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AN ASSESSMENT OF THE QUALITY OF CARE

IN OCCUPATIONAL THERAPY

IN SELECTED MICHIGAN HOSPITALS

by

Margaret Mary Kirchman

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Education)
in The University of Michigan
1973

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CHAPTER I

INTRODUCTION

Social, political and economic forces are prompting the assessment of the quality of care in the health delivery system. Health care as a right has recently become a major social issue. Society is beginning to demand good health care, the government is exerting its influence on quality control, and the purchaser of health services expects reasonable assurances that good care is being provided.

Health care systems combine inputs of biomedical knowledge, specialized facilities and equipment, as well as health manpower, to provide delivery systems of health care through community and regional institutions with the best utilization of all resources to every consumer (Kissick, 1970). There is a growing need and interest among the health professions to define and assess the quality of service being offered. Recognizing the right of the consumer to high quality health care, occupational therapy must make certain that the full benefits of professional knowledge are being applied effectively to the needs of the consumer.

An assessment of the quality of care is important in order to study the impact of occupational therapy programs, to determine the needs of these programs and to postulate changes necessary to improve them. Occupational therapy is a service profession. Standards for education and practice not only have an effect on the quality of care offered but are actually a reflection of quality care offered by the recognized leaders in the profession. Such an assessment, then, becomes relevant both to

practice and to education in that it has implications for judging the effectiveness of therapist preparation as well as the appropriateness of the mode and the pattern for delivery of this particular health service.

It was only natural that occupational therapy as a service oriented profession should be primarily concerned with service in the first half century of its existence. Now, however, it is appropriate to evaluate that service to determine whether the forces that shaped the profession have allowed the provision of quality care.

Emphasis in this study is placed on health care rather than on medical care. In contrast to medical care which concentrates on the arrest of a pathological process, early diagnosis and physical rehabilitation when indicated, health care includes preventive supervision, patient care, medical care, and social rehabilitation or the maintenance or restoration of the individual to his maximum level of social functioning (De Geyndt, 1970). Health care is concerned with the quality of life in general, and takes into account social as well as physical health factors.

Quality in medical care can be identified by the evaluation of structure, process, and outcome (Donabedian, 1969). Structure deals with physical facilities and equipment, administrative organization, and qualifications of health professionals. Process includes the management or care of the patients/clients. Outcome refers to end results in terms of health, performance, and satisfaction. A further differentiation of process was made by Spelbring (1971) who felt that process in occupational therapy would include components of patient/client evaluation, treatment or program plan, the implementation of the plan, the reevaluation, and the discharge plan. Criteria selected in a research study, which is designed

to assess the quality of care, implicitly define quality operationally. Quality is evaluated by quantifying pre-established qualifications.

It is generally accepted that clinical practice in health care programs is of higher quality in facilities in which there was a teaching commitment than in nonteaching ones. Several studies have substantiated this hypothesis (Rosenfeld, 1957, Sparling, 1962, Trussell, Moorehead, & Ehrlich, 1962, Moorehead and Donaldson, 1964, Stapleton and Zwerneman, 1965).

Donabedian's frame of reference to quality using structure, process, and outcome has been adapted in this study to examine the quality of occupational therapy practice in selected Michigan hospitals. The quality of care in educational settings is compared with that in noneducational settings. In this study, educational settings refer to hospitals providing required clinical experience to occupational therapy students. The term educational settings is used synonymously with teaching hospitals. Detailed criteria for components of process and outcome provide measurable items in the assessment of the quality of care. The Therapist Performance Index (TPI), a ratio of total process points scored divided by the total number of possible points, provides an overall indication of quality.

There is a need in occupational therapy, as in all health professions, for developing methods of assessing quality if programs are to be objectively measured against existing standards and expectations of quality. The purpose of this study is to develop and test a methodology for assessing the quality of occupational therapy. This study should contribute information to verify the placement of occupational therapy personnel in traditional hospital and rehabilitation settings, or

to indicate the need for new placements which might result in more effective and efficient service.

The objectives of the study are as follows:

1. to compare the quality of occupational therapy practice, as measured by process, between educational and noneducational clinical settings by:
   a. comparing each of the five components of process
   b. comparing total process
   c. comparing each item within each component of process
   d. comparing the Therapist Performance Index (TPI) on total process
2. to compare the quality of occupational therapy practice, as measured by process, within both educational and noneducational clinical settings by:
   a. comparing each of the five components of process
   b. comparing total process
3. to compare the quality of occupational therapy practice, as measured by outcome, between educational and noneducational settings by:
   a. comparing ratings of Activities of Daily Living assessments
   b. comparing ratings of Job and Homemaking assessments
   c. comparing ratings of Social Objectives assessments

A rationale for determining the objectives of this study will be found in the next chapter through the review of the literature.

CHAPTER II

REVIEW OF THE LITERATURE

This chapter summarizes the literature related to assessment reflecting structure, process, and outcome. It is divided into the following sections: definitions, standards, methods of evaluation, continuing competency and reports of other studies. Since the assessment of program quality is relatively new in occupational therapy, literature from other fields is included when relevant.

Definitions

The problem of defining quality is to admit its elusiveness. Lee and Jones (1933) are credited with the classical definition of quality, describing good medical care as the kind of medicine practiced and taught by the recognized leaders of the medical profession at a given time or period of social, cultural and professional development in a group of people. Donabedian (1966) found the quality of care remarkably hard to define and felt that the criteria of quality are no more than value judgments that are applied to several aspects, properties, ingredients or dimensions of a process called medical care. He concurred with Lee and Jones in defining quality as a reflection of values and goals current in the medical care system and in the larger society of which it is a part. The evaluation of quality in medical care has been identified through three major approaches: the evaluation of structure,

process, and outcome or end results. These three approaches are equally appropriate in evaluating occupational therapy (Spelbring, 1971).

Appraisal of structure involves the evaluation of the settings and instrumentalities for the provision of care (Donabedian, 1969, Hefferin and Katz, 1971). Structural appraisal includes the physical aspects of facilities and equipment, the characteristics of the administrative organization and the qualifications of health professionals. It also includes the properties of the resources used to provide care and the manner in which they are organized. Appraisal of structure is based on two assumptions: (1) that better care is more likely to be provided when the quality of the staff, physical facilities and organization is high, and (2) that we can identify "good" in terms of staff, physical structure and formal organization. In other words, given good structural properties, it is expected that good care is more likely to occur (Donabedian, 1969, Lewis, 1973). However, measuring the quality of care provided to patients in an institution simply by examining its organizational and physical characteristics leaves something to be desired. In spite of these limitations, structural and organizational criteria are the most widely used measures of the quality of care provided by health services in the United States today (Lewis, 1973).

The definition of assessment of process has varied approaches. Hefferin and Katz (1971) make process synonymous with effort and define it as the technics of application and appropriateness of methods of treatment. Donabedian (1969) defines it as the evaluation of the management of patients by physicians and other health professionals. The criterion usually used is the degree to which the management of patients conforms with the standards and expectations of the profession. For

this purpose, normative standards are based on what is considered to be ideal or good practice as formulated by recognized leaders in the profession, while empirical standards, equally admissible, are inferred from patterns of care observed in actual practice. Evaluation of process, in its use for judging quality, assumes that health care is useful in maintaining or promoting health, and that particular elements and aspects of care are known to be specifically related to health outcome or end results. A further definition of process was made by Spelbring (1971) who felt that process would include the patient/client evaluation, treatment or program plan, the implementation of the plan, the reevaluation and discharge plan in occupational therapy.

Sheps (1955) defined the process approach to quality as using indices to reflect one or more elements of performance. Indices were defined as one or a set of measures used to indirectly measure the incidence of a characteristic. Its quality cannot be measured quantitatively, unless the method of alloting a certain number of points arbitrarily to a qualitative judgment is used. The use of these performance indices depends on an assumption that they are valid for an assessment of quality. This presumes that each index does measure an element of patient care and that one or a number of these indices are highly correlated with the intangibles of care.

He saw most of the work in the appraisal of hospital quality related to correcting abuses, setting minimum standards and stimulating improvements in quality, with program evaluation just beginning to be explored. With techniques varying with the purposes of the particular study, quality of care can be evaluated through the use of a multidimensional approach, resulting in a profile of a hospital. The primary

basis of the appraisal can be the use of one or a combination of: examinations for prerequisites for good care, indices intended to measure elements of performance, indices to measure the effect of care by results obtained and qualitative clinical judgments (Sheps, 1969).

A different approach to the assessment of outcome is the evaluation of end results as measured in terms of health and satisfaction (Donabedian, 1969). This evaluation's relation to quality depends on the broad fundamental social and professional agreement on what results are desirable, and also on the assumption that good results are brought about by good care. A more traditional definition by Hefferin and Katz (1971) describes outcomes as the results of effectiveness of similar or alternative prescribed courses of treatment. They see the large majority of evaluative reports in rehabilitation literature as tending to be focused on the visible or measurable outcomes of program efforts on the clients.

DeGeyndt (1970) added the assessment of content and impact to the above methods. Concern with the content of care serves two purposes: educational, including self-appraisal and self-discipline, and quality control. The impact approach centers on the impact of health care and of the health services system on the life of the individual and on society in general.

When Donabedian (1968) defined quality as the evaluative dimension of the elements and interaction in the medical care process, he referred to a judgment of what is good or bad. The judgment of goodness derives from the standards of management acceptable to the leaders of the profession at any given time. These standards apply to particular situations and must be specified in almost endless detail. The standards

reflect current knowledge and orientations and are subject to change as knowledge advances and service delivery systems improve.

Third parties, insurance agencies, governmental programs, organized labor and industry, are all concerned with the quantity and quality of care they purchase or provide. Traditionally, the medical profession has controlled quality by (1) controlling entry into the profession, (2) controlling education and training so as to assure the acquisition of knowledge and skill and the internalization of appropriate values, (3) having licensure and certification procedures to confirm the competence of the finished product, and (4) by providing opportunities for continuing education. The control of quality through formal supervision and review is fairly recent and fairly foreign in professional life.

There are at least two prerequisites to the development of mechanisms that use evaluation by peers: a certain degree of organization of practice and considerable individual professional autonomy in the conduct of care. Donabedian (1969) felt that the validity of assessments of care rests on agreed-upon professional judgment, and that reasonably reliable judgments can be obtained through the audit of medical records. It is also claimed that reliability is improved by the prior specification of criteria and standards. A process study asks if the patient received good care. An outcome study asks what good, if any, has been done. Some outcomes, such as patient attitudes and satisfactions, social restoration, and physical disability and rehabilitation can be difficult to measure.

A well rounded appraisal of quality would probably include concurrent or coordinate assessments of structure, process, and end results, to the extent that each of these is observable and measurable under the constraints inherent in any given setting.

Reibel (1969) felt that one way to promote and define quality health care was by setting standards, and said that licensure, accreditation and certification of health personnel and facilities utilize standards against which to measure the providers of care or the care itself. Standards serve as guidelines by indicating general criteria to be met in order to achieve the goal of licensure, accreditation or certification. They define a certain capacity for quality, not quality itself.

The ultimate responsibility for quality health care rests with the health professions. The standards they set for their members determine the caliber of the services rendered to a much greater extent than any standards externally imposed. Regardless of public pressure, quality care still rests with each health profession. Quality depends on the ideals, the integrity, and the vigilance of all health professions.

This opinion was supported by Noland (1970), who felt that the responsibility of quality health care belongs to and should be totally assumed by the health professions through collective peer review, professional standards and individual competence.

Standards

Standards have long been considered the basic expression of the structure component. Several standards are covered here, drawing attention to their use in establishing criteria for quality through the encouragement of good education and practice. Other uses of standards are mentioned as appropriate.

One of the earliest attempts to establish standards related to practice was Objectives and Functions (1958) compiled by the American Occupational Therapy Association. It described the role of the occupational therapist, and gave a synthesis of treatment objectives by

specialty area for general medicine and surgery, pediatrics, physical disabilities, psychiatry and tuberculosis. Diagnostic studies in occupational therapy are covered for forty major diagnostic areas.

The revised Guidebook for an Accredited Curriculum in Occupational Therapy contained the minimum standards for an accredited curriculum covering organization and administration, faculty and curriculum (1965). The revision was based on the following rationale: (1) to meet the needs of the curriculum which leads to a baccalaureate degree, post-degree certificate or master's degree, (2) to emphasize the importance of increasing course content in neuroanatomy and neurophysiology, (3) to effect a greater emphasis in the study of the behavioral sciences, (4) to increase interest in the development of core courses which would provide the student with adequate skills in fine and applied arts, and (5) to emphasize the need for organized instruction in equally important subjects such as prevocational evaluation and activities of daily living.

The American Medical Association recently adopted the newly revised Essentials of an Accredited Educational Program for the Occupational Therapist (1973) which aimed at the following: (1) to assure the competency of the entry level therapist, (2) to provide a guide for quality education consistent with the professional standards, and (3) to encourage and assist in the development of new educational programs to meet accreditation standards. The Essentials include guidelines for establishment of educational curricula, field work experience, facilities, finances, faculty, students, records, educational programs, organizational administration, and credentialing processes.

A draft of Standards and Evaluative Criteria for the Accreditation of Teacher Education (1967) was meant to be applied to 4 year, 5 year,

or master's level and advanced programs of teacher education. The work of the National Council for Accreditation of Teacher Education, these standards cover components of general studies, professional studies, research, evaluation of instructional programs, faculty, admission to teacher education programs, resources and facilities, and evaluation of graduates in the basic program. Standards for advanced programs include purpose, content, role of research, quality of graduate study, residence requirement, faculty, screening, admission, resources and physical facilities, and evaluation of graduates. Criteria, mainly in question form, present a method for specific evaluation of each standard.

The American Occupational Therapy Association has developed minimum requirements in its Standards for Occupational Therapy Service Programs (1971). They are intended for the use of health administrators and occupational therapy personnel as a guide in the development of their service programs and the assessment of these programs. They were also intended for the use of any other accrediting or inspecting agencies that would be evaluating occupational therapy service programs. Ten standards cover objectives, planning, evaluation, types of service, personnel, facilities and budget, records, reports, supervision and professional development.

Related to the health picture are the Child Welfare League of America Standards for Services of Child Welfare Institutions (1966). Composed of nine sections, they are intended to be goals for continuous improvement of services to children. While not the criteria for accreditation for League membership, they are used as a basis for establishing membership requirements. They represent practices considered most desirable in providing the social services which the community offers out

of its concern for children. These standards cover institution care, total service for child and parents, program for care and treatment, child care work in the institution, casework, social group work, plant and equipment, organization, administration, and community planning.

Another set of standards referring to institutions are Standards for Rehabilitation Facilities and Sheltered Workshops (1967). Accompanied by relatively detailed criteria, these were set up in order that on-site survey teams could evaluate grant programs for training services and workshop improvement. The standards cover organizational and administrative structure, planning and operation of service programs, staff qualifications, client personnel policies and practices, records, public relations, and physical facilities. In addition to serving as a measure of quality, standards help the governing board of the facility and other interested groups in the community to better understand what is required for a sound program. They also serve the purpose of self study and evaluation by the board, administration and staff.

Designed to clarify the role and function of occupational therapy, to increase understanding and appropriate use, and to establish criteria to determine ethical reimbursement for occupational therapy service, the Guidelines for Interpretation of Occupational Therapy in General Practice and Rehabilitation (Task Force, 1970) defined the three levels of registered therapist, certified assistant and occupational therapy aide. The functions of occupational therapy are outlined in terms of evaluation, prevention, restoration and correction, while examples of specific programs are given for ten diagnostic areas.

The Special Interest Group on Psychiatry (1972) defined psychiatric occupational therapy, four levels of personnel, referrals, services,

length of treatment and indication for discontinuation to clarify reimbursable programs in psychiatric occupational therapy. Specific criteria for evaluation, treatment process, partial hospitalization, and aftercare of patients are process oriented.

Set up as a voluntary service to education programs to determine whether standards have been met, the Approval Procedure for Occupational Therapy Assistant Programs (1970) includes well defined stipulations for pre-survey material needed, review material needed during visit, survey visit schedule, survey report, appeals procedure and continued approval.

The Committee on Basic Professional Education of the American Occupational Therapy Association has prepared Standards and Guidelines for an Occupational Therapy Affiliation Program (1971) to provide minimal standards for an affiliation experience. Twenty five standards with accompanying guidelines are delineated related to facilities, philosophy of occupational therapy services, referrals, communication, the affiliation experience, staffing, supervision, administration and professional relationships and the evaluation of the educational experience.

A sister publication to the above standards is Student Affiliations (1971). The American Occupational Therapy Association presented a detailed outline to acquaint the student with opportunities and responsibilities of the clinical affiliation which has been designed to offer an opportunity for the practical application of theoretical and technical knowledge acquired during the academic years. It covered areas of general principles, orientation to the affiliation center, professional and personal adjustment, treatment program, reports, registration and membership.

In relation to patient care, Hoog (1969) felt that the development of written professional standards which clearly state the minimum requirements of patient care is fundamental to the entire concept of quality patient care. The purpose of these standards is to improve and insure the delivery of quality patient care. Record keeping is the only way that has been found to determine objectively whether departmental standards have been satisfied. He felt that departmental administrative procedures must be integrated with, and must support, the quality-control procedures.

Standards for Residential Facilities for the Mentally Retarded (Cromwell, 1972) covering physical and occupational therapy services, were developed by the Accreditation Council for Facilities for the Mentally Retarded of the Joint Commission on Accreditation of Hospitals (JCAH). They included scope of service, method of delivering service, components of service, qualifications of personnel, and organizational and administrative guidelines.

In its Activity Program Services (Cromwell, 1972), JCAH has established standards for psychiatric facilities to include art therapy, dance therapy, music therapy, occupational therapy, and therapeutic recreation. The standards cover organizational plans, written objectives, qualifications of personnel, patient records, physical facilities, staff development, evaluation and research.

The section pertaining to rehabilitation services of the Joint Commission's Standards for Accreditation of Hospitals lists both physical and occupational therapy under Physical Medicine (Cromwell, 1972). The standards cover organization and staffing, facilities and patient care plan. Unfortunately these standards suggest the limitation of the

profession's interests and activities to physical medicine and to the model of care of patients with physical disabilities (Cromwell, 1972). This view was upheld in the American Occupational Therapy Association's statement to the JCAH when it was stated that the occupational therapist's purview and potential is seriously limited and constrained by specific identification with physical medicine and chronic/restorative physical care in the JCAH Hospital Standards. This results in occupational therapy being seen as a professionally restricted service, not as a generally available, independently responsible service with broad access and integration with total institutional programs and services (Cromwell, 1972).

Some standards reflect process as well as structure. The revised standards for the Joint Commission of Accreditation of Hospitals fit this picture and include guidelines for continuing medical care evaluation, patient safety through good physical facilities, accessibility to special services, patient care, and health needs of the community.

The Council on Standards (1968) also combined structure and process in setting down minimal classification standards for various levels of staff, supervisory and administrative personnel, and for aides and assistants in occupational therapy. Each position is described through definition, qualifications, special skills, guidelines for duties and responsibilities, and supervision received.

Another approach to the same subject was taken by Falk and his associates (1967) who dealt with the development of normative standards for the content of good clinical performance by interviewing physicians in private practice who were also teaching in medical school and asking them what good medical care is in relation to specific diagnoses. Results are compiled in narrative and quantitative terms for 230 categories

of disease and disorders. This study is concerned with indices not of what is provided but what should by provided. Its potential is stressed as standards for clinical audits and utilization review, and as bases for estimates of national personnel and facility needs.

The Standards for Occupational Therapists Providing Direct Service (1973) are structure and process oriented and cover initiation of service, referral, documentation, communication, initial assessment, program planning, continuing program review and program discontinuation.

Zimmerman (1969) stressed that social and economic forces are forcing the health field to examine its standards for the use of facilities, personnel and financial resources. With the advent of demands that health services be accessible to everyone, purchasers of health services are demanding a reasonable standard of quality. Emphasizing structure and process, he felt that professional performance should be judged by objective criteria and the best means for evaluating qualitative standards would be adherence to generally accepted procedures and processes of treatment. He stated that standards for physical therapy might take the form of a treatment procedure manual which outlines steps to be observed for each procedure used in the department and that quantitative measurement shows a wide variation among physical therapy departments in the average number of procedures each therapist performs. This thinking supported the argument that standards developed from within the profession should prove more reasonable and acceptable than standards imposed from without.

Some standards reflect process. Among these would be the editing of the Objectives of Occupational Therapy Education by the Committee on

Basic Professional Education (1968) in terms of normal growth and development, pathology, basic concepts in the theory and practice of occupational therapy, evaluation, treatment planning and treatment procedures, and supervision and administration, further dividing each of these sections into acquisition of knowledge, development of skills and cultivation of attitudes.

Another illustration of standards and process is a work of the Council of Practice (1969) in which descriptions of function in occupational therapy were written defining occupational therapy, the registered occupational therapist, the certified occupational therapy assistant and the occupational therapy aide. The occupational therapist is described as a consultant in the following settings: community health programs, the extended care facility, geriatrics, mental retardation, neuromuscular disorders, pediatrics and psychiatry. This description is carried out for each of these areas through definition, function, responsibility, professional relationships, and qualifications.

Methods of Evaluation

Descriptions of methods of evaluation appearing in the literature also reflect structure, process and outcome, with emphasis on the first two approaches.

The appraisal of structure is widely carried out through accreditation, certification and licensure. The written standards provide guidelines to the provider of service indicating general criteria to be met (Cushman and Myers, 1967). These three methods of credentialing have similar objectives to establish standards of quality for medical care services and to encourage and assist providers to meet and maintain the standards and improve the quality of the care they provide through a

process of inspection, education and consultation. Noting that standards define a capacity for quality and not the quality itself, the assumption is made that given this capacity a level of quality will result, while without this capacity, achievement of quality is difficult if not impossible. Cushman and Myers (1961) felt that the Joint Commission on Accreditation of Hospitals places its emphasis on medical staff and medical records as they reflect quality, while licensure programs concentrate mainly on nursing care and medical records as well as on the condition of the physical plant. Certification, as applied to Medicare, refers to standard setting and the application of these standards to hospitals, home health agencies, extended care facilities, and independent laboratories. They suggest that the future might hold the feasibility of licensing, certifying or accrediting a community as being capable of providing a certain range of health services, while they admit that the immediate future will continue a fragmented approach to standards.

Richardson (1971) presents a slightly different approach to the credentialing process, while acknowledging greater public accountability, and sees it in three forms: accreditation of education programs (institutional and specialized), certification of personnel by the profession, and licensure by a government agency. Recommendations in his report to Congress included a two year moratorium on establishing new categories of health personnel, expansion of health practice acts to facilitate assignment of additional tasks to qualified health personnel, adoption and utilization of national examinations where they exist, development of equivalency and proficiency examinations, strengthening of state licensing boards to maintain quality, adoption or requirements for

assurance of continued competency in the recredentialing process, and potential of existing institutional licensure to include health personnel beyond the traditional facility licensure.

The American Occupational Therapy Association took the following stand on licensing (Committee on Standards for the Profession, 1969): (1) that licensing represents an external procedure imposed on a professional group by a licensing agency under legislative authority to identify and examine minimal levels of competency, (2) that present national registration and certification procedures by the American Occupational Therapy Association represent entry qualifications for professional and technical services respectively, (3) that the national association realizes that external agencies may have the legal right to offer licensure, (4) in which case the national professional association will cooperate with such licensing procedures for occupational therapists, and (5) the American Occupational Therapy Association reserves the right to grant registration and certification to occupational therapists.

There has been a history of voluntary organizations working together on accreditation. The Conference on Accreditation in the Health Professions (1963) was attended by 50 representatives of 21 professional and educational organizations. Participants discussed such subjects as evaluating outcomes of an educational program, preparation and function of the visiting team, purposes of self-studies in preparation for accreditation, continuing reports required of accredited institutions, revisits to accredited institutions and revision of accreditation standards.

Accreditation has been defined as public recognition by an association or agency given to an institution or specialized program of study

that has met certain standards through initial and periodic evaluations (Proffitt, 1970, Pennell, 1971, Nahm, 1971). The United States Office of Education publishes a list of nationally recognized accrediting agencies responsible for the quality of training offered by educational institutions and programs. The National Commission on Accrediting, established to coordinate accreditation in higher education, has recognized the Council on Medical Education of the American Medical Association for the accreditation of several allied health programs, including medical technology, occupational therapy, physical therapy and medical librarians (Pennell, 1971). Since accreditation is primarily a self-evaluation study, the institution requesting American Medical Association accreditation assembles background material which can be used to judge whether its educational program meets the minimum required essentials. A site visit is made by a survey team and the results are reported to the joint review committee which makes its recommendations concerning accreditation.

The Joint Commission on Accreditation of Hospitals has progressed from setting minimum essentials to optimum achievable standards. Advice and help in delineating these standards were sought from many segments and specialties in the health care field (Porterfield, 1971). The survey team from JCAH was composed of a nurse and a physician and concentrated primarily on structure as they visited floors, surveyed administration and medicine, visited various departments and inspected hospital records (Morris, 1971). Their documents become part of the material the 22 member Commission Board uses to decide whether to grant or deny accreditation.

The Council on Medical Education attempts to serve allied health education by its involvement in the process of accreditation through establishing, maintaining, and improving standards of quality for educational programs while providing recognition for educational programs that meet these standards. In its work of accreditation the Council collaborates with fourteen allied health professions and medical specialty organizations (Educational Programs in Areas Allied with Medicine, 1970). Future research will be directed toward issues of institutional accreditation, the continuing education of allied health personnel, core curriculum, the function and validity of equivalency examinations, mobility within professions, the preparation of allied health instructors and legislation relating to allied health education. This shows a heightened concern for the quality of the education and training of the health professional.

Over 250 classifications of allied health occupations have been identified by the National Center for Health Statistics of the United Public Health Service. As the demands of the public for more health care have mounted, concern for the education and requirements for entrance into the health professions has become more visible (Selden, 1970). A study of accreditation of selected health education programs (SASHEP, 1971) was carried out emphasizing programs conducted in cooperation with and subject to final review by the American Medical Association, with information being solicited from the entire range of health professions and services. Areas considered through brief questionnaires completed by the accrediting agencies and a sampling of colleges, universities, and hospital or other health centers included: accountability, structure, expansion, financing, research, and relationship of accreditation to registration (certification).

Nahm (1971) felt that voluntary accreditation has done much to bring about improvement in nursing education in the past twenty years and should be continued until some better method evolves. Every accrediting agency in the future must constantly evaluate the criteria in accreditation in relation to changes taking place in society. People are demanding better health care today and are asking the major health professions to make the changes essential to provide this care.

Accreditation in the United States is marked by its voluntary character (Cardozo, 1970, Dickey, 1970). It arises out of the spontaneous action of private individuals and organizations, rather then from government. This has resulted in the proliferation of "voluntary" agencies established to exclude the unqualified and to limit competition in their field. The most important legal issues in accreditation will continue to center around "due process." Accrediting agencies, even of a private nature, will be well advised to adopt the administrative practices imposed by law on government agencies in dealing with the public (Cardozo, 1970).

The federal government has started to become the dominant force in shaping education in American with its activity to assist education at all levels (Proffitt, 1970). This produces a need to verify that public resources are being invested wisely. In this connection accreditation must play a new and vital role of being the primary management device for validating and improving the quality of education for the various health professions. The future will demand that the public have representation on the governing councils of accrediting bodies. The economic, political and social developments in this country continue to exert their influences to support the development for the need of accreditation (Dickey, 1970).

Turning to program evaluation, Hefferin and Katz (1971) describe the evaluation of a rehabilitation program as whether the predetermined objectives are met, how well they are met and the assignment of relative value to these objectives. While the primary goal of rehabilitation effort is to improve the condition of the individual client, the long range purpose is generally to assess or to improve the productive value of the program itself. While there are many types of professionals involved in rehabilitation, tools for measuring the effectiveness of their efforts are generally derived from one or more of the following investigative orientations: the statistical data approach, the clinical (medical) approach, the sociocultural approach, the psychological approach and the work (vocational) approach.

Methods of evaluation often focus on different aspects of quality. Hoog (1971), in emphasizing structure, listed standards of practice including professional objectives, policies, and procedures, as well as the administrative organization and procedures required to maintain the effectiveness of patient services. He developed an audit procedure to evaluate the quality and delivery of physical therapy service. Twenty nine items were rated on a four point scale both in organization and operation.

A self assessment evaluation form for the occupational therapy department at Kansas University Medical Center (Baum, 1971) specifies standards of performance in terms of management, service, and education, all of which are structural in nature.

Stressing structure and process, the Standards for Educational Staff Associate Certification of Registered Occupational Therapists (1971) provides minimum requirements for initial and continuing levels of certification of occupational therapists who work in school systems

of the state of Washington. Evaluation procedures consist of self evaluation by the applicant, review of self evaluation by a colleague, evaluation by an administrator, and completion of application form for Education Staff Associate Certificate - Occupational Therapy.

Still another method of evaluation emphasizing structure and process is peer review which Carr (1971) described as a voluntary procedure where individuals and groups of similar backgrounds assess, review and evaluate the services provided by another of the same background. The therapist whose service is being reviewed is an active participant as the reviewer compares goals and purpose with actual function and relates the findings to concepts of comprehensive, coordinated health care. Peer review can be used as a base for the public and voluntary surveys and as one aspect of a reregistration, recertification procedure.

Expected to tap both structure and process was the Surgical Self-Assessment Program (Medical News, 1971). The purpose of this test was to enable surgeons to see how well they have kept up with surgical progress, define areas in which they may be deficient, and plan a continuing education program. It is composed of 750 clinically oriented questions in multiple-choice fashion over nine areas. Taking about 10 to 20 hours to complete, a physician may use open or closed book method for this test that has no passing or failing grade. Answers are computer scored and scores are returned to participants by an agency bonded to insure confidentiality of test results.

A peer review model aimed at reviewing the quality of patient care through a study of process was proposed by Payton, Seubott, DeFlora & Mayer (1971). They felt that the hospital chart was the only product of professional activities of physical and occupational therapists that can

be examined and evaluated after-the-fact without involving the patient. This model suggested that the professional staff of each therapy section would meet once a month to study several randomly selected charts of patients currently under treatment with the addition of one recently discharged patient's chart. The records will be compared with the standards established in the therapy section's policy manual. Once every three months, the therapists from all sections will meet with the supervisor as a committee to review charts selected at random in the same manner.

Another evaluative method aimed at process is the Quality Patient Care Scale (Wandelt, 1970) which measures the nursing care the patient receives. It lists 68 items in areas covering individual psychosocial, group psychosocial, physical, general, communication and professional implications. In using the scale, a nurse makes a care plan for each patient she is to observe, then watches the care given for two hours, rating items from 1 to 5. The scale can be used to compare quality of care of different shifts.

A Self-Study and Evaluation Guide for Residential Schools (1968) was formulated by using existing standards accepted by the majority of public school educators and by developing supplementary material in areas crucial to the upgrading of education programs for blind and visually handicapped children. Covering studies of structure, process and outcome, this guide includes such things as curriculum planning, core programs, daily living skills, orientation and mobility, health education, vocational trade and industrial education, school plant, administration and school staff. It is designed for use as

the basic document for a school undertaking a self-study prior to the on-site review required for accreditation.

While the audit method has been proposed previous to this, it is now suggested as a model in a medical setting with emphasis on a process study. Lembcke (1956) described a medical audit as the evaluation of medical care in retrospect through analysis of clinical records. Its purpose is to make certain that the full benefits of medical knowledge are being applied effectively to the needs of the patient. This procedure employs scientific methods that attempt to measure and evaluate the actual care given to patients. Internal audits are done by the hospital staff itself; external audits are performed by an independent agency. The application of the medical audit to major female pelvic surgery, with statistical tables prepared for the medical audit committee, has shown them to be highly effective in discovering and helping to correct situations where the type of operation is unsuitable or the diagnostic study is inadequate, particularly where the number of operations is excessive.

Richardson (1972) presented a model of an objective, systematic audit of medical care. The prototype is an analysis of the quality of care observed in a process study of 400 cases of biliary tract surgery. The model used a criterion listing of information items expected in the hospital chart, subjective ratings on a five point scale, statistical analysis of the relationship between missing criterion-related information and the subjective ratings of quality so as to retain only the important related information items, and finally, the development of a set of case scores presenting quality of care judgments ranging from good to bad. This method was developed to escape the proven imprecision and lack of reliability of the peer review process as ordinarily practiced.

Inadequacies of audits was also expressed by Weed (1971) when he said that many of the crude attempts have revealed not so much that the physician performs inadequately, as they show the system under which they were trained and expected to function to be inadequate.

Carter, Hilliard, Castles & Cowan (1972) attempted to measure quality through both structure and process by describing a procedure for the development of written standards of nursing care covering the nursing care plan (Kardex), the nursing record, and nursing care measures for the patient and his environment. Based on these three sets of standards, nursing care indices were developed as questionnaires, to be used as a tool for measuring the quantity and quality of nursing care. Percentages of items logged as being carried out and recorded reflected the quality of care. An audit of four patients each month on each of six medical-surgical nursing units at St. Louis University Medical Center has implemented this method of assessing care. It has shown payoffs in both motivating nursing personnel in meeting these criteria on which they were to be judged, and in the development of observational skills in supervisors and other nurse practitioners.

Phaneuf (1969) saw the nursing audit as a method for systematic written appraisal of the process of nursing care, made after the discharge of the patient through examination of the patient care records. A pilot test of an audit used 50 components based on 7 standards for nursing and emphasized both structure and process. Overall numerical ratings computed from the points scored for each function were translated into a 5 point scale from excellent to poor. Functions measured included application and execution of physicians' legal orders, observation of symptoms and reactions, supervision of the patient, supervision of those

participating in care, with the exception of physicians, reporting and recording, application and execution of nursing procedures and techniques, and promotion of physical and emotional health by direction and teaching. Individual summations of scores were compared with the profile reflecting top level scores.

Continuing Competency

Concern for continuing competency is seen as part of the heightened interest in quality care. An Ad Hoc Committee of the American Occupational Therapy Association (MacDonald, 1970) was charged with investigating the models of continuing competency adopted by other professional organizations. Sixteen responses from a total of 19 inquiries showed that two national associations, the American Academy of General Practice and the American Dietetic Association, had adopted models of continuing competency.

The American Academy of General Practice requires 150 hours of acceptable postgraduate study every three years in order to be eligible for reelection to membership.

The American Dietetic Association, which grants registration to its members on successful completion of a test on basic dietetic knowledge and payment of an annual fee, requires 75 clock hours of approved continuing education every five years to maintain registration status. Guidelines are provided for acquiring this continuing education through classes, meetings, conferences and individualized study kits available through the association.

If, as now alleged, scientific development is such that a medical school education alone cannot qualify a doctor for more than a few years,

public protection would warrant making continued licensure dependent on continuing evidence of competence (Somers and Somers, 1961). Some associations have approached the idea of ensuring quality in practitioners through a positive reinforcement model (AMAgrams, 1971). Nearly 20,000 physicians have been awarded The Physician's Recognition Award by the American Medical Association for participation in continuing medical educational programs. The award is given for a minimum of 150 credit hours of continuing medical education earned over a 3 year qualifying period. This included courses in 611 institutions in 41 states, the District of Columbia and Puerto Rico.

The Oregon Medical Association is starting a plan to require periodic documentation by society members of participation in continuing education as a condition for renewing membership. The Pennsylvania Medical Society will require members to achieve requirements of the Physician's Recognition Award to retain membership after July 1972. The New Mexico Medical Society legislated to permit the board of medical examiners to require continuing education for licensed physicians, providing it doesn't jeopardize the availability of physicians. The California Medical Association began a voluntary program in August 1970 to collect, codify and certify physician participation in accredited postgraduate education. More than 100 hospitals in California require staff physicians to report continuing education experience yearly for staff reappointment. Similar efforts appear to be underway by the American College of Physicians through a self assessment program in internal medicine and the American Psychiatric Association in considering an award program (AMAgrams, 1971).

State medical societies are encouraging continuing education programs almost to the point of making them mandatory for society membership

(Naftulin and Ware, 1971). Medical educators and deliverers of health care find it difficult to define the relationship between continuing education and clinical competence. A study involving offering and evaluating a course entitled "An Intensive Review of Psychiatry and Neurology" given to 30 psychiatrists confirmed the hypothesis that the course takers demonstrated significant learning gains in basic psychiatry and neurology, while clinical psychiatry gains were not significant. In the clinical psychiatry section, an oral examination simulating the board examination in which a psychiatrist actually interviews a patient, relates his findings, and is questioned about the theoretical and practical implications of the patient's pathology, differential diagnosis, treatment, and predicted outcome, showed no mean increase in these skills between the first and second administration. If replicated, these findings call into question the relationship between basic and clinical skills in psychiatry as they pertain to the process of awarding credentials.

In an effort to insure that occupational therapists deliver consumer services uniformly and continuously consistent with high professional standards, the American Occupational Therapy Association has begun a Continuing Certification Project (1972). Objectives include development of standards, development of educational opportunities, development and implementation of the continuing certification process, and education of employers and consumers. Improved policies and methods are needed to insure uniformly that all personnel in occupational therapy provide quality service and that the outcomes of that service are of the dimensions intended (Quality of Care, 1972).

Other Studies

A good example of a structure and process study is provided by the Occupational Therapy Curriculum Study (1963) in which the curriculum was evaluated through an assessment of current clinical practice and instructional procedures. This project had three phases: (1) a curriculum survey, with visits to approved schools of occupational therapy and selected student affiliation centers to delineate the specific knowledge and techniques acquired by students in their professional education, (2) a survey of practice in selected hospitals' departments to ascertain and define job requirements, and (3) matching the instructional patterns against the job demands, to determine the functional status of the curriculum. Major recommendations from the Curriculum Study included the following: (1) that occupational therapy be conceived of as applying to physical and psychosocial dysfunction, rather than to the traditionally diagnostically-oriented areas of psychiatry, physical disabilities, general medicine and surgery, tuberculosis and pediatrics, (2) that an increased proportion of time in the curriculum be given to the behavioral sciences so that emphasis on this area be more nearly equal to, equal to, or greater than that devoted to biologic sciences, (3) that crafts should be de-emphasized by core course teaching and concentration on a few major craft ideas, (4) that there should be opportunities for clinical teaching in the academic phase of education and that the pattern of clinical teaching in student affiliations be changed, (5) that specialization in occupational therapy is desirable and that standards for specialty accreditation be developed, (6) that graduate education be a requisite for academic and clinical instructors, and (7) that the profession

consider taking increased responsibility for its own standards and controls of education and practice.

Ohio State University's School of Allied Medical Professions conducted a two year study (Development of Occupational Therapy, 1972) in which they developed job descriptions through a task analysis of occupational therapy practice at fifteen selected facilities. Curriculum and training guides were developed for four different levels of practice with suggestions for career and academic mobility, with emphasis on both structure and process.

Turning to the area of program assessment, Rosenfeld (1957) described a process study of the quality of medical care using hospital records and making measurements of intermediate goals, that is, of prompt and adequate provision of appropriate diagnostic and therapeutic services as determined by the needs of the patient and in accord with the best current concepts and practices. Random samples of records were selected from internal medicine, surgery, and obstetrics and gynecology. Forty records from each specialty in each of the four hospitals (two teaching, two community) were selected. Two consultants in each specialty were retained and the degree of agreement in rating of pairs of consultants according to hospitals was computed. Findings supported the hypotheses that (1) medical care rendered in teaching institutions represents a high standard of performance in the community, and (2) that there is a correspondence in standards of care in the several specialties and for various categories of illness in an institution.

The reliability of the method used was tested by arranging for independent review of the cases studied by two observers. A system of internal controls was built in by adopting the performance at teaching

hospitals as a standard and comparing performance at community hospitals with this standard. A schedule and a set of general standards based on currently accepted principles of medical practice were devised. The standards allow a rating of good, fair, or poor. A total rating was made on the basis of combinations of individual items of rating.

Validity was determined by comparing objective ratings based on the standards with the intuitive ratings formulated by consultants after review of the record before deriving an over-all rating according to the procedure prescribed.

Continuing emphasis on process, the Implications of the Curriculum Study (1966) contained an indepth evaluation of the 1963 Curriculum Study for occupational therapy by eight regional commissions. They concentrated on process inherent in patient evaluation, treatment planning, treatment implementation, supervision, and administration in relation to physical and psychosocial dysfunction. Educational objectives were written in terms of acquisition of knowledge, development of skills and cultivation of attitudes and interests.

Schonfeld, Falk, Sleeper & Johnson (1967) described a process study whose aim was to provide data useful in describing the content of good dental care and to develop standards and indices that would serve in the clinical audit of dental practices. Staff dentists conducted interviews of dentists in private practice who held faculty and hospital appointments at Yale, covering subject matter of prevention, examination, treatment planning and treatment of patients. Information obtained was being consolidated and indices were being developed for good dental care in dental caries, malocclusions, periodontal problems and other dental conditions.

Utilizing a process approach to assist in the development of alternative, non-academic credentialing mechanisms (proficienty tests) which would promote increased career mobility and manpower supply, the American Occupational Therapy Association undertook a project to delineate the roles and functions of occupational therapy personnel (Project to Delineate, 1972). The objectives for the project included delineation of actual and appropriate roles and functions for entry-level therapists and assistants, identification of the knowledge and skills needed for entry-level practice, and recommendations for credentialing mechanisms.

In an attempt to meet Navy medical manpower needs, Parks (1973) described a process oriented research project with objectives of determining what it is that health care personnel actually do in their occupations, of improving the personnel education and training, and of building a viable career pathway system for all health care personnel. Nearