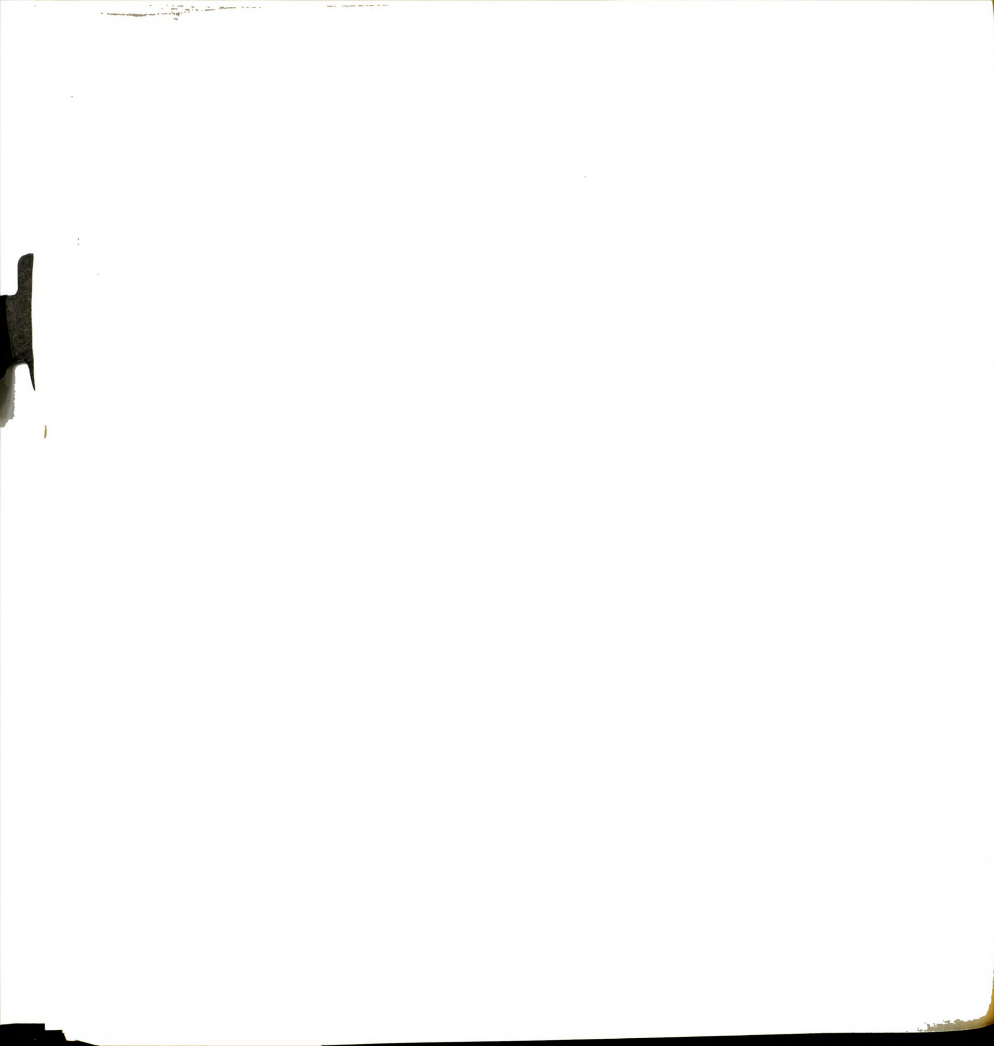
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1



APPENDIX C

SUPPLEMENTARY DATA ON METHODOLOGY



APPENDIX C

Table C.1
Coding Procedures

Questionnaire and Question Number*	Coding Key
Faculty 1	Required = 1; Selective = 2; Elective = 3
2	(Coded as percent of students in fourth year.) Code 1 2 3 4 5 6 7 Percent 0 1-20 21-40 41-60 61-80 81-99 100
3a	Actual number; responses greater than, 9 coded as 9.
3b	Code 1 2 3 4 5 6 7 8 9 Hrs/Wk 0-4 5-8 9-12 13-16 17-20 21-24 25-28 29-32 33+
3c	Code 1 2 3 4 5 6 7 8 9 Weeks 0-3 4-6 7-9 10-12 13-15 16-18 19-21 22-24 25+
4	Adults only = 1; Adults and children = 2
5a, b, c	Coded as percents; same as question 2.
6, 7	Same as question 2.
8	Code 1 2 3 4 5 6 Response 1 1½ 2 2½ 3 More than 3
9, 10	Same as question 2.
11, 12	Response coded without transformation.
13	Teaching medical students = 1; Patient care = 3, Both = 2.
14a	Yes = 2; No = 1.
14b, c, d	Percent; Same as question 2.
15	Actual number, except numbers over 99 coded as 99.
16a, d	Actual number coded to nearest ten minutes.
16b, c	Actual number coded to nearest ten minutes, responses greater than 90 minutes coded as 90 minutes.
16d	During = 1; After = 2; Both = 0
17, 18	Response coded without transformation

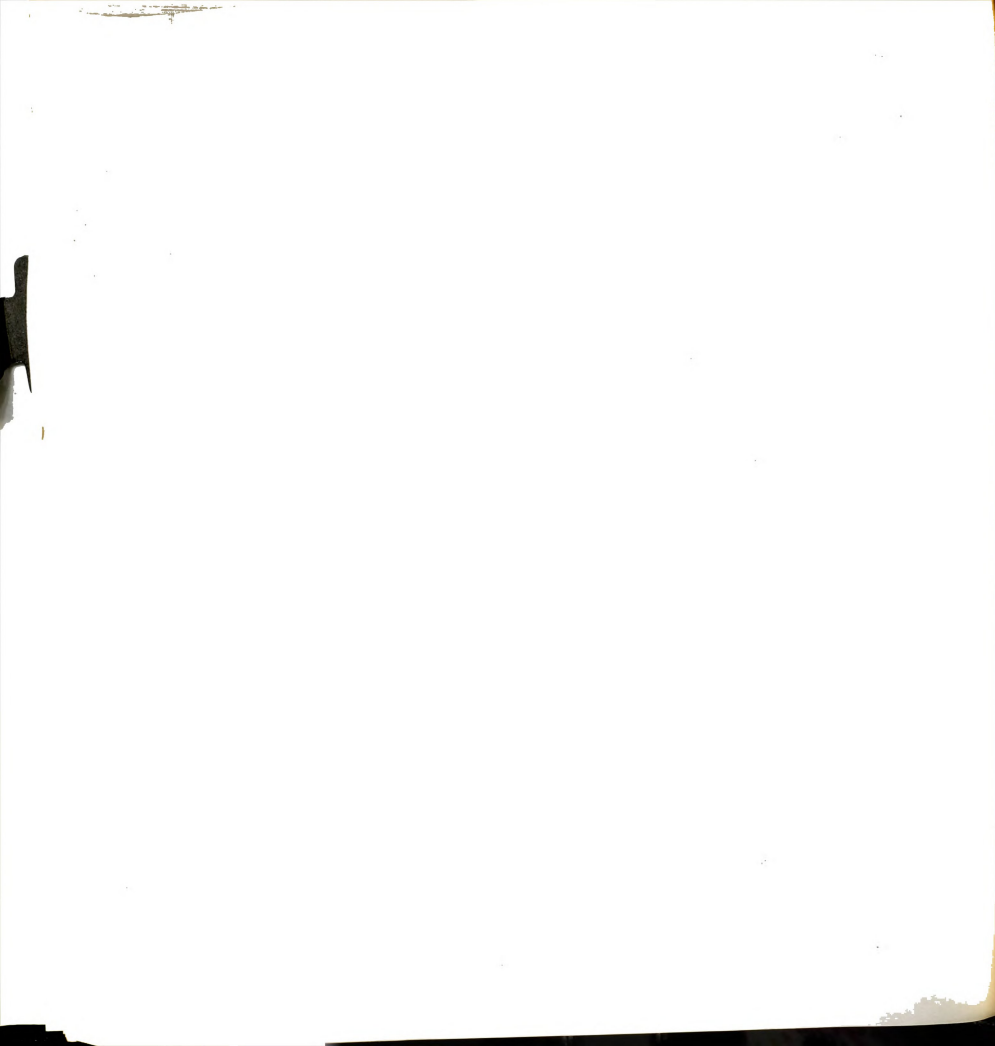
*All question numbers refer to the final questionnaires.

Questionnaire and
Question Number*

Coding Key

	19	Ranking: First = 9; Second = 8; ... Non-ranked = 0.							
	20	Response coded without transformation.							
Precep.	1	Required = 1; Selective = 2; Elective = 3.							
	2	Response coded without transformation.							
	3	Ranking: First = 9; Second = 8; ... Non-ranked = 0.							
	4	Response coded without transformation.							
Nurse	1, 2	Same as Faculty, 2.							
	3a	Yes = 2; No = 1.							
	3b	Not coded.							
	4a	Same as Faculty, 2.							
	4b	Yes = 2; No = 1.							
	4c	Same as Faculty, 2.							
	5a	Same as Faculty, 16a, d.							
	5b	Same as Faculty, 16b, c.							
	6	Code	1	2	3	4	5	6	7
		Resp.	15 or less	16-30	31-45	46-60	61-75	76-90	90+
	7	Same as Faculty, 2.							
	8	Same as Faculty, 13.							
	9a, b	Code	1	2	3	4	5		
		Percent	0-5	6-10	11-15	16-20	21-25		
		Code	6	7	8	9			
		Percent	26-30	31-35	36-40	41+			
Student	1a, b, c	Coded as percent; Same as Faculty, 2.							
	2a, d	Same as Faculty 16a, d.							
	2b, c	Same as Faculty 16b, c.							

*All question numbers refer to the final questionnaires.



Questionnaire and
Question Number*Coding Key

Student 2d	During = 1; After = 2; Both = 0.
3	Same as Nurse, 6.
4	Same as Faculty, 2.
5	Undecided = 0; General Medicine/Family Medicine = 1; Internal Medicine = 2; Pediatrics = 3; Surgical Specialties = 4; Other = 5.
6, 7	Response coded without transformation.
8a, b, c	Strong = 3; Weak = 1; Neither = 2.

*All question numbers refer to the final questionnaires.



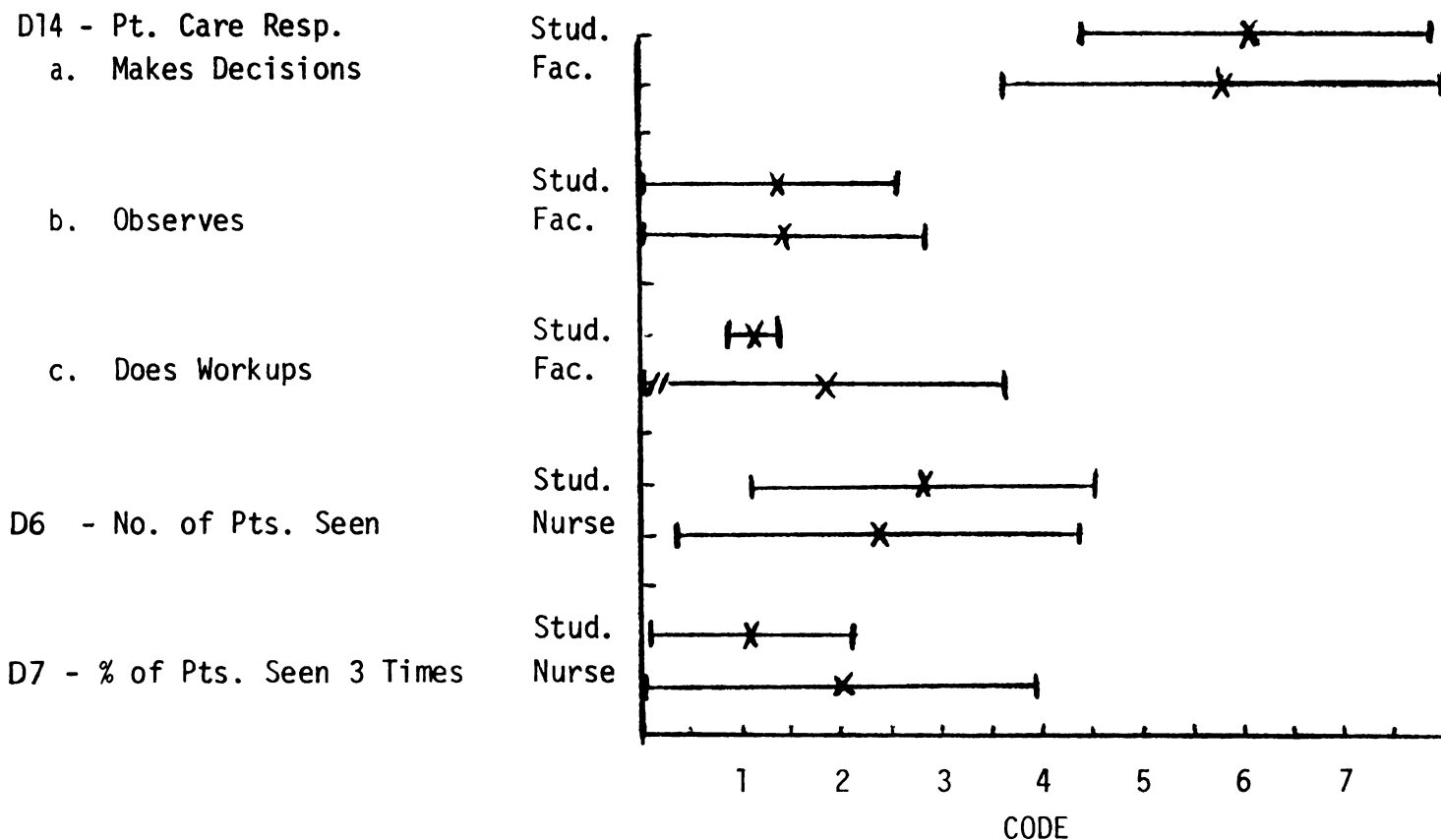
VARIABLE*

Figure C.1

Mean and Standard Deviation of Variables by Source-
Clinic Programs With Student Data (Part A)

NOTES: (a) Student data is from student means per program.

(b) Stud. N = 23; Nurse N = 24; Faculty N = 20.

*Variable letter and number designation refers to Table 3.4, p. 12-13.

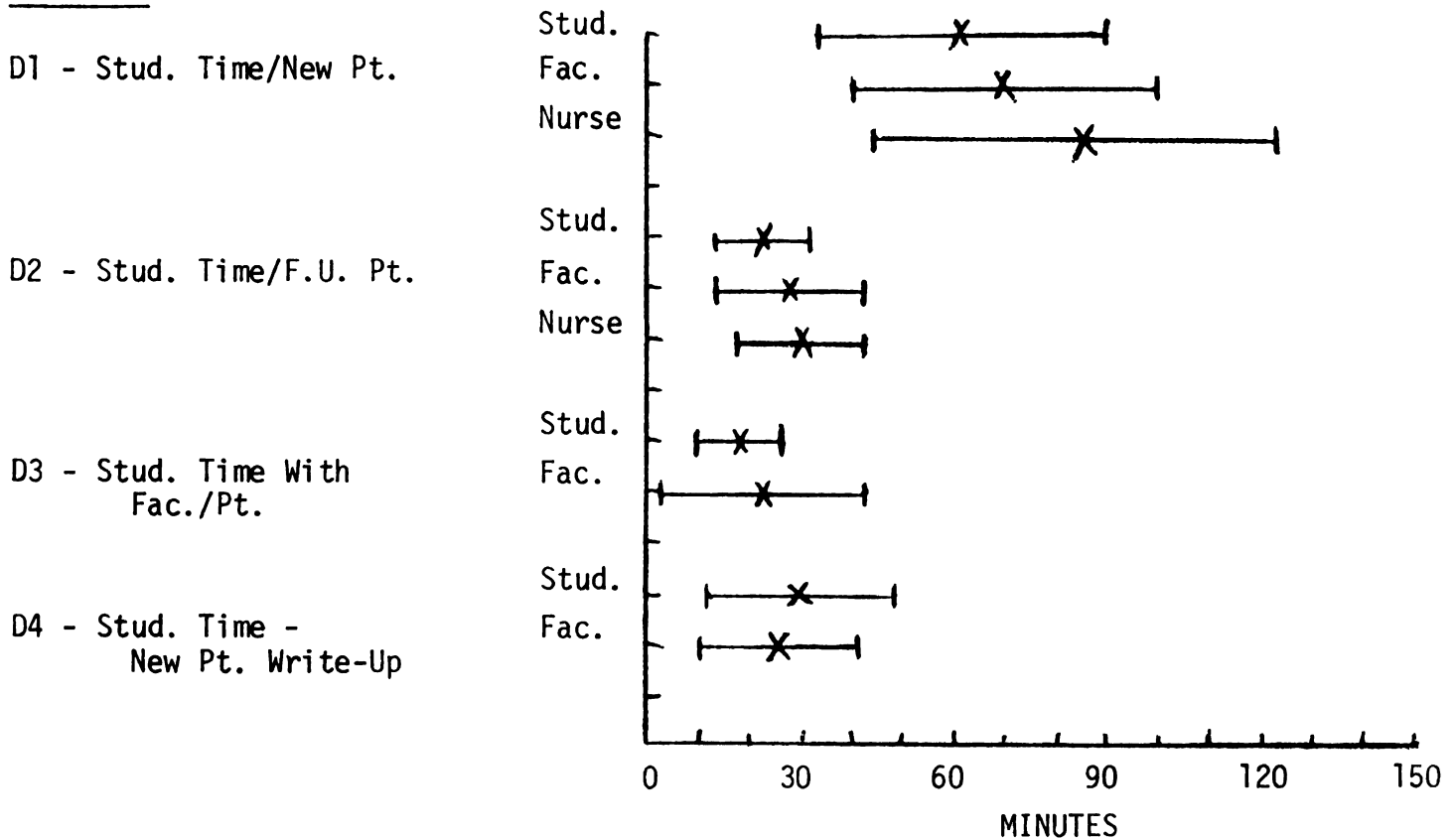
VARIABLE*

Figure C.2
Mean and Standard Deviation of Variables by Source-
Clinic Programs with Student Data (Part B)

NOTES: (a) Student is from student means per program.
(b) Students-N = 23; Nurses-N = 24; Faculty-N = 20.

*Variable letter and number designation refers to Table 3.4, p. 12-13.

Table C.2
Frequency Distribution of Student and Faculty Indications
of When Students Write New Patients' Records

	<u>Students</u>		<u>Faculty</u>	
	<u>No. of Responses</u>	<u>%</u>	<u>No. of Responses</u>	<u>%</u>
1. During Clinic Hours	12	86	16	80
2. After Clinic Hours	2	14	4	20
3. Both	0	0	0	0
TOTAL	14	100%	20	100%

NOTE: Student data is from students means per program.



Table C.3

Frequency Distribution of Faculty and Nurse Indications
of Primary Purpose of the Clinic

	<u>Faculty</u>		<u>Nurses</u>	
	<u>No. of Responses</u>	<u>%</u>	<u>No. of Responses</u>	<u>%</u>
1. Teach medical students.	18	38	12	28
2. Patient care and/or teach house staff.	27	57	26	60
3. Both	<u>2</u>	<u>4</u>	<u>5</u>	<u>12</u>
TOTALS	47	100%	43	100%

Table C.4

Correlations Among Student and Faculty Ratings of Outcome
Variables for Clinic Programs With Student Data (N = 21)

1. Students' Rating of Educational Value	1.000				
2. Students' Ratings of Enjoyment	.607	1.000			
3. Faculty Rating of Educational Value	.244	-.005	1.000		
4. Faculty Rating of Student Enjoyment	.251	.204	.504	1.000	
5. Faculty Rating of Goal Achievement	.154	.136	.525	.589	1.000
	1	2	3	4	5

NOTE: (a) The "Students' Ratings" are the mean of students' ratings within programs.
(b) Correlations greater than .433 are significant at the .05 level.



Table C.5

Index Values and Number of Programs in Each Outcome Group

<u>Group</u>	<u>Index Values</u>	<u>No. of Programs</u>
Faculty Success - High Middle Low	6.0-7.0	14
	5.3-5.7	18
	3.0-5.0	<u>16</u>
TOTAL		48
Student Success - High Low	4.5-6.0	14
	3.0-4.0	<u>9</u>
TOTAL		23
Educational (Clinics) - High Middle Low	6.0-7.0	19
	5.5	10
	3.0-5.0	<u>19</u>
TOTAL		48
Educational (Preceptorships) - High Middle* Low	6.0-7.0	12
	5.5	3
	3.0-5.0	<u>7</u>
		22

*For some analyses involving only preceptorship programs the middle and low groups were combined to form only high and low groups.



APPENDIX D

IDENTIFIED PROBLEMS



Table D.1
Problems Listed by Faculty at School One

Rank	Points	Variable Group*	Problem
1	126	Pr	The achievement of continuity of care between student and patient.
2	44	Pt	The selection of patients to achieve a representation of a cross-section of the total population of patients.
3	40	Pr	The lack of identification of the physician primarily responsible for patient's care.
4	33	Pr	The difficulties in the scheduling of patients, preceptors, and facilities.
5	31	Pr	The patient spends an unreasonably long time in the out-patient clinic in order to receive care.
6	30	Pr	The integration of primary care with specialty care clinics.
7-8	25	Pr	Establishing an esprit de corps among faculty, students, and patients in the ambulatory care clinic.
-	25	Pr	An impairment of the physician - patient relationship in the teaching clinic setting.
9-10	22	Pt	Acquisition of an adequate patient population base for a teaching clinic.
-	22	Pr	Establishment of a financial basis for the clinic operation ("Who pays?")
11-12	18	Pr	The proper "flow" and maintenance of patients' medical records.
-	18	Pr	How to bring an academic atmosphere into the ambulatory care clinic.
13	16	S	The student views ambulatory care as less interesting than in-patient care.



Table D.1 (continued)

Rank	Points	Variable Group*	Problem
14-16	15	Pr	The patients' lack of acceptance of the student as "his" physician, due to (a) referral to a specific physician but being seen by a student; (b) the student's dress or appearance; or (c) being charged for services at least partially delivered by a student.
-	15	F	Difficulty in acquiring appropriate teachers for ambulatory care.
-	15	Pr	Unnecessary and excessive diagnostic studies ordered in the teaching out-patient clinic.
17-18	13	S	Scheduling the student's ambulatory clinic experiences within the overall curriculum.
-	13	Pr	To obtain community acceptance of the ambulatory care teaching program as being good health care.
19-22	10	Pr	Delays in decision-making re diagnosis and/or therapy due to waiting for lab results, etc.
-	10	Pr	The cost to patients of laboratory workups.
-	10	Pr	The commitment of faculty (preceptor) time for one student to one faculty member teaching.
-	10	Pr	The lack of definition of the student's role with a followup patient, who the student sees for the first time.
23	7	Pr	Difficulty, or lack, of followup of clinic patients admitted to the hospital.
24-28	5	Pr	Difficulty in obtaining access to the patient's prior records.
-	5	Pr	The overlap of responsibility between the student and the resident.



Table D.1 (continued)

Rank	Points	Variable Group*	Problem
-	5	Pr	Arranging an appropriate (consultant's) report to the referring physician.
-	5	Pr	The dispersion of students (and patients) among clinical facilities, and the need for transportation.
-	5	Pr	Difficulty in adequately monitoring the student's actions regarding the patient (as compared to the in-patient setting).
29	4	Pr	Ensuring that the teaching program is not exploiting the patient.
30	2	Pr	Repetitive complete workups on follow-up patients as a result of being seen by new students.
31	1	Pr	Inadequate supervision of residents results in lack of faculty input to students.

(Non-Ranked Problems)

Pt	Patients failing to keep appointments.
Pr	Appropriate utilization of allied health personnel.
Pr	Training of allied health personnel to function effectively in the clinic.
Pr	The lack of a single physician responsible for the patient's care.
Pr	Inefficiency in performing procedures, e.g. lumbar puncture, bone marrow aspiration, in an out-patient clinic.
Pr	Communications from the referring physician to the clinic.
Pr	Transportation of patients and parking.
Pr	More than one student per teacher.

Table D.1 (continued)

Rank	Points	Variable Group*	Problem
(Non-Ranked Problems)			
		Pr	The management of the acutely ill patient in a teaching setting.
		Pr	Planning the curriculum to be compatible with available ambulatory teaching resources.

* Pt = Patient Variable
 F = Faculty Variable
 S = Student Variable
 Pr = Process Variable



Table D.2

Problems Listed by Students at School One

Rank	Points	Variable Group*	Problem
1	103	Pt	The "no-show" patient, or patient arriving late for an appointment.
2	30	Pt	The low proportion of patients with significant organic disease.
3	28	Pr	An inadequate amount of learning for the time commitment involved.
4	18	Pr	Patients frequently have a long wait while the students consult with preceptors.
5	17	Pt	Lack of adequate patient mix on socio-economic basis.
6-8	16	Pr	Patients hospitalized from the clinic are frequently admitted to a hospital other than the one where the student is primarily assigned.
-	16	Pr	The hospital administration's opposition to birth control and abortion.
-	16	Pr	Inappropriate social worker input. (one social worker is overly aggressive in seeking social work referrals).
9	15	Pr	Lack of continuity of patient followup due to the student taking a clerkship outside the immediate geographic area.
10	12	Pt	Community physicians are sometimes reluctant to excuse students from clerkship responsibilities to see patients in the CHC.
11	8	Pr	Schedule conflicts between clerkship activities and clinic times.
12	7	Pr	Failure of patients to return for follow-up, either on appropriate clinic day, or ever.
13-14	5	F	Lack of continuity of faculty in the clinic.



Table D.2 (continued)

Rank	Points	Variable Group*	Problem
-	5	Pr	Poor communications and referral rates from emergency room to the CHC.
15	4	Pr	Lack of understanding by, and guidance of, the student during the early part of the clinic experience regarding the expected and/or appropriate extent of the workup.
(Non-Ranked Problems)			
		Pt	The patient's problems are frequently perplexing to the student. Socio-economic problems are frustrating; and complex, varied complaints are confusing.
		Pr	The need for frequent transportation between hospitals results in unprofitable use of time.
		Pr	Some student nurses are slow in the patient check-in process, thus keeping the medical students waiting to see the patient.

* Pt = Patient Variable
 F = Faculty Variable
 S = Student Variable
 Pr = Process Variable



Table D.3

Problems Listed by Faculty at School Two

Rank	Points	Variable Group*	Problem
1	105	Pr	Who should pay for faculty teaching time in the ambulatory care setting?
2	60	Pr	Conflict between the teaching and service demands on the organization.
3-4	40	F	Difficulty with time availability, quality, and interest of the teaching staff.
-	40	Pr	Inadequate facilities for teaching adult ambulatory care.
5	30	Pr	Lack of acceptance of primary care as an entity.
6-8	20	Pr	Inadequate supporting services in the ambulatory care teaching setting.
-	20	Pr	Poor continuity of patient care and student learning in the ambulatory care teaching setting.
-	20	Pr	Lack of good teaching methods for ambulatory care instruction.
9	19	S	Student disinterest in learning in the ambulatory care setting.
10	18	Pr	Medical record systems in use were not designed for the ambulatory care situation.
11-15	15	Pr	Lack of a research tradition in ambulatory care.
-	15	Pt	The patient population in the ambulatory care clinic does not represent a cross-section of the total population.
-	15	Pr	Patients serve as "guinea pigs" in the ambulatory teaching clinic.



Table D.3 (continued)

Rank	Points	Variable Group*	Problem
-	15	Pr	"Patchwork" financial support for ambulatory teaching clinics.
-	15	F, S	Some students and faculty are unable to deal with people and their psychological problems.
q 16-18	10	Pr	The physician lacks control over the allied health personnel in the teaching clinic.
-	10	Pr	Some students are being taught ambulatory care when they do not need to know it.
-	10	S	Students are insecure in dealing with patients, who have emotional problems.
19-22	5	Pt	Difficulties with patient scheduling and missed appointments.
-	5	Pr	The actual effectiveness of ambulatory care has been poorly demonstrated.
-	5	Pr	The "system" in the ambulatory teaching clinic is insensitive to the patient.
19-22	5		Lack of physicians' assistants to help in the ambulatory teaching clinic.
23	3		Inadequate teaching/learning aids and materials in the ambulatory teaching clinic.

(Non-Ranked Problems)

F	Not enough senior faculty available in the ambulatory teaching setting.
S	Students at different levels of education in the same clinic.
Pt	An inadequate patient population base suitable for teaching primary care.

Table D.3 (continued)

Rank	Points	Variable Group*	Problem
(Non-Ranked Problems)			
		Pt	Some patient's problems are too complex for students to manage.
		Pt	Too many patients have functional problems.
		Pr	Teaching on paying patients seems unfair.
		Pr	Over-utilization of the patient's time in an ambulatory teaching clinic.
		Pr	Difficulties with scheduling of students and handling the situation when a student is absent.
		Pr	Difficulty obtaining the patient's medical records.
		Pr	Lack of a balance between the breadth and the depth of experience in ambulatory care.

- * Pt = Patient Variable
 F = Faculty Variable
 S = Student Variable
 Pr = Process Variable

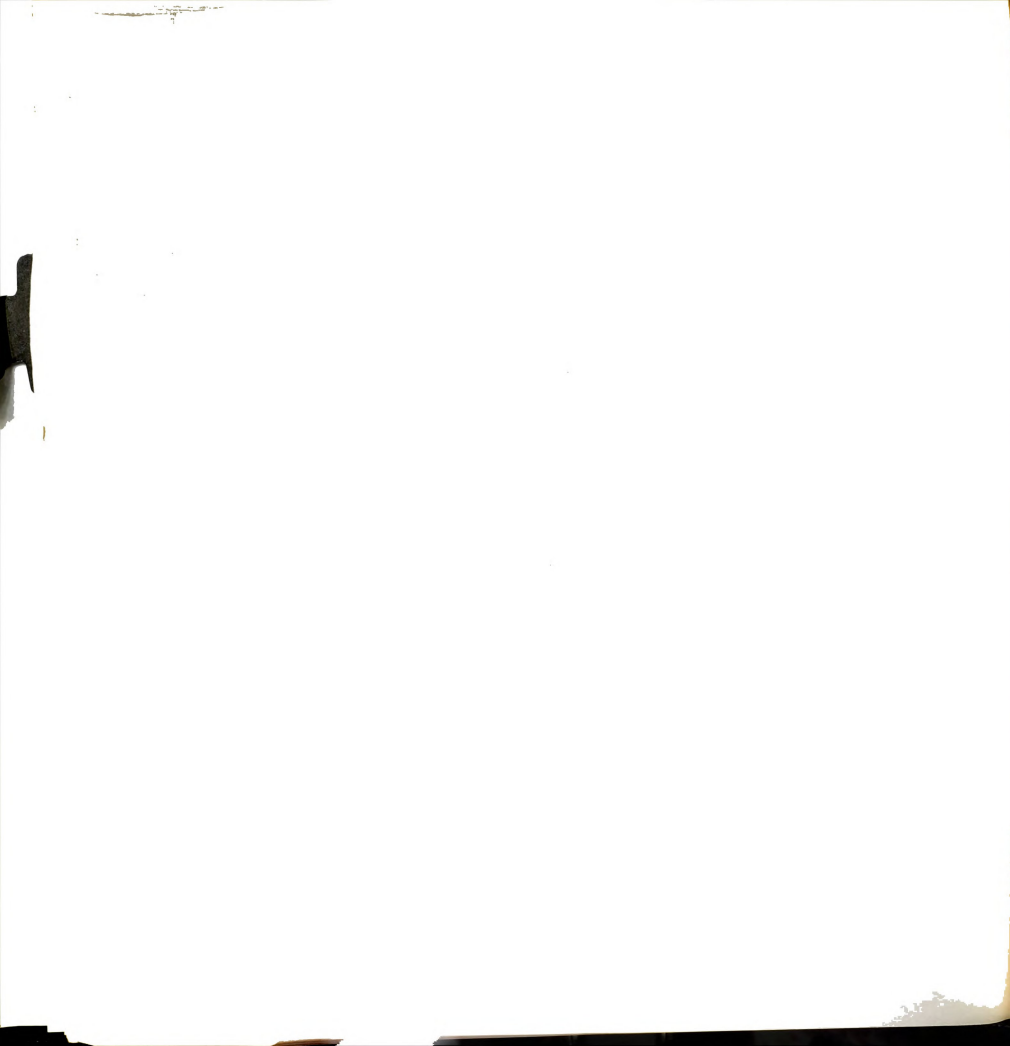


Table D.4

Problems Listed by Students at School Two

Rank	Points	Variable Group*	Problem
1	45	Pr	The lack of adequate patient followup by the student results in the lack of feedback in a "trial and error" learning setting.
2	43	Pr	The lack of orientation of the student to the support services available in the clinic and the community.
3-5	25	Pr	A data review problem exists when a followup patient is seen by a new student.
-	25	Pr	No available summary of medical records.
-	25	Pr	Excessive use of subspecialty clinics leads to fragmentation of ambulatory care.
6	22.5	F	Lack of faculty (as opposed to house staff) teaching in the clinics.
7-8	20	Pr	Lack of adequate followup to establish optimal rapport between student and patient.
-	20	Pr	Lack of adequate followup between clinic visits and hospitalization of patients.
9	14.5	Pr	Emergency room is inappropriately used for primary care.
10	11	Pr	Inadequate time in clinic setting for students to deal with the problems of patient education.
11-13	10	Pr	Inadequate time in clinic setting for students to do complete workups on patients.
-	10	Pr	The diagnostic workup is too expensive for the patient.

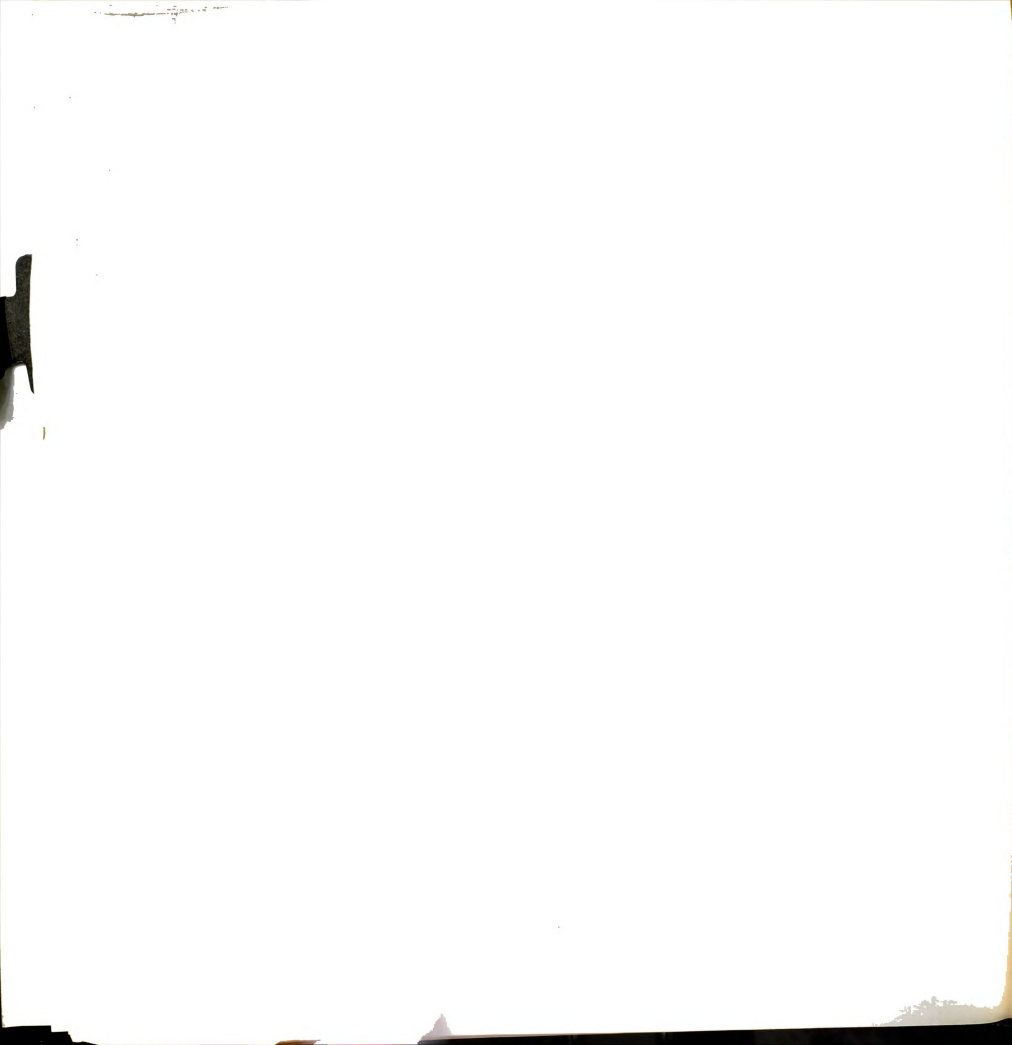


Table D.4 (continued)

Rank	Points	Variable Group*	Problem
-	10	Pr	Students lack training in the management of psychosomatic problems.
14	6	Pt	Patients demand excessive and inappropriate services.
15-16	5	Pr	Lack of adequate patient followup to accomplish complete data collection.
-	5	Pr	Inadequate allied health personnel in the clinic to provide optimal support.
17	3	Pt	Failure of patients to follow orders.
(Non-Ranked Problems)			
		Pr	Lack of adequate patient followup to obtain laboratory results.
		Pr	Medical records and laboratory results are frequently not available when needed.
		Pr	The operations of clinics lack adequate flexibility to effectively perform many diagnostic and therapeutic measures on an out-patient basis.
		Pr	Students lack authority to order diagnostic and therapeutic measures.
		Pr	In teaching clinics patients receive more extensive workups than are medically indicated.
		Pt	Too many patients present with psychosomatic problems.
		Pr	There is not enough time to deal with psychosomatic problems.

* Pt = Patient Variable
 F = Faculty Variable
 S = Student Variable
 Pr = Process Variable



APPENDIX E

SUPPLEMENTARY RESULTS OF THE QUESTIONNAIRE
SURVEY PHASE



APPENDIX E

Table E.1

Student Response Rates for Individual Programs

<u>Program</u>	<u>No. of Students Surveyed</u>	<u>No. of Students Responding</u>	<u>Percent Responding</u>
1	50	26	52%
2	50	27	54%
3	50	25	50%
4	40	19	47%
5	40	15	37%
6	40	24	60%
7	25	17	68%
8	25	15	60%
9	25	12	48%
10	25	14	56%
11	25	16	64%
12	25	14	56%
13	25	21	84%
14	25	6	24%
15	25	6	24%
16	25	16	64%
17	19	13	68%
18	10	5	50%
19	9	8	89%
20	9	7	78%
21	8	6	75%
22	7	6	86%
23	5	3	60%

Notes: (a) Sample size varied with percent of students participating and whether or not participating students were identified.

(b) Response rates for programs 1 through 14 are reduced because some students surveyed did not participate in the program.



Table E.2

Criteria for the Selection of Patients
for Teaching Medical Students

<u>Criteria</u>	<u>Number of Programs Reporting this Criterion</u>
A. Criteria for exclusion	
1. Emergencies	2
2. Psychosomatic problems	1
3. Diseases requiring multiple hospitalizations	1
4. Routine physical examinations	1
B. Criteria for selection	
1. Variety of common "out-patient type" problems	7
2. "Learning value" or "potential" for the student	4
3. New patient with several complaints	2
4. Routine physical examinations	1
5. Need for a complete medical workup	1
6. Variety of interesting patients not seen for one year or longer	1
7. Multiple problems requiring ongoing care	1
8. Compatible with student competence	1
9. Patients without a "medical center workup"	1
10. Some exposure to "doctor-shopping" patients	1
11. Chronic diseases	1
12. Younger (age 21-45) patients	1
13. New disease or problem	1



Table E.3

Additional Goals Listed by Clinic Program Directors
and Assigned Ranks

<u>Goal Statement</u>	<u>Rank (Top Rank = 1)</u>
1. Teach elements of comprehensive care.	1
2. Assess emotional impact of illness & understand psychosomatic interrelationships.	3
3. Recognize influence of social, cultural, and economic factors.	6
4. Working with team of health workers.	4
5. Consideration of family/psychosocial problems and impact on health and disease.	3
6. Involvement in preventive & prospective medicine and in consumer health education.	1
7. Interact constructively with other members of health care team.	2
8. To learn about sources of extramural help for patients.	1
9. How to conclude medical care in one setting and in one visit.	4
10. Teach the multidisciplinary approach of health care.	2
11. To develop the attitudes and skills required for the practice of holistic medicine.	1
12. Stress practical and economic care.	1
13. Stress socioeconomic factors in care.	3
14. Demonstrate the need for and use of personnel other than physicians in patient care.	1
15. Community health aspects: Familiarize student with problems of the ambulatory patient as relates to his job, family, disability and drug or other ancillary cost of illness that is less than disabling.	1

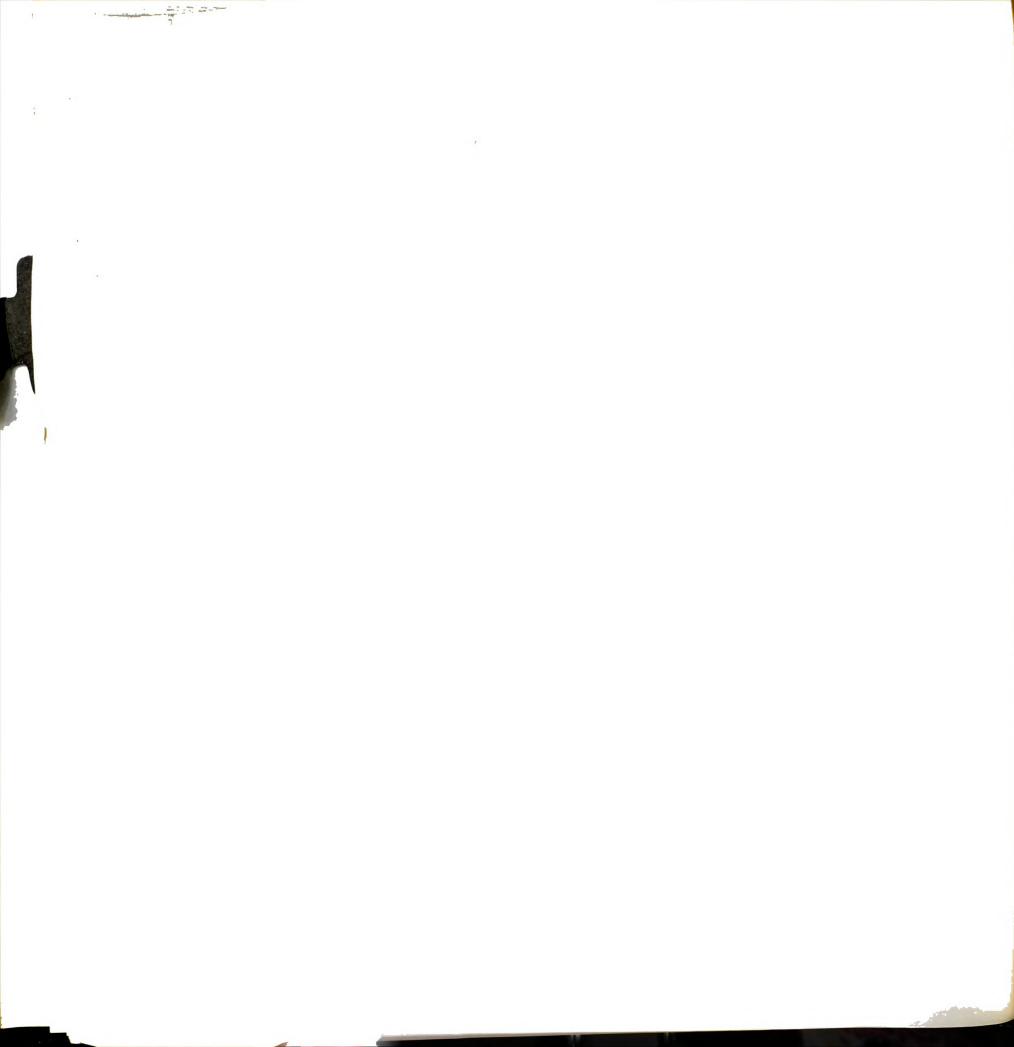


Table E.3 (continued)

<u>Goal Statement</u>	<u>Rank (Top Rank = 1)</u>
16. For students to actively <u>seek responsibility</u> for primary patient care, to make decisions about diagnosis and treatment and to learn what can be taken care of in an ambulatory setting.	1
17. Systematize history taking and physical examination.	1
18. Individual responsibility for patient care.	2
19. More experience with psychosomatic illness.	2
20. Exposure to family physicians on "university ground," i.e. functioning amongst university faculty.	1
21. Provide opportunity for approach to the family unit with cognizance of social and environmental factors.	1
22. Demonstrate importance of structuring time to the time available and directing it to the most salient points.	2
23. First contact experience with the "undiagnosed" patient.	1



Table E.4

Additional Goals Listed by Preceptorship Program
Coordinators and Assigned Ranks

<u>Goal Statement</u>	<u>Rank (Top Rank = 1)</u>
1. Demonstrate the working relationship of generalists and specialists.	5
2. Provide a perspective on community primary care as a component of the medical care system.	3
3. Provide experience in an environment different from hospitals.	1
4. Demonstrate legal and ethical, administrative and economic, and community aspects of practice.	3
5. Provide the student a chance to be part of the day-to-day delivery of primary care, and evaluate that experience.	2
6. Provide the student an opportunity to analyze the dynamics of community, and how the social and physical environment affects health care.	4
7. Students will work with the principles of epidemiology as tools in the delivery of health care.	5
8. To give insight into the medical "way of life" of a primary care physician.	1
9. To demonstrate what the practices of family practice, primary medicine and pediatrics are like, the scope of the physician's work and the problems encountered.	1
10. Demonstrate the good medical care received outside a university medical center.	5
11. Provide the student with experience with and an understanding of the cost of delivering comprehensive health care -- including out-patient and in-patient care.	5



Table E.4 (continued)

<u>Goal Statement</u>	<u>Rank</u> <u>(Top Rank = 1)</u>
12. Understand economics of health care delivery.	8
13. Work with other health care professionals and consumer groups.	3
14. Experience as member of primary care team.	2

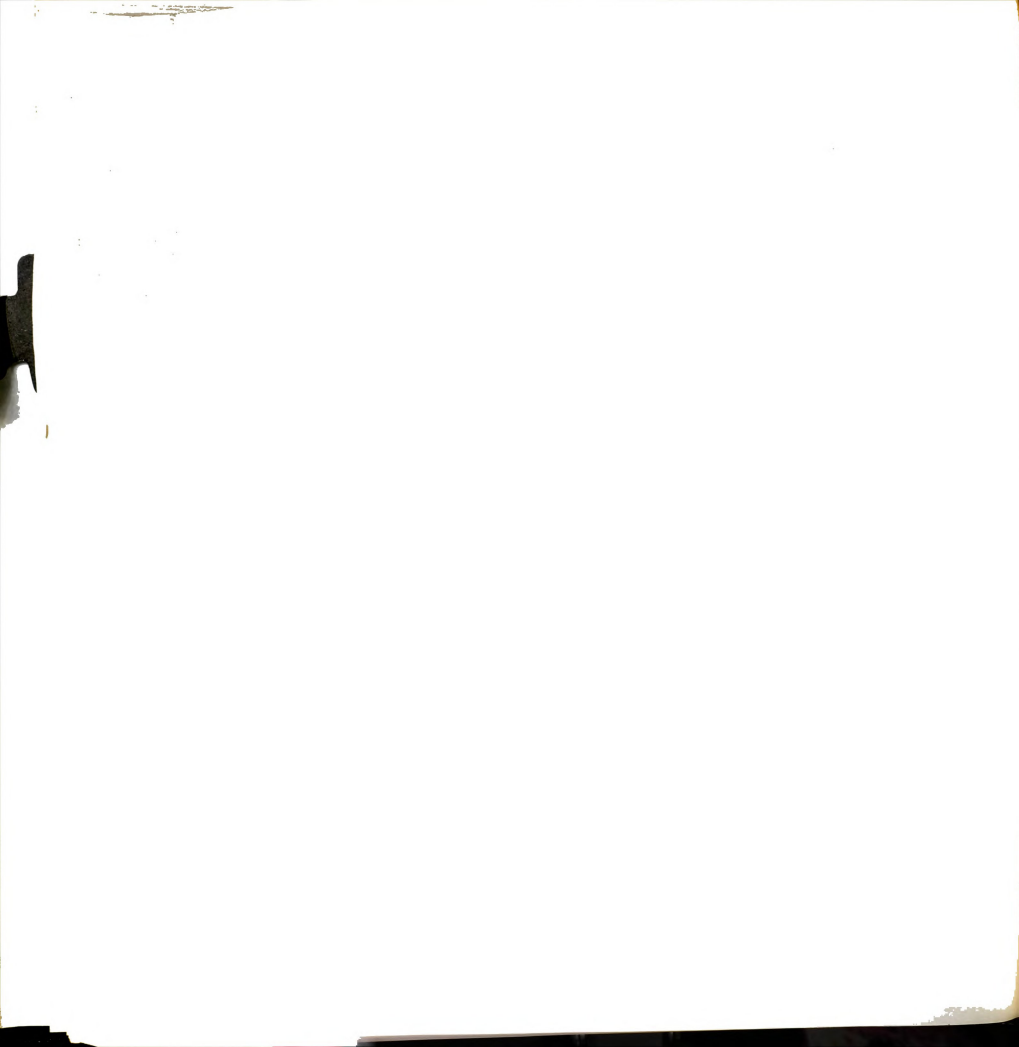


Table E.5

Comparison of Clinic Programs With (SQ) and Without (NSQ)
Student Questionnaire Data (t tests)

<u>Variable</u>	<u>SQ Programs</u> Mean,* (S.D.), and Sample Size	<u>NSQ Programs</u> Mean,* (S.D.), and Sample Size	<u>Level of Significance</u> (p less than:)
1. Percent of faculty who are full-time faculty.	3.90 (1.48) N=21	5.15 (2.70) N=27	.05
2. Percent of students who are in their fourth year.	3.90 (2.70) N=21	5.74 (1.95) N=27	.005
3. Number of students in program per year.	67.86 (33.43) N=21	33.24 (29.98) N=25	.0005
4. Student time in clinic ($\frac{1}{2}$ days per week).	3.52 (3.33) N=21	6.20 (2.96) N=25	.005
5. Student time in clinic (number of weeks).	4.71 (3.21) N=21	2.78 (1.55) N=27	.005
6. Percent of clinic patients seen by students.	4.84 (2.22) N=19	3.05 (1.91) N=21	.01



Table E.5 (continued)

Variable	SQ Programs Mean,* (S.D.), and Sample Size	NSQ Programs Mean,* (S.D.), and Sample Size	Level of Significance (p less than:)
7. Ranking of Goal: Involvement in a health care delivery system other than a university medical center.	1.65 (2.19) N=20	3.63 (2.71) N=27	.01
8. Education value to students of the program.	5.17 (1.03) N=23	5.78 (1.08) N=27	.05
9. Student enjoyment of experience.	5.30 (.88) N=23	5.52 (1.16) N=27	.20
10. Degree of goal achievement.	4.95 (1.12) N=21	5.48 (1.09) N=27	.10

* Units are the coded values. (See Appendix C, Table C.1).

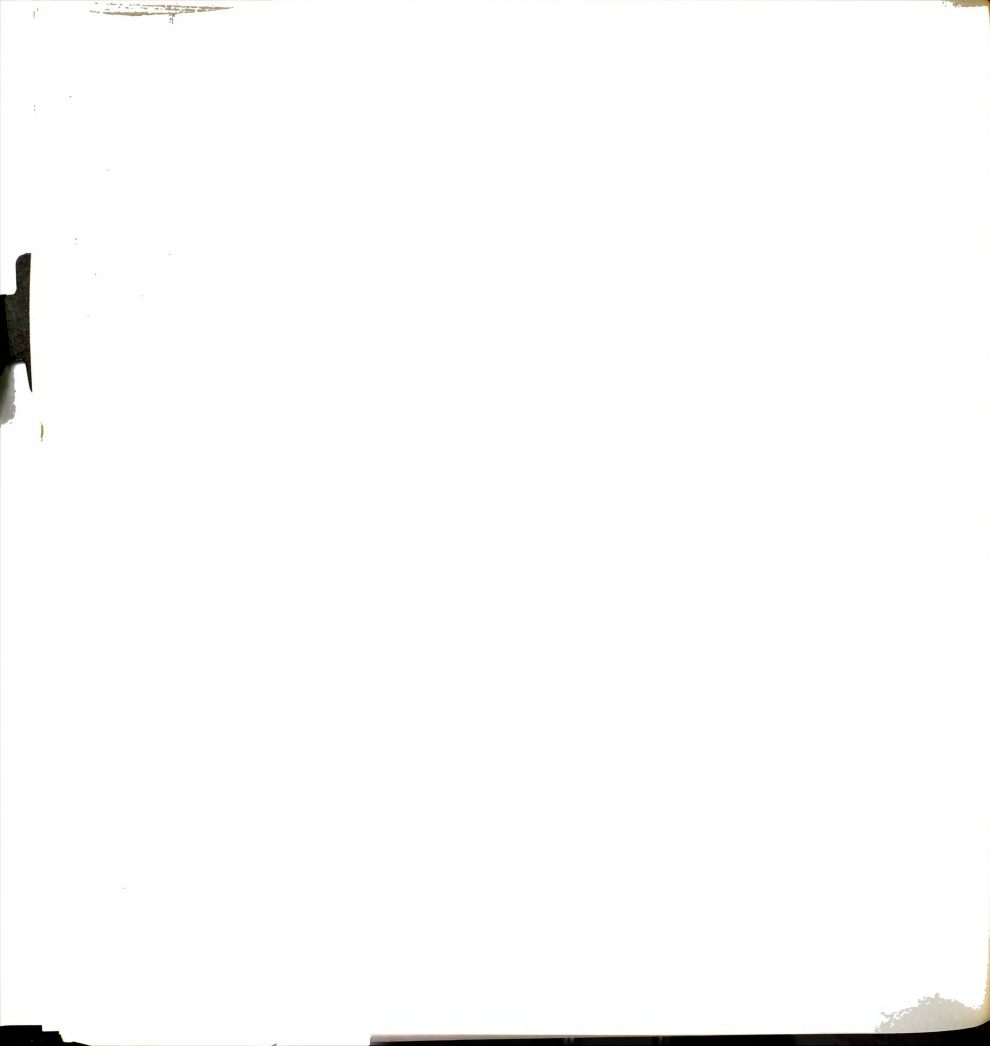


Table E.6

Comparison of Clinic Programs With (SQ) and Without (NSQ)
Student Questionnaire Data (Chi square tests)

<u>Variable</u>	<u>Response</u>	<u>No. of SQ Programs</u>	<u>No. of NSQ Programs</u>	<u>Level of Significance (p less than:)</u>
1. Required, selected, or elected program.	Required	11	6	.01
	Selective	9	9	
	Elective	1	12	
2. Primary purpose of clinic (teaching students or patient care.	Teach Students	11	7	.10
	Patient Care	8	19	
	Both	2	1	
3. Do faculty see patients without students during teaching clinic.	Yes	4	15	.01
	No	12	4	

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Table E.7

Key to Variable Names for Intercorrelation Matrices

A. Patient Variables (PV)

1. Percent of patients medically indigent.
2. Percent of patients over age 60.
3. Percent of patients with primarily psychological or psychosomatic problems.
4. Percent of patients with problems not previously diagnosed.
5. Percent of patients failing to keep appointments.
6. Percent of patients cancelling appointments and failing to schedule new appointments.
7. Selection or screening of patients assigned to students.
8. Patients are adults only or adults and children.

B. Faculty Variables (FV)

1. Willingness of faculty to teach in the clinic.
2. Percent of faculty who are full time faculty, rather than part-time or volunteer faculty.
3. Seniority of faculty.
4. Percent of teaching done by house staff.

C. Student Variables (SV)

1. Percent of students who are in their fourth year.
2. Student's career choice.
3. Required, selected, or elected program. Coded: 1 = required, 2 = selected, 3 = elected.

D. Process Variables (PrV)

1. Student time per new patient.
2. Student time per followup patient.
3. Student-faculty interaction time per patient.
4. Student time per new patient spent in writing the medical record.
5. Record written during or after clinic hours.
6. Number of patients seen per student during program.
7. Percent of patients seen three or more times.
8. Primary purpose of clinic (Coded: 1 = teaching students, 2 = both, 3 = patient care and/or teaching house staff).
9. Presence of teaching conferences. (Coded: 1 = no; 2 = yes)
10. Types of teaching conferences
- 11a. Number of half-days per week each student spends in the clinic.
- 11b. Number of hours per week each student spends in the clinic.
- 11c. Number of weeks the typical student spends in the program.
- 12a. Percent of time that student's role is making patient care decisions consistent with his expertise.
- 12b. Percent of time that student's role is observing and discussing patients with little input in decision-making.
- 12c. Percent of time that student's role is doing workups, with little input in patient management decisions.



Table E.7 (continued)

-
13. Number of students per faculty member in the clinic.
 14. Percent of clinic patients seen by students.
 15. Do faculty see patients without students during teaching clinic. (Coded: 1 = No; 2 = Yes)
 16. Percent of patients seen by faculty without students.
 17. Percent of patients on whom a complete medical workup is performed.
- E. Program Goals (Coded: 9 = top ranked goal; 0 = non-ranked)
1. Demonstrate the continuity of the doctor-patient relationship.
 2. Demonstrate the natural history of chronic diseases.
 3. Demonstrate the pathophysiology of disease at a given point in time.
 4. Provide experience with diseases which do not commonly lead to hospitalization.
 5. Provide student with experience to assist in career choice decisions.
 6. Provide student with instruction and experience in abbreviated workups and seeing a volume of patients.
 7. Involvement in a health care delivery system other than a university medical center.
 8. Write-in goals.
- F. Outcome Variables (OV)
1. Education value to students of the program.
 2. Student enjoyment of experience.
 3. Degree of goal achievement.
 4. Faculty Success Index
 5. Student Success Index
 6. Educational Index



Table E.8
Intercorrelation Matrix - All Clinic Programs

Variable*	PV1	PV3	FV1	FV2	FV3	FV4	SV1	SV3	SV4	PrV1	PrV3
PV 2	.43	-	-	-	-	-	-	-	-	-	-
FV 3	-	.40	-	-	-	-	-	-	-	-	-
SV 1	-	-	-	-	-	.32	-	-	-	-	-
3	-	-	-	.52	-	-	.34	-	-	-	-
4	-	-	-	-.32	-	-	-	-.55	-	-	-
PrV 3	-	-	-	-	-	-	-	-	-	.62	-
9	-	-	.33	-	-	-	-	-	-	-	-
11b	-	-	-	-	-	-	.40	-	-	-	-
11c	-	.32	-	-	-	-	-	-	-	-	-
12a	-	-	-	-.31	-	-	-	-	-	-	-
12b	-	-	-	.35	-	-	-	-	-	-	-
12c	-	-	-	-	-.32	-	-	-	-	-	-
PG 1	-	-	-	-	-	-	-.36	-	-	-	.35
3	-	-	-	.33	-	-	-	-	-	-	-
5	-	-	-	.49	-	-.33	-	-	-	-	-
OV 1	-	-	.44	-	-	-	-	-	-	-	-
2	-	-	-	.36	-	-	-	-	-.38	-	-
3	-	-	.45	-	-	-	-	-	-	-	-
4	-	-	.48	.31	-	-	-	-	-	-	-
6	-	-	.47	-	-	-	-	-	-	-	-

*The key to the variable names is contained in Table E.7

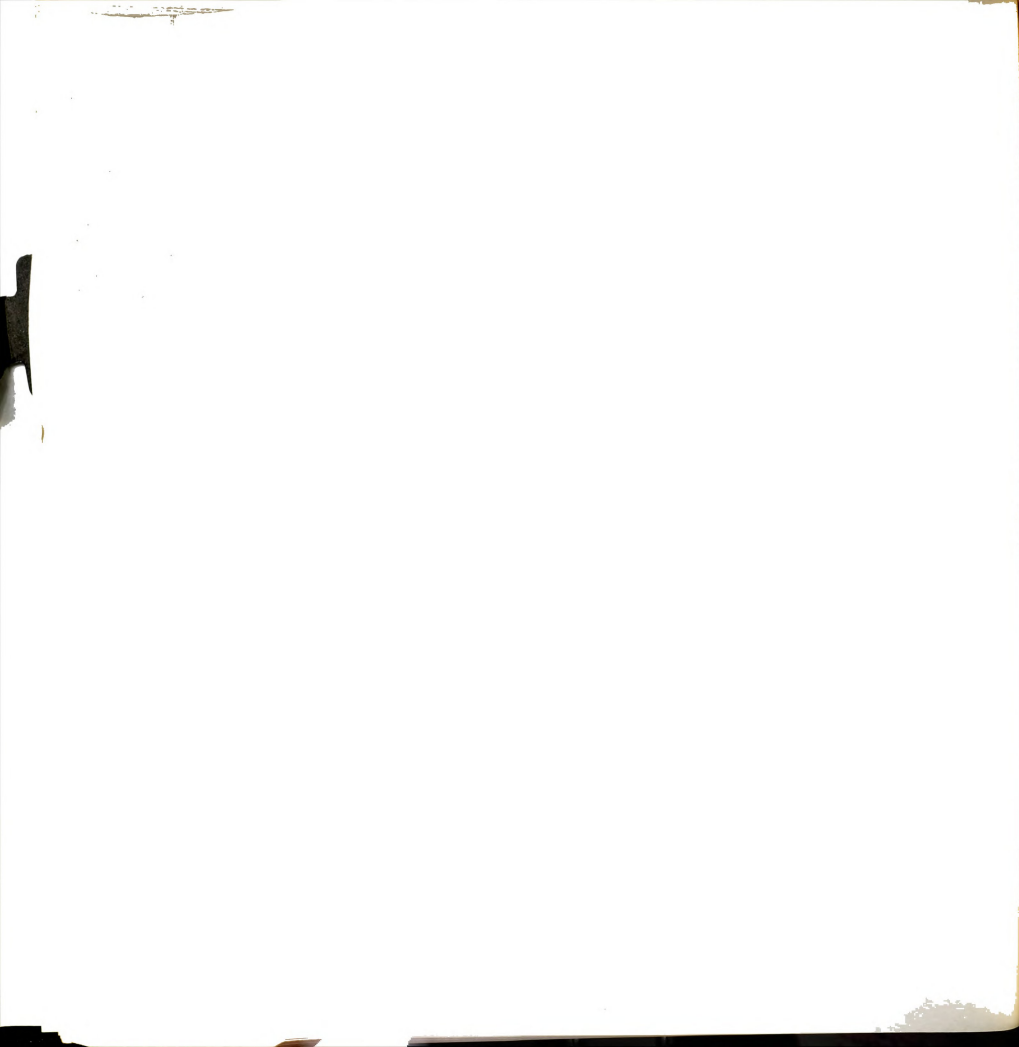


Table E.8 (continued)

Variable*	PrV8	PrV9	PrV11b	PrV11c	PrV12a	PrV12b	PrV12c	PG1	PG2	PG3	PG4
PrV11b	-	.34	-	-	-	-	-	-	-	-	-
11c	-	-	-.57	-	-	-	-	-	-	-	-
13	-.40	-	-	-	-.32	-	-	-	-	-	-
PG 1	-	-	-.44	-	-	-	-	-	-	-.55	-
4	-	-	-	-	-	-	-	-.39	-	-	-
5	-	-	-	-.43	-	-	.48	-	-	-	-
7	-	-	.49	-.46	-	-	-	-	-	-.48	.40
8	-	-	-	-	-	-	-	-	-.56	-	-
OV 3	-	.33	.49	-3.2	-	-	-	-	-	-	-
4	-	-	.40	-	-	-	-	-	-	-	-
6	-	.35	.43	-	-	-	-	-	-	-	.34
	PrV8	PrV9	PrV11b	PrV11c	PrV12a	PrV12b	PrV12c	PG1	PG2	PG3	PG4

*The key to the variable names is contained in Table E.7

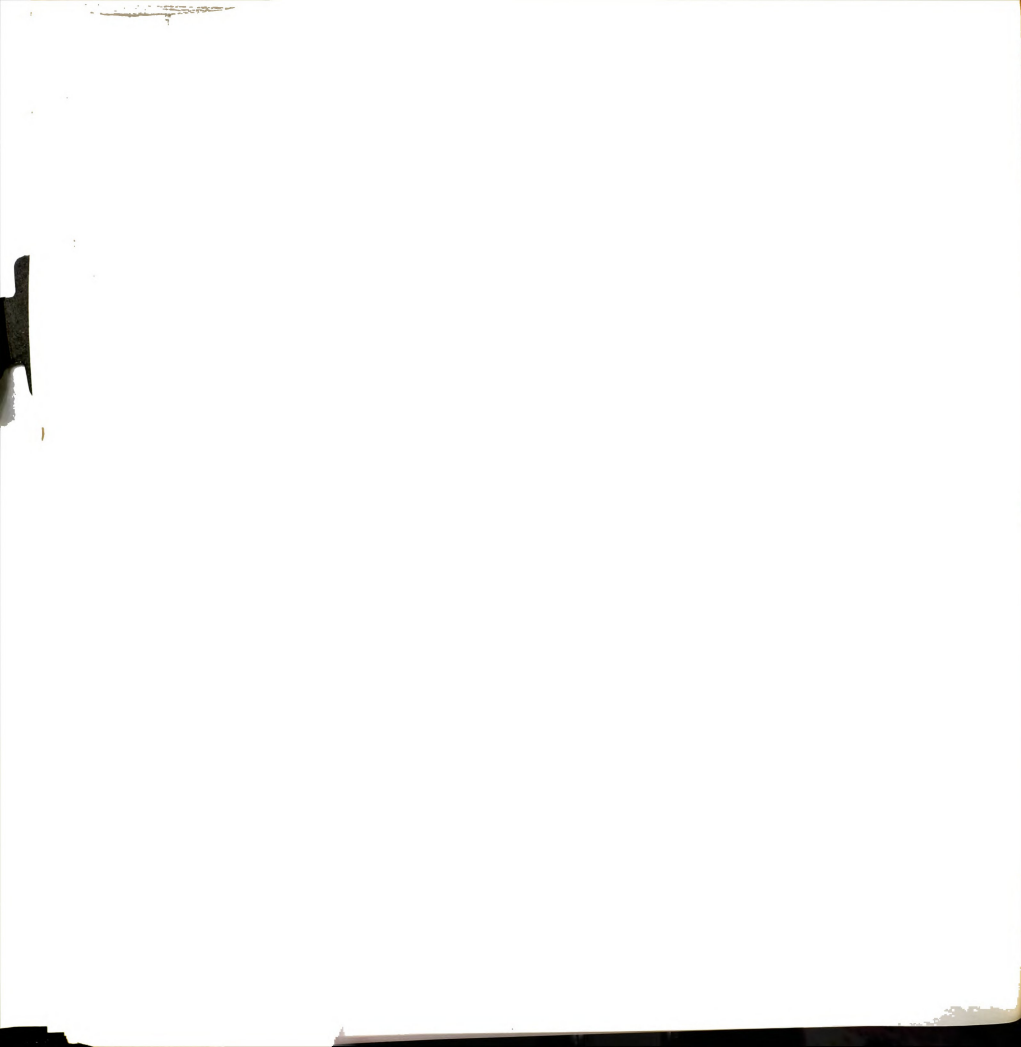


Table E.8 (continued)

Variable*		PG5	PG7	OV1	OV2	OV3	OV4
PG	8	.34	-	-	-	-	-
OV	2	-	-	.49	-	-	-
	3	-	.39	.61	.51	-	-
	4	-	-	.83	.81	.84	-
	6	-	-	.91	.55	.83	.91

*The key to the variable names is contained in Table E.7

Notes: (a) Only significant correlations (p less than .05) are shown. (N = 41)
 (b) A total of 32 variables was used in forming the original matrix.
 (c) Correlations are Pearson's product-moment correlation coefficients.

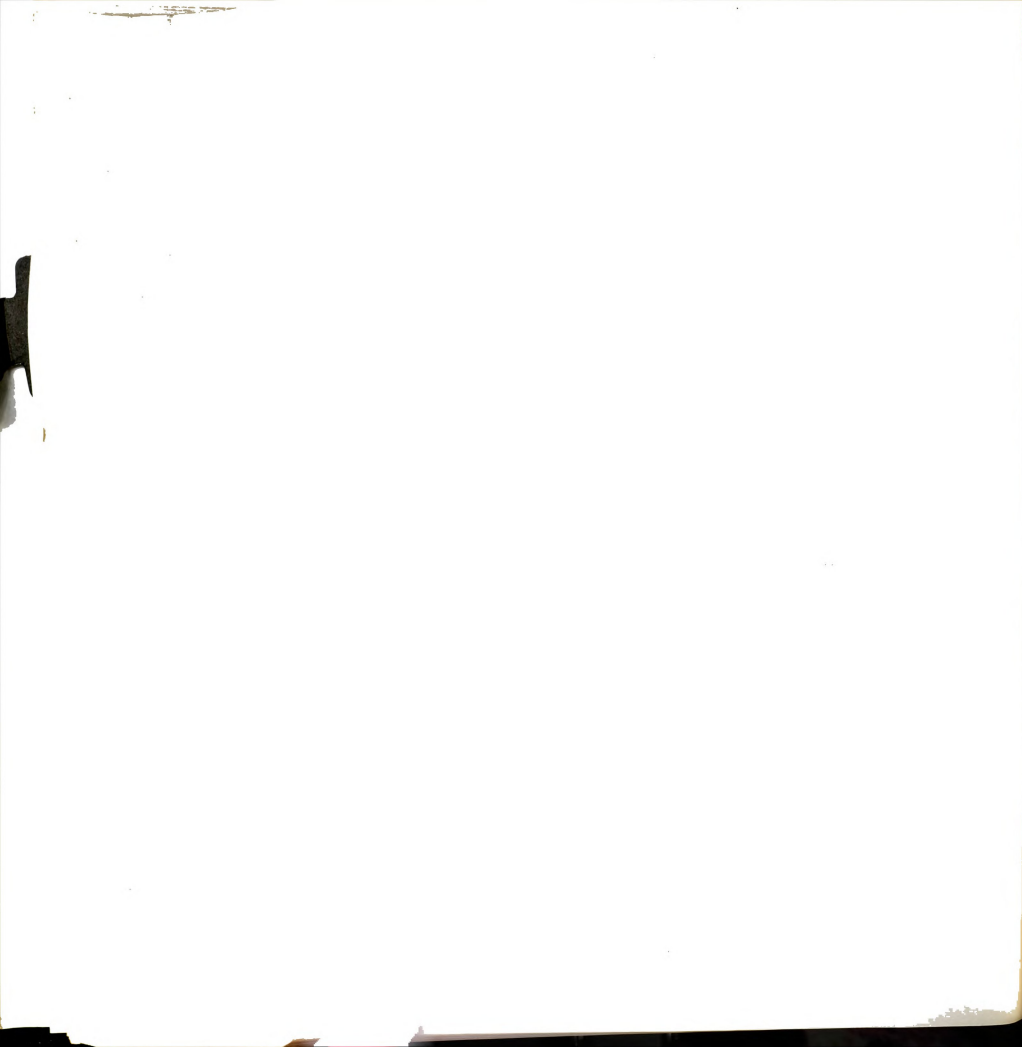


Table E.9
Intercorrelation Matrix - Clinic Programs Without Student Questionnaire Data

Variable*	PrV3	FV1	SV1	SV3	PrV1	PrV8	PrV11b	OV1	OV2	OV3	OV4
SV 4	-	-	-	-.43	-	-	-	-	-	-	-
PrV 3	.42	-	-	-	.69	-	-	-	-	-	-
11b	-	-	.44	-	-	-	-	-	-	-	-
11c	-	-	-	-	.50	-	-.49	-	-	-	-
12c	.50	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-.46	-	-	-	-	-
OV 1	-	.64	-.43	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	.47	-	-	-
3	-	-	-	-	-	-	.49	.62	.48	-	-
4	-	.49	-	-	-	-	-	.81	.82	.83	-
6	-	.57	-	-	-	-	-	.90	.53	.90	.91

*The key to the variable names is contained in Table E.7

- Notes: (a) Only significant correlations (p less than .05) are shown. ($N = 24$)
(b) A total of 24 variables was used in forming the original matrix.
(c) Correlations are Pearson's product-moment correlation coefficients.

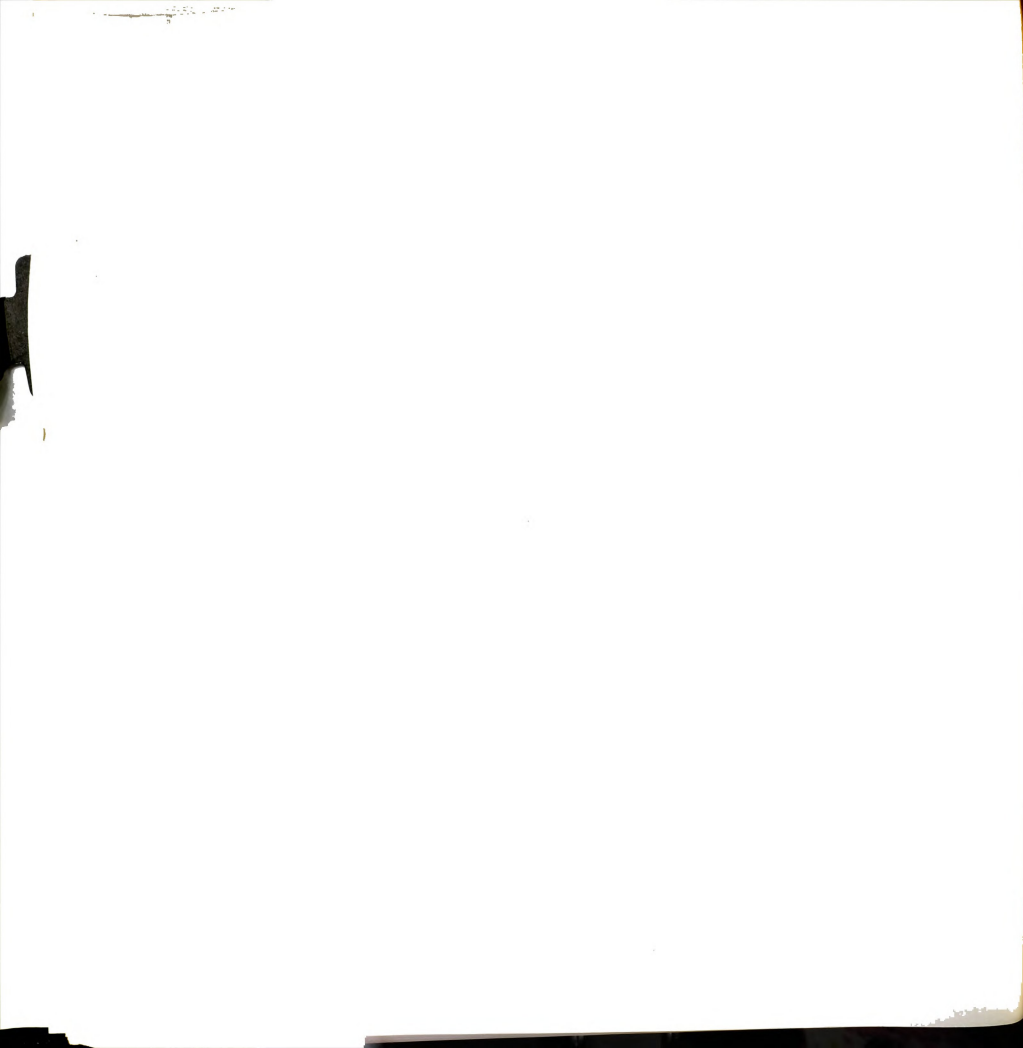


Table E.10
Intercorrelation Matrix - Clinic Programs With Student Questionnaire Data

Variable*	PV1	PV2	PV3	PV4	PV7	FV1	FV2	FV3	FV4	SV1	SV3
PV 2	.71	-	-	-	-	-	-	-	-	-	-
FV 1	-	-	-	-	-.53	-	-	-	-	-	-
SV 2	-	-.55	-	-	-	-	-	-	-	-	-
SV 1	-	-	-	.54	-	-	.62	-	.57	-	-
SV 3	-	-	-	-	-	-	.68	-	-	.65	-
PrV 4	-	-	-.52	-	-	-	-	-	-	-	-
PrV 3	-	-	-	.57	-	-	-	-	-	-	-
12b	-	-	-	-	-	-	.61	-	-	-	-
12c	-	-	-	-	-	-	-	-.61	-	-	-
13	-	-	-.56	-	-	-.62	-	-	-	-	-
15	-	-	-	-	-	-	.62	-	-	-	-
16	-	-	-	-	-	-	.61	-	-	-	-
OV 2	-	-	-	-	-	-	.54	--	-	-	.69
OV 4	-	-	-	-	-	-	-	-	-	-	.52
	PV1	PV2	PV3	PV4	PV7	FV1	FV2	FV3	FV4	SV1	SV3

*The key to the variable names is contained in Table E.7

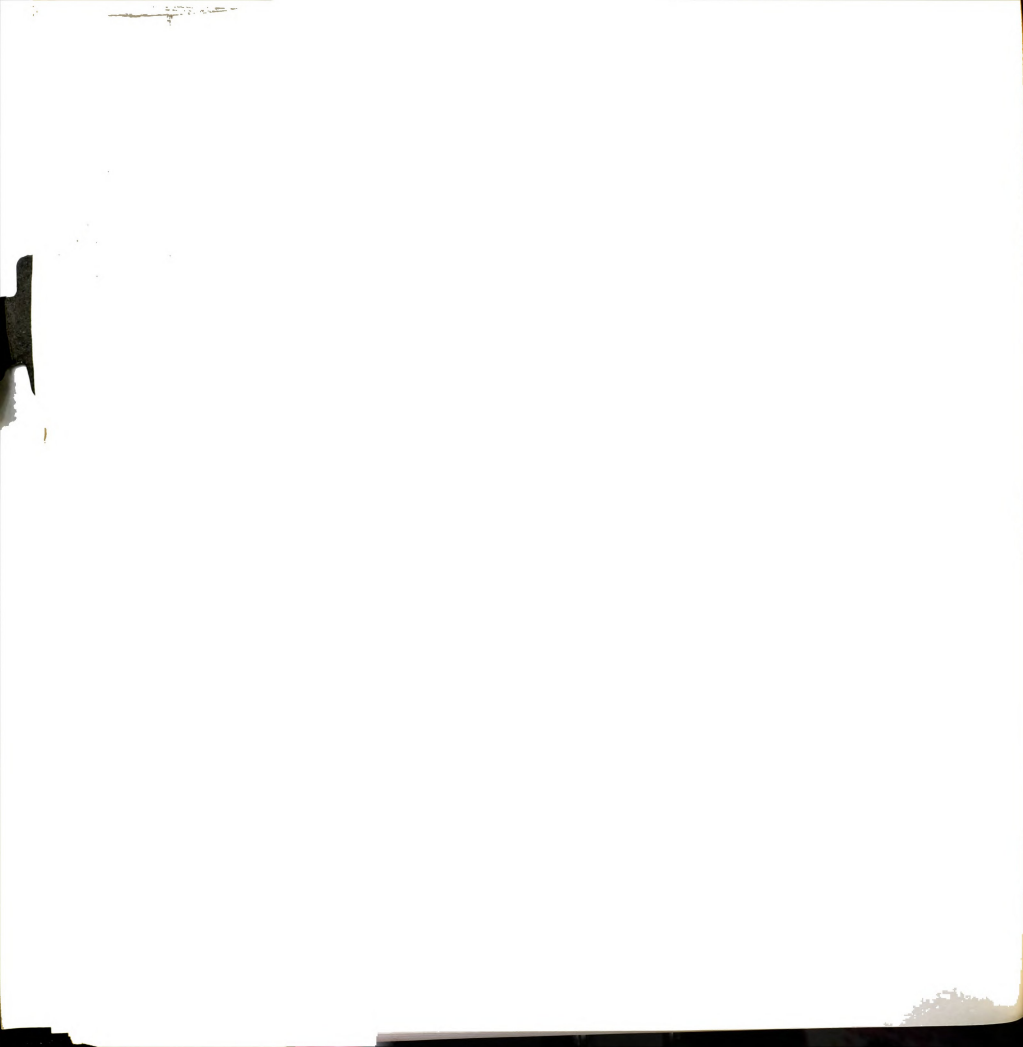


Table E.10 (continued)

Variable*	SV4	PrV1	PrV3	PrV8	PrV12a	PrV12b	OV1	OV2	OV3	OV4
PrV 3	-	.61	-	-	-	-	-	-	-	-
11b	-	.63	-	-	-	-	-	-	-	-
11c	-.66	-	-	-	-	-	-	-	-	-
12b	-	-	-	.55	-	-	-	-	-	-
14	-	-	-	-.79	-	-	-	-	-	-
16	-	-	-	-	-.61	.73	-	-	-	-
OV 2	-	-	.60	-	-	-	.69	-	-	-
3	-	-	.55	-	-	-	-	-	-	-
4	-	-	.65	-	-	-	.78	.81	.77	-
6	-	-	.54	-	-	-	.90	.56	.59	.86

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*The key to the variable names is contained in Table E.7

Notes: (a) Only significant correlations (p less than .05) are shown. (N = 15)
 (b) A total of 32 variables was used in forming the original matrix.
 (c) Correlations are Pearson's product-moment correlation coefficient.

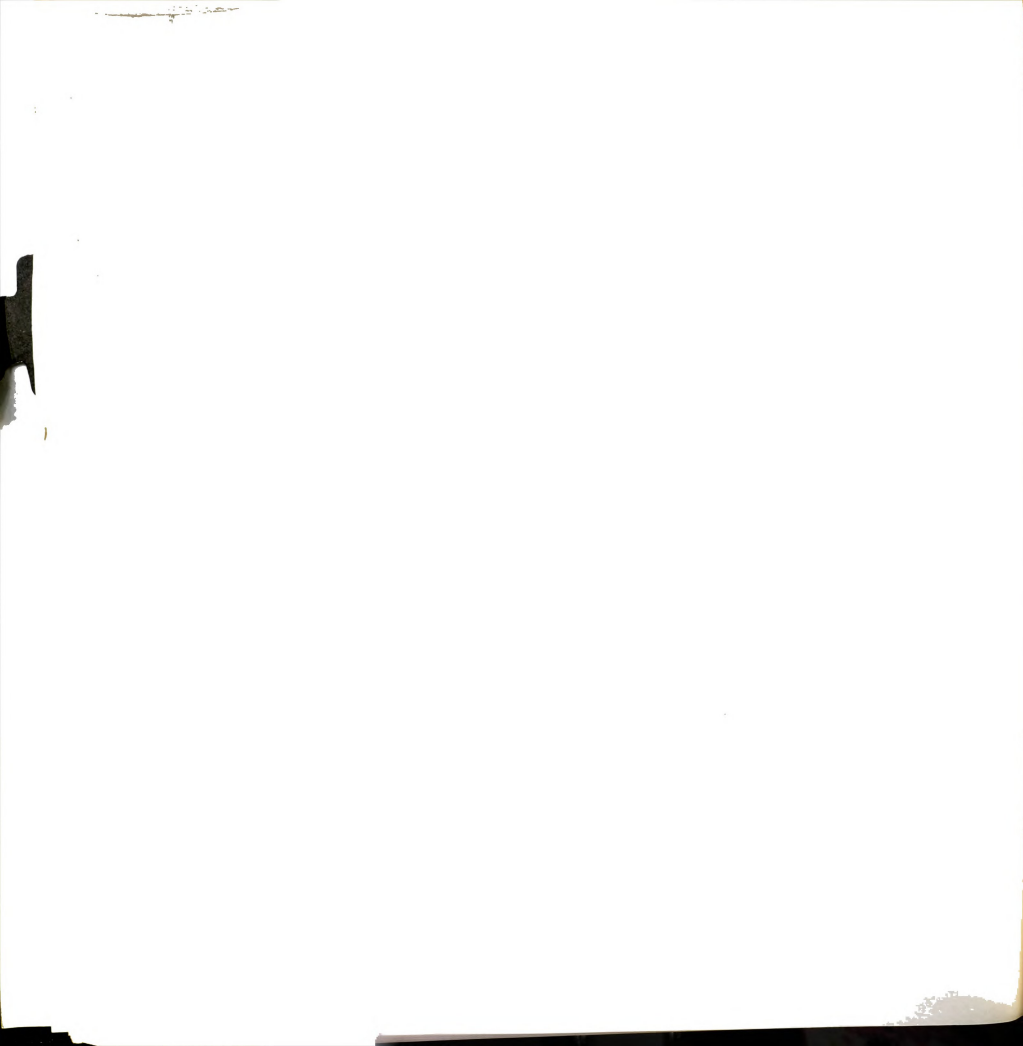


Table E.11

Variables Significantly Related to Goal Groups (t tests) (Part A)

Goal Groups and Variables	Primary Goal Group Mean,* (S.D.), and Sample Size	Tertiary Goal Group Mean,* (S.D.), and Sample Size	Level of Significance (p less than)
<u>A. Continuity Goal Groups</u>			
1. Percent of patients with primarily psychological or psychosomatic problems.	3.36 (1.03) N=11	2.50 (.53) N=10	.025
2. Percent of patients seen three or more times.	4.17 (1.72) N=6	2.00 (.93) N=8	.005
3. Number of half-days per week each student spends in the clinic.	3.00 (2.79) N=10	6.27 (3.10) N=11	.025
4. Number of weeks the typical student spends in the program.	4.91 (3.36) N=11	2.46 (.93) N=11	.025
<u>B. Clinical Goal Groups</u>			
1. Percent of patients with problems not previously diagnosed.	3.92 (1.44) N=13	3.15 (1.04) N=20	.05
2. Willingness of faculty to teach in the clinic.	3.47 (1.19) N=15	4.20 (.83) N=20	.025

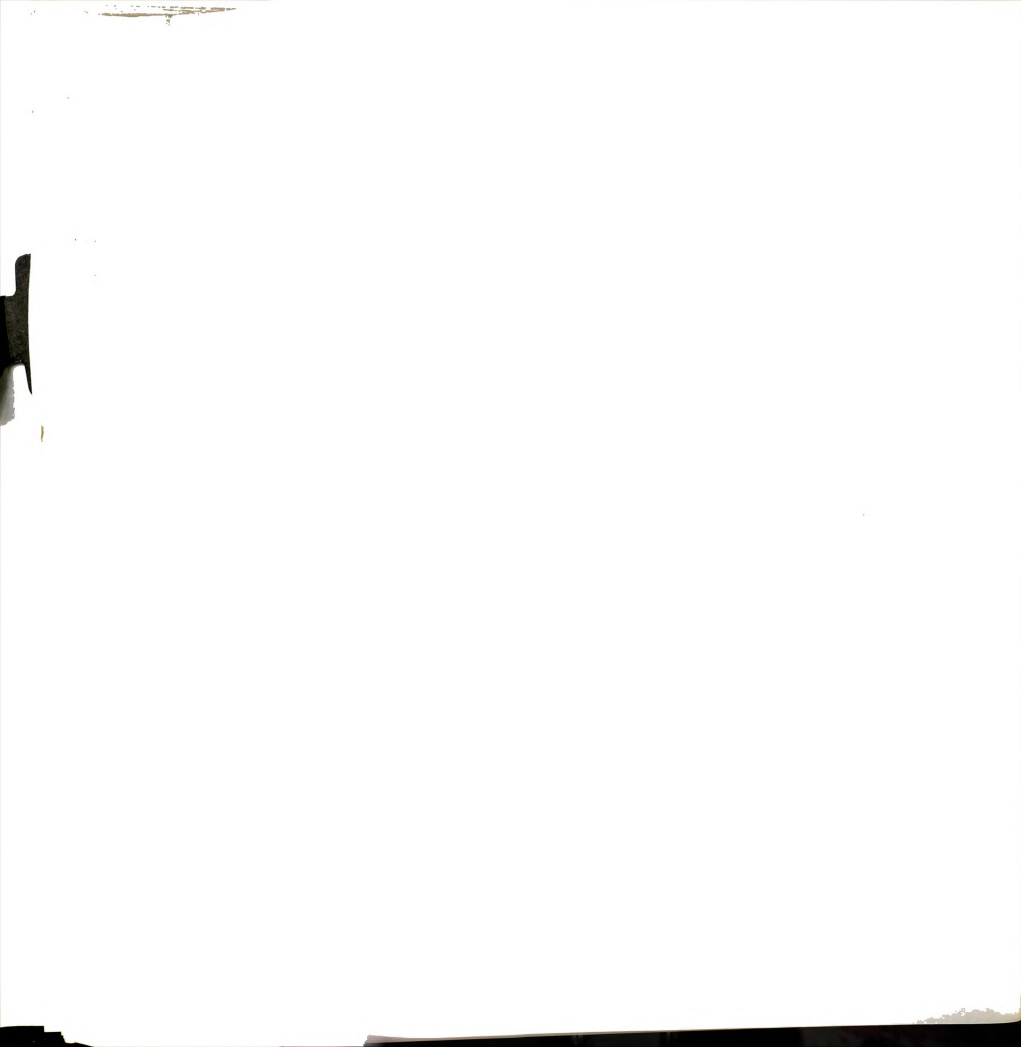


Table E.11 (continued)

<u>Goal Groups and Variables</u>	<u>Primary Goal Group Mean,* (S.D.), and Sample Size</u>	<u>Tertiary Goal Group Mean,* (S.D.), and Sample Size</u>	<u>Level of Significance (p less than)</u>
3. Student-faculty interaction time per patient.	3.33 (1.95) N=15	1.65 (.88) N=20	.005
4. Percent of conferences organized around psychological, psychosomatic, environmental, or clinical practice problems.	1.79 (1.97) N=14	3.32 (2.60) N=19	.05
<u>C. Practical Goal Groups</u>			
1. Percent of patients over age 60.	2.50 (1.20) N=18	3.13 (.74) N=14	.05
2. Willingness of faculty to teach in the clinic.	3.90 (.94) N=21	3.31 (1.08) N=16	.05
3. Student-faculty interaction time per patient.	1.55 (.69) N=20	3.00 (1.93) N=16	.005
4. Student time per new patient spent in writing the medical record.	21.58 (9.58) N=19	33.75 (20.62) N=16	.025

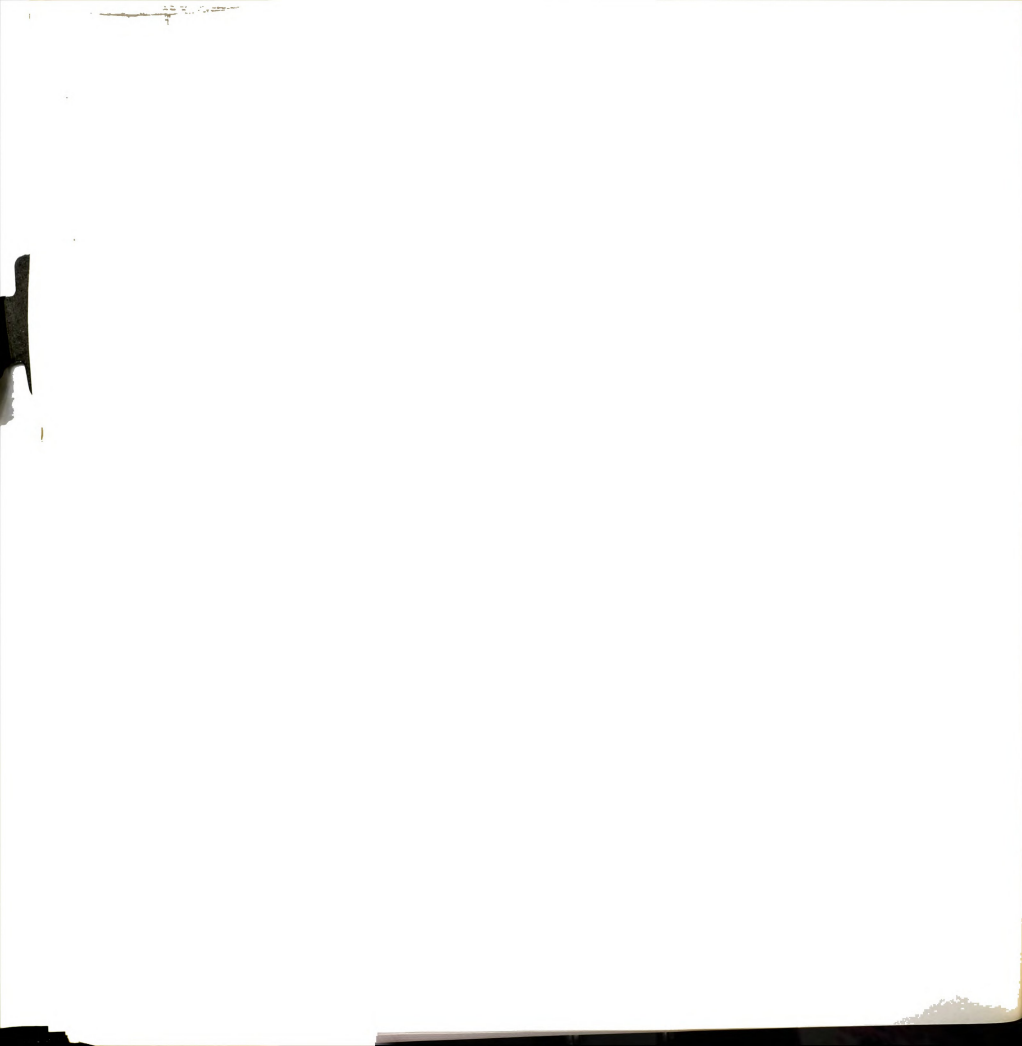


Table E.11 (continued)

Goal Groups and Variables	Primary Goal Group Mean,* (S.D.), and Sample Size	Tertiary Goal Group Mean,* (S.D.), and Sample Size	Level of Significance (p less than)
5. Number of patients seen per student during program.	3.53 (2.46) N=19	2.00 (1.25) N=15	.025
6. Percent of conferences organized around psychological, psychosomatic, environmental, or clinical practice problems.	2.60 (2.69) N=19	1.14 (1.23) N=14	.05

*Means and standard deviations are in code units.

Code units for different variables are as follows:

(a) Variables A1, 2, B1, 2, 4, and C1.
Code 1 2 3 4 5 6 7
Percent 0% 1-20% 21-40% 41-60% 61-80% 81-99% 100%

(b) Variable A3 - Coded as actual number.

(c) Variable A4.

Code 1 2 3 4 5 6 7 8 9
Weeks 0-3 4-6 7-9 10-12 13-15 16-18 19-21 22-24 25+

(d) Variable B2 and C2.

Teach in clinic only because it is required = 1; Willing but not eager = 3; Extremely eager and enthusiastic = 5.

(e) Variable B3.

Actual number of minutes coded to the nearest ten minutes, responses greater than 90 minutes coded as 90 minutes.



Table E.12

Variables Significantly Related to Goal Groups
(Chi-square test) (Part B)

<u>Variable</u>	<u>Number of Programs</u>		<u>Level of Significance (p less than)</u>
	<u>Primary Clinical Goal Group</u>	<u>Tertiary Clinical Goal Group</u>	
Patients are: adults	11	7	
adults and children	2	11	.02

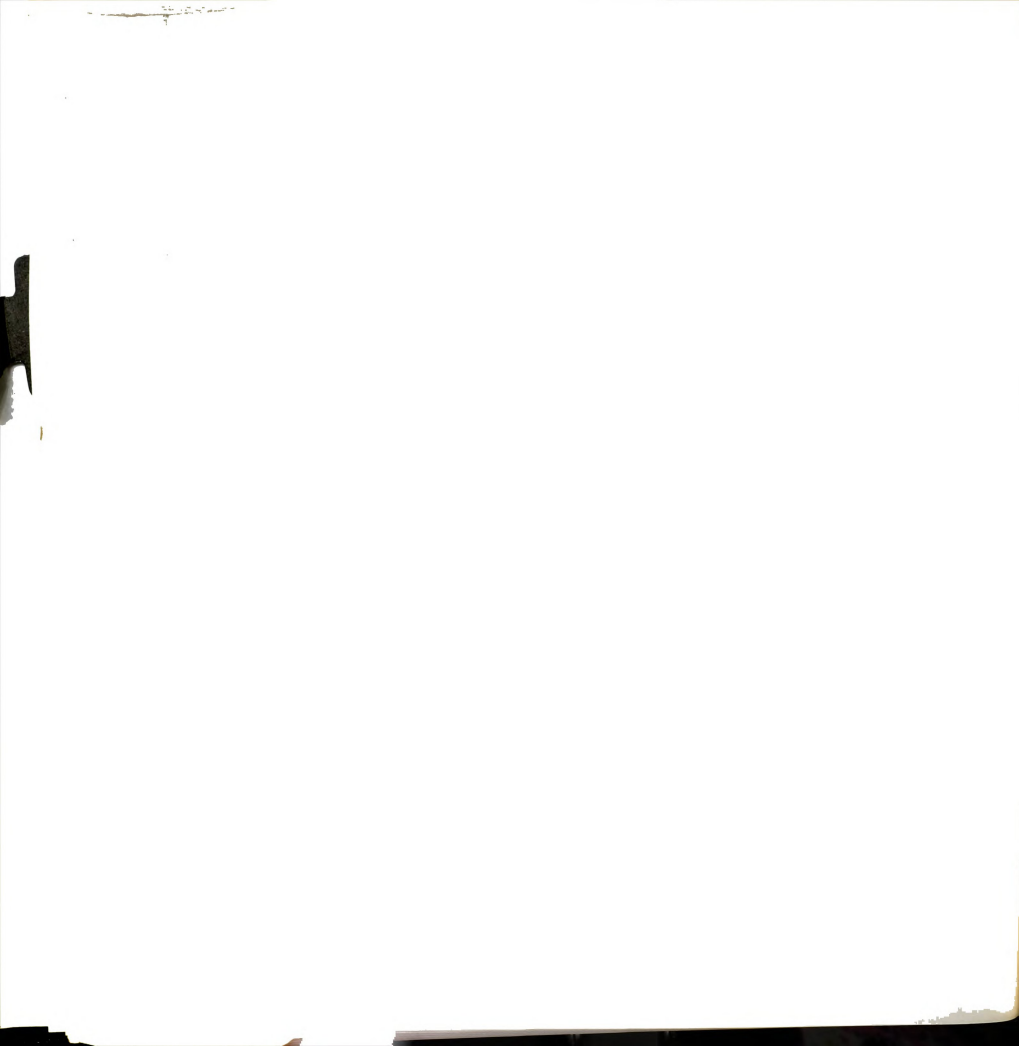


Table E.13

Chi-square Analyses of Numbers of Clinic Programs in Goal Groups
by Faculty Success Groups Matrices

Goal Groups	Faculty Success Groups			Results
	Low	Middle	High	
A. Primary Goal Groups				
1. Continuity	3	5	3	Chi-square = 4.98
2. Clinical	7	2	6	df = 4
3. Practical	6	10	5	p less than .30
B. Tertiary Goal Groups				
1. Continuity	4	3	4	Chi-square = 6.20
2. Clinical	4	11	5	df = 4
3. Practical	8	3	5	p less than .20



Table E.14

Comparison of High and Low Faculty Success Groups (FSG)
on Selected Variables (t tests)

Variable	High FSG Mean,* (S.D.), and Sample Size	Low FSG Mean,* (S.D.), and Sample Size	Level of Significance (p less than)
1. Percent of patients over age 60.	2.77 (.73) N=13	3.43 (1.08) N=12	.05
2. Willingness of faculty to teach in the clinic.	4.29 (.99) N=14	3.06 (.77) N=16	.0005
3. Percent of conferences organized around diseases or medical prob- lems.	2.77 (2.24) N=13	1.29 (2.09) N=14	.05
4. Number of hours per week each student spends in the clinic.	6.71 (2.55) N=14	4.38 (3.20) N=16	.025

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*Means and standard deviations are in code units.

Code units for different variables are as follows:

(a) Variables 1 and 3:

Code	1	2	3	4	5	6	7
Percent	0%	1-20%	21-40%	41-60%	61-80%	81-99%	100%

(b) Variable 2:

Teach in clinic only because it is required = 1; Willing but not eager = 3; Extremely eager and enthusiastic = 5.

(c) Variable 4:

Code	1	2	3	4	5	6	7	8	9
Hrs/wk	0-4	5-8	9-12	13-16	17-20	21-24	25-28	29-32	33+

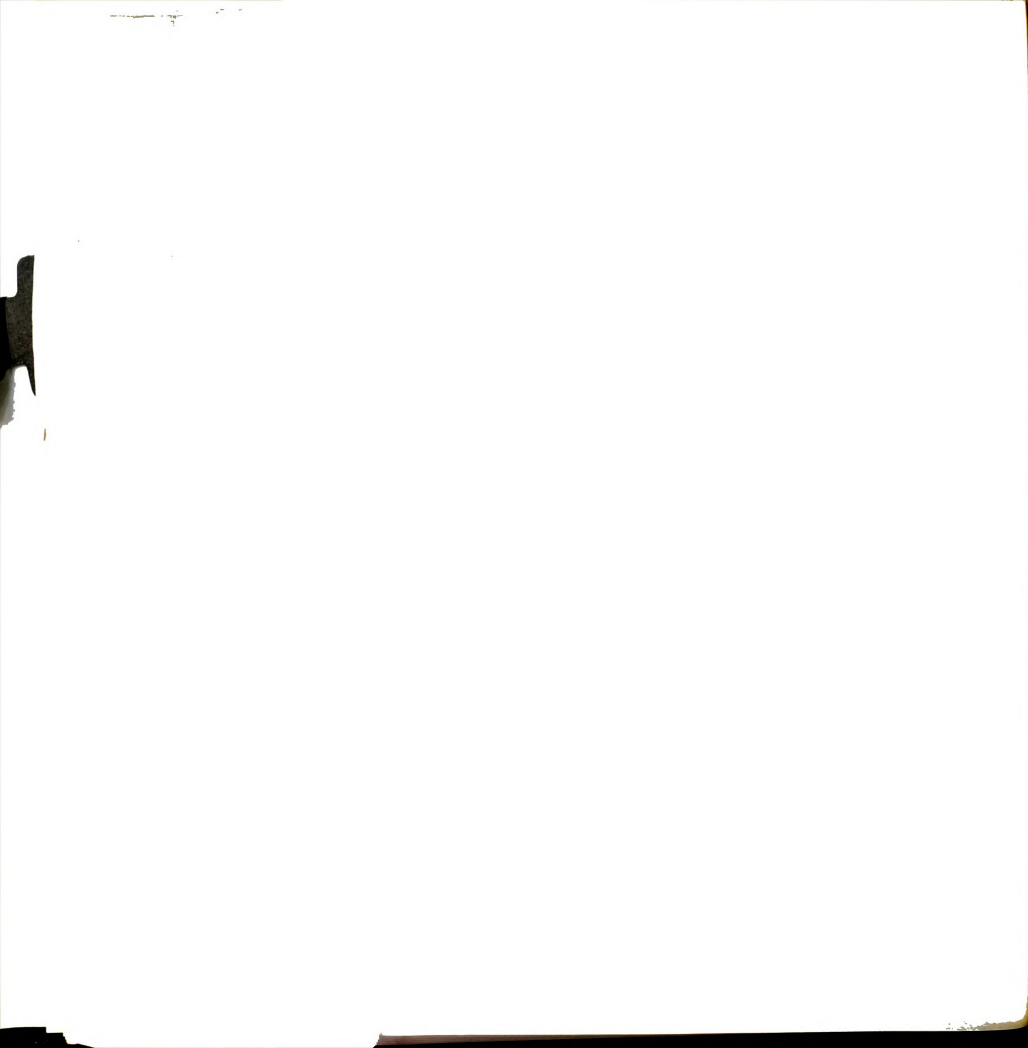


Table E.15

Stepwise Multiple Regression Analysis of All Clinic
Programs on the Rating of Faculty Willingness
to Participate (N = 44)

<u>Variable</u>	<u>Direction*</u>	<u>Percent of Variance Accounted For</u>	<u>Level of Significance (p less than)</u>
1. Presence of conferences.	+	6.2%	.10
2. Student's hours/ week in the clinic.	+	6.3%	.09
3. Required, selective, or elective program.**	+	4.0%	.18
4. Ranking of Goal: Provide students with experience to assist in career choice decisions.***	+	1.5%	.40
Total of the four variables.		18.0%	.095

*Indicates the directionality of the relationship between the variable listed and the rating of faculty willingness to participate in the program.

**Coded as: Required = 1; Selective = 2; Elective = 3.

***Top ranking = 9; . . . ; Unranked = 0.

Table E.16

Chi-square Analysis of Numbers of Preceptorship
Programs in the Goal Groups by
Educational Groups Matrix

<u>Goal Groups</u>	<u>Educational Groups</u>		<u>Results</u>
	<u>Low</u>	<u>High</u>	
1. Continuity	5	4	Chi-square = 1.03 df = 1
2. Practical	4	8	p less than .30

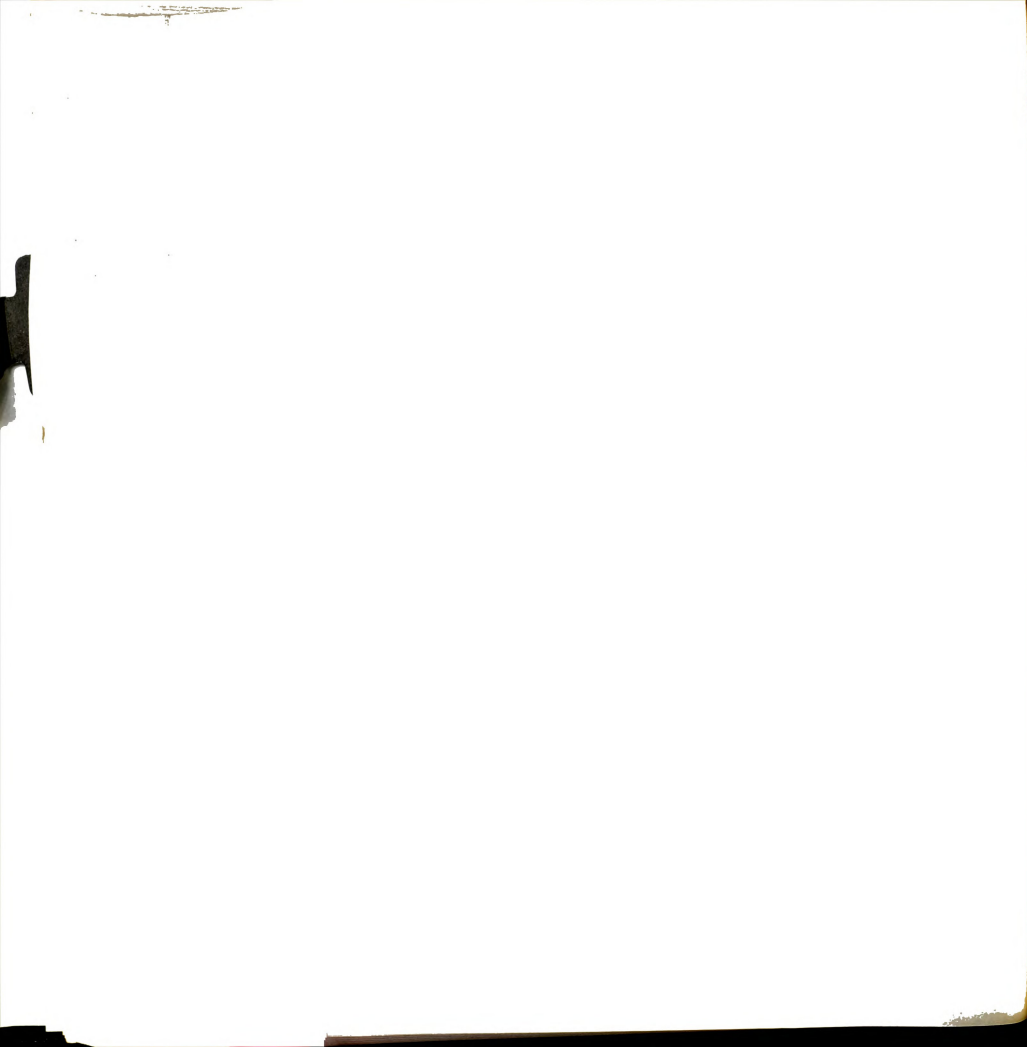


Table E.17

Tests of Hypotheses

<u>Research Hypothesis</u>	<u>Statistical Test Used</u>	<u>Results</u>
1. Faculty ratings of educational value more closely approximate student ratings of student enjoyment than student ratings of educational value.	Test of significant difference between two correlation coefficients.	$r_1 = .031$ Direction opposite to that predicted. $r_2 = .063$ $n = 23$ Fail to reject H_0 .
2. Students planning to enter primary care fields (general practice, family practice, internal medicine, or pediatrics) rate clinic programs as being of higher educational value than do students planning to enter other medical fields.	t-test of difference between means (independent samples, one-tailed test).	$\bar{x}_1 = 4.33$ $s_1 = 1.55$ $n = 184$ $\bar{x}_2 = 3.94$ $s_2 = 1.50$ $n = 123$ $t_{305} = 2.197$ p less than .025 Reject H_0
3. Selective and elective clinic programs are rated higher by students than required programs on both educational value and student enjoyment.	Analysis of variance.	$n = 22$ $F = .9544$ p less than .40 Fail to reject H_0
4. Program success is not uniform across goal groups for both clinic programs and preceptorship programs.	Chi-square analysis of goal groups and success (educational) groups for clinic and preceptorship programs.	(a) Primary Goal Groups - Chi-square = 5.3 df = 4 p less than .30; Fail to reject H_0 . (b) Tertiary Goal Groups - Chi-square = 6.3 df = 4 p less than .20; Fail to reject H_0 . (c) Preceptorship Goal Groups - Chi-square = 2.44 df = 2 p less than .20; Fail to reject H_0 .



Table E.17 (continued)

Research Hypothesis	Statistical Test Used	Results
5. Faculty ratings of the success of clinic programs (Faculty Success Index) are:		
a. Positively correlated with student participation in patient care decisions.	Significance of a correlation coefficient.	$r = .05$ $n = 42$ Fail to reject H_0 .
b. Positively correlated with the percent of patients whose primary problems have not been previously diagnosed.	Significance of a correlation coefficient.	$r = .11$ $n = 42$ Fail to reject H_0 .
c. Negatively correlated with the percent of patients over age 60.	Significance of a correlation coefficient.	$r = -.25$ $n = 42$ Fail to reject H_0 .
d. Negatively correlated with the percent of patients who are medically indigent.	Significance of a correlation coefficient.	$r = -.07$ $n = 42$ Fail to reject H_0 .
e. Negatively correlated with the number of students per faculty member in the clinic.	Significance of a correlation coefficient.	$r = -.13$ $n = 42$ Fail to reject H_0 .
f. Positively correlated with the percent of participating faculty who are full-time faculty.	Significance of a correlation coefficient.	$r = .31$ $n = 42$ p less than .05 Reject H_0 .



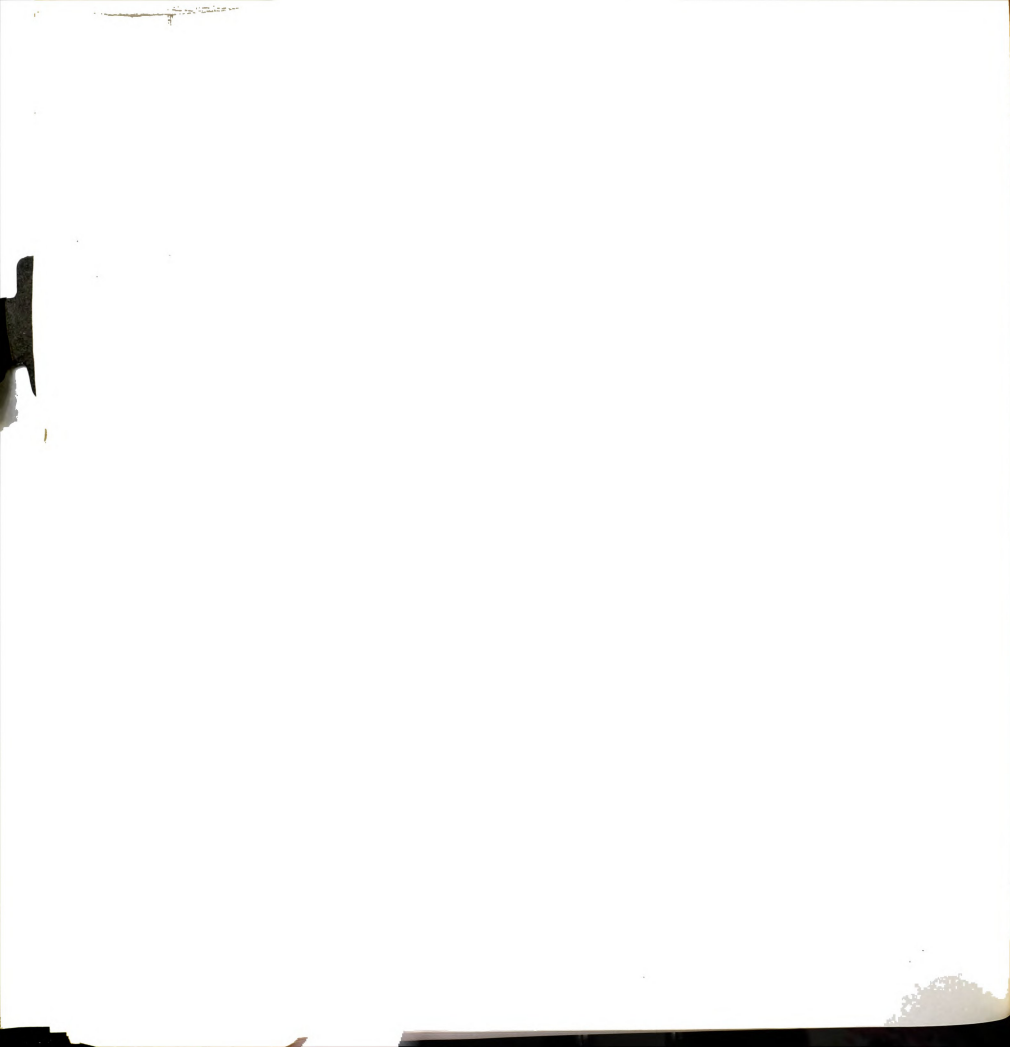
Table E.17 (continued)

<u>Research Hypothesis</u>	<u>Statistical Test Used</u>	<u>Results</u>
g. Positively correlated with the seniority of participating faculty.	Significance of a correlation coefficient.	$r = .09$ $n = 42$ Fail to reject H_0 .
h. Positively correlated with the willingness of faculty to teach in the clinic.	Significance of a correlation coefficient.	$r = .48$ $n = 42$ p less than .01 Reject H_0 .
i. Positively correlated with the percent of students in the program who are fourth year students.	Significance of a correlation coefficient.	$r = .16$ $n = 42$ Fail to reject H_0 .
j. Negatively correlated with the percent of patients with problems which are primarily psychological or psychosomatic.	Significance of a correlation coefficient.	$r = -.12$ $n = 42$ Fail to reject H_0 .
k. Negatively correlated with the percent of patients failing to keep appointments or to cancel the appointments.	Significance of a correlation coefficient.	$r = -.22$ $n = 42$ Fail to reject H_0 .

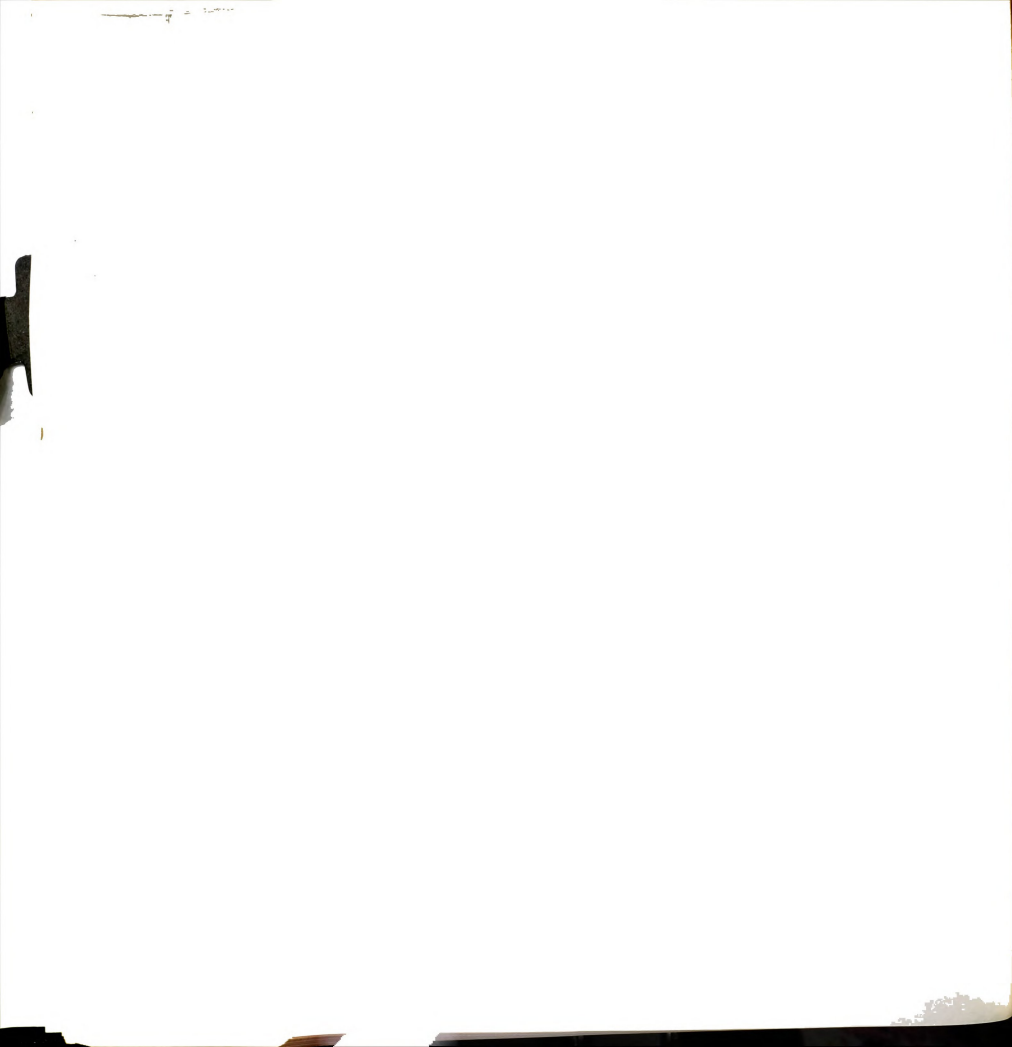


Table E.17 (continued)

Research Hypothesis	Statistical Test Used	Results
1. Positively correlated with the presence of conferences.	Significance of a correlation coefficient.	$r = .23$ $n = 42$ Fail to reject H_0 .
m. Higher if the primary purpose of the clinic is to provide patient care or graduate education rather than to teach medical students.	t-test of difference between means (independent samples, one-tailed test).	$\bar{X}_1 = 5.13$ $s_1^2 = 7.71$ $n = 18$ $\bar{X}_2 = 5.44$ $s_2^2 = 4.89$ $n = 27$ $t_{43} = .419$ p less than .35 Fail to reject H_0 .



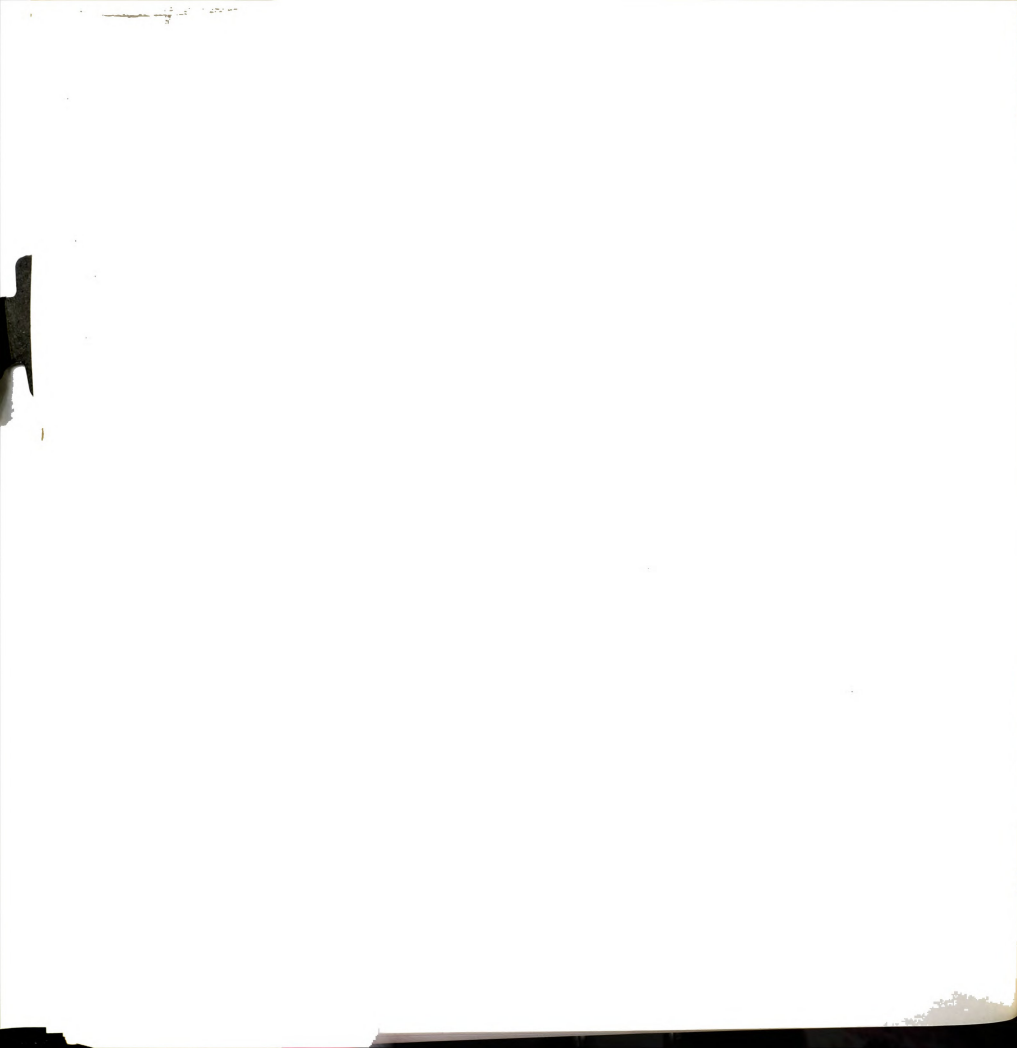
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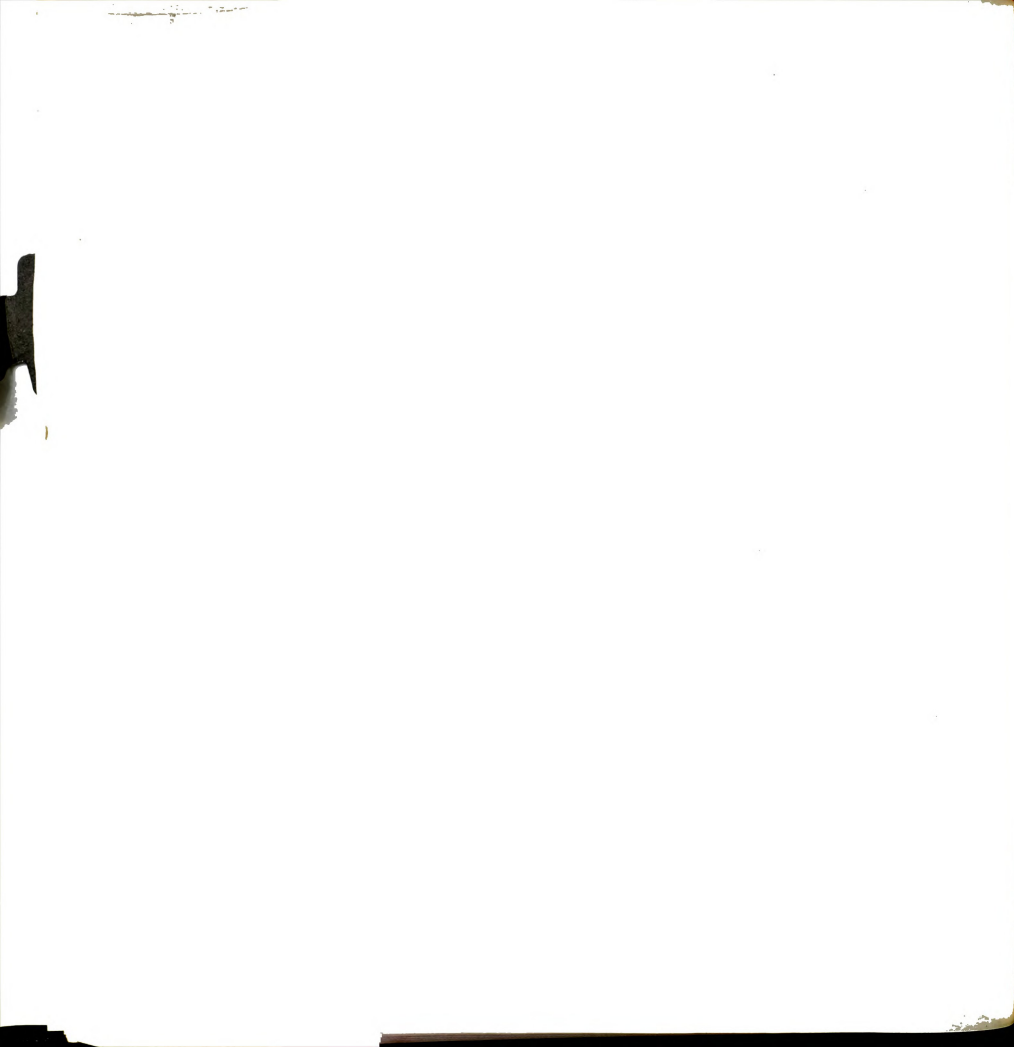
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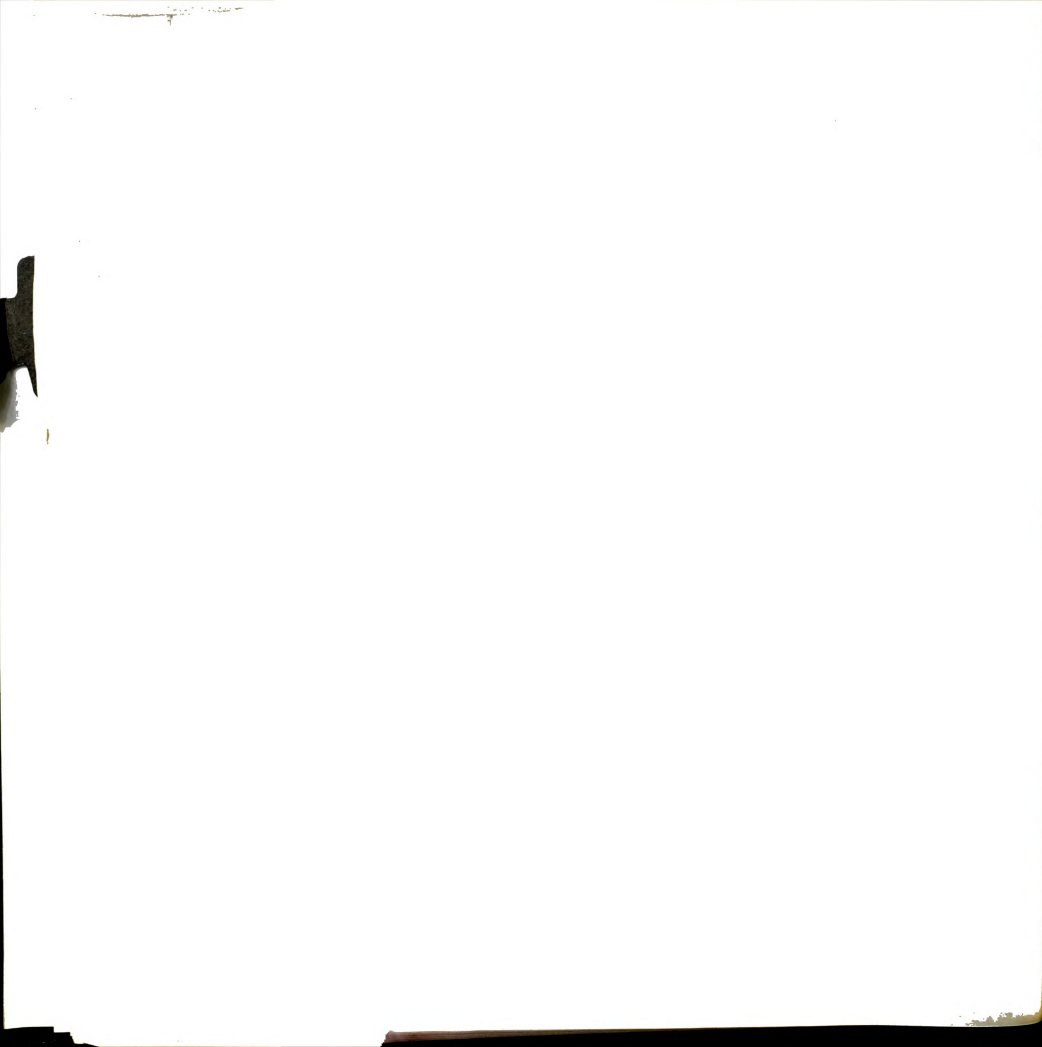
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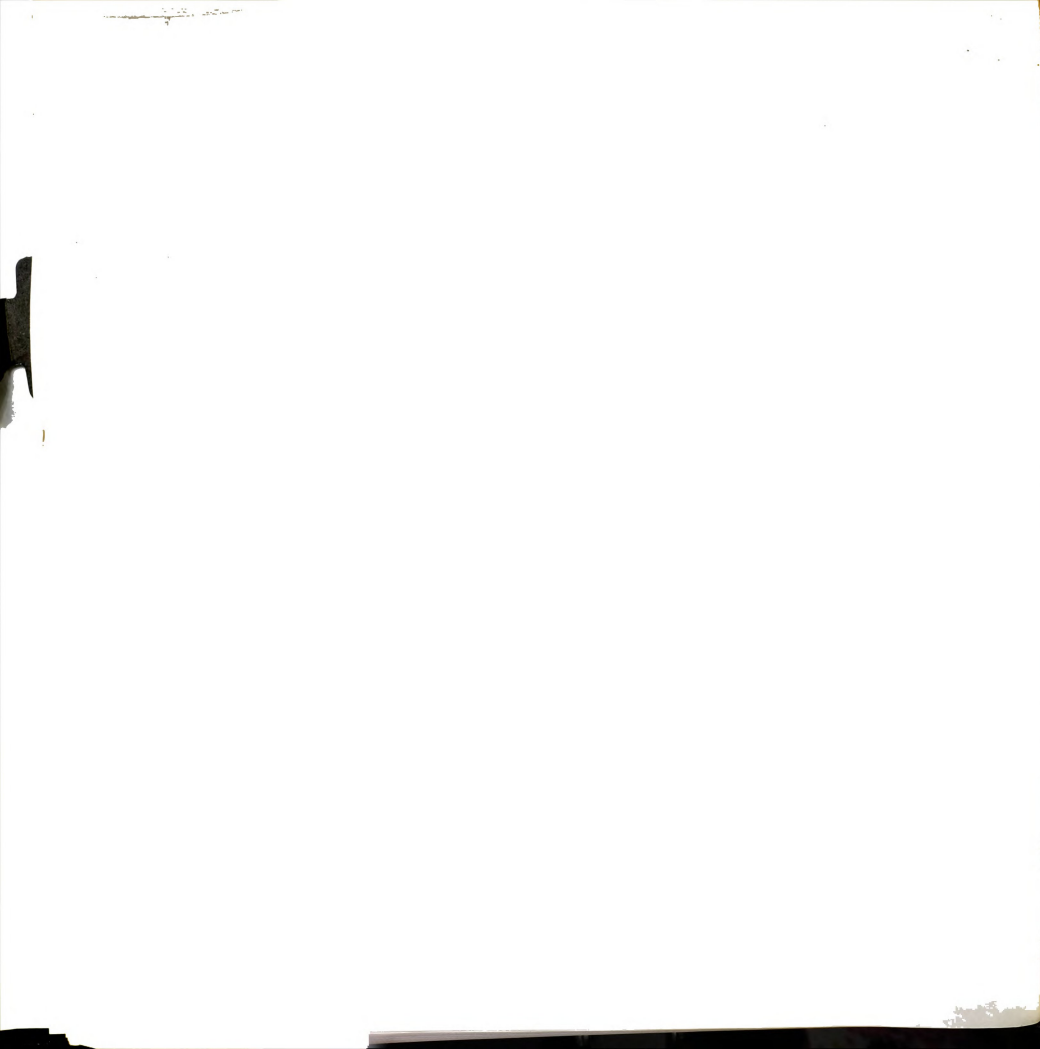
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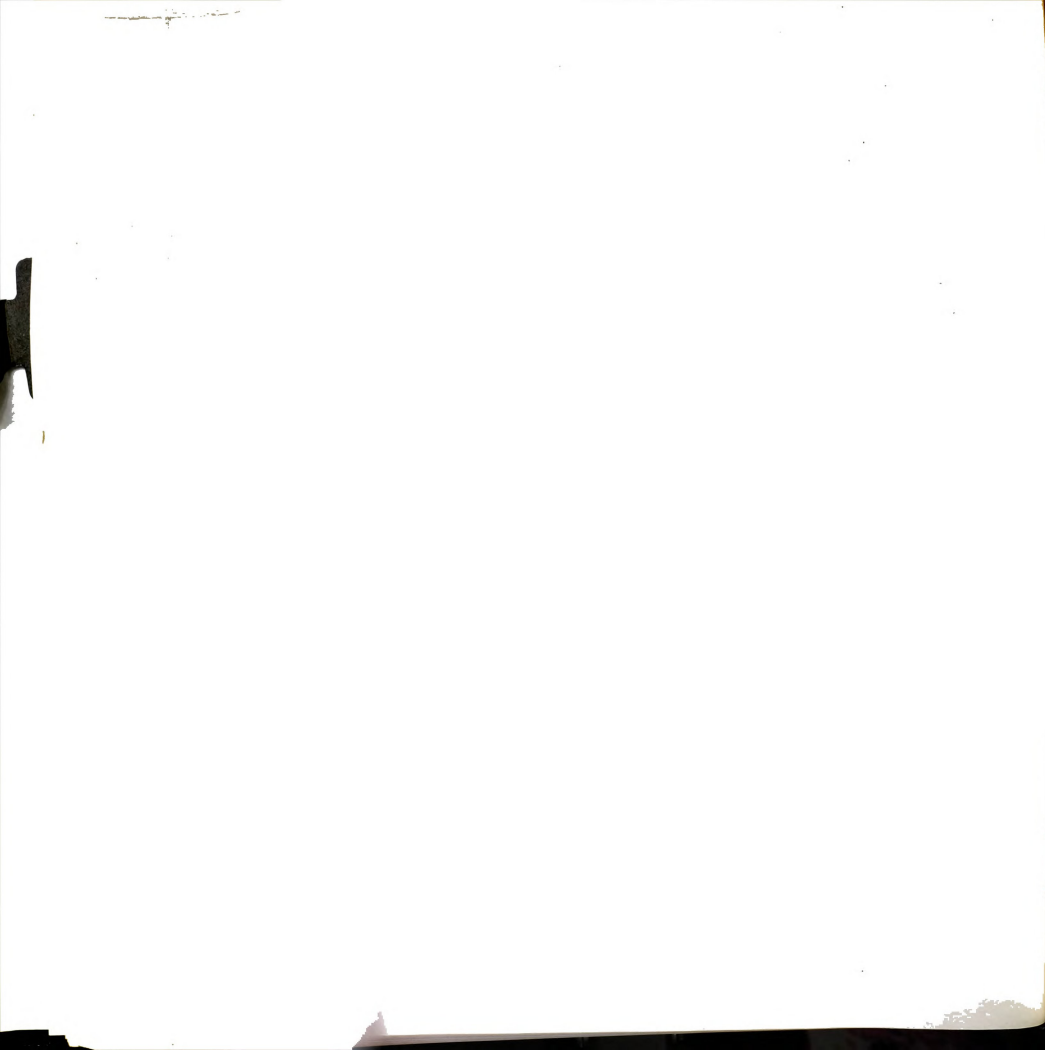
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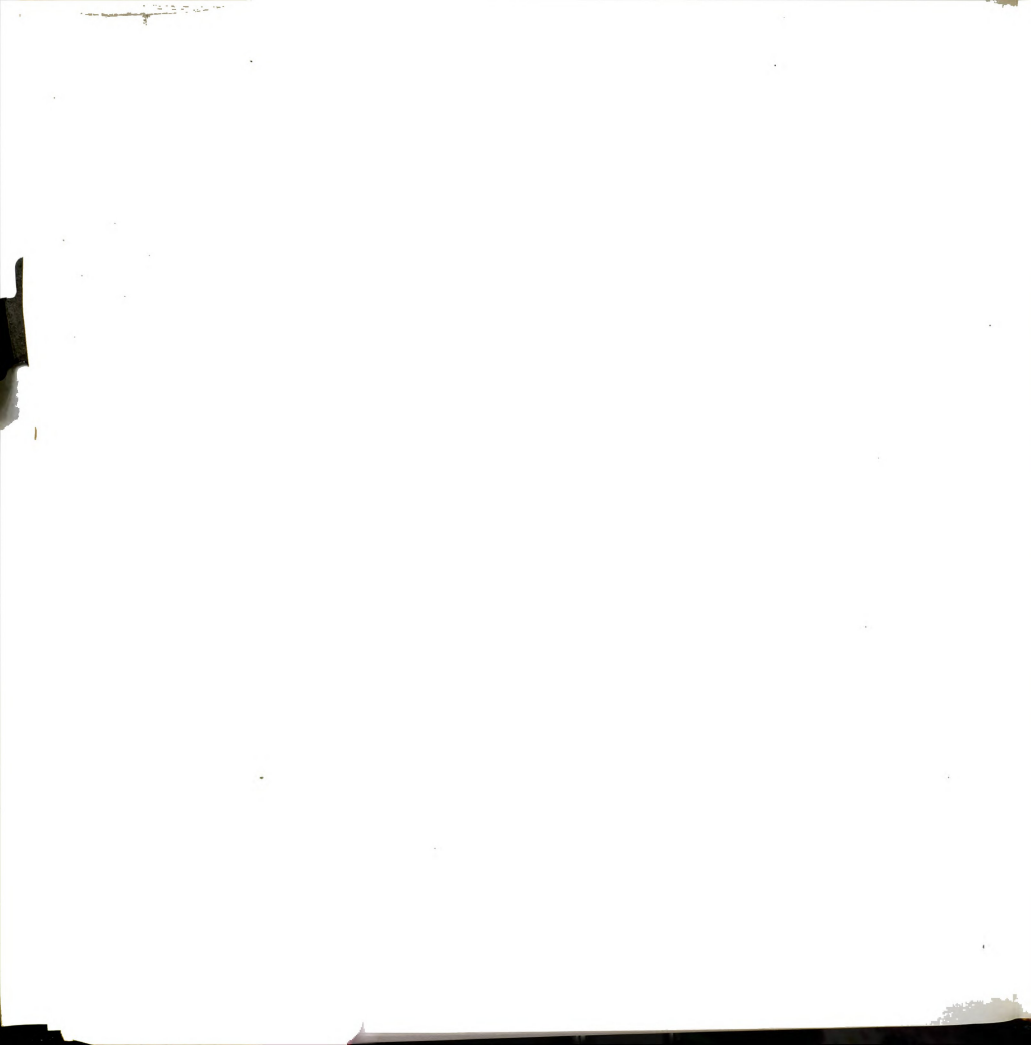
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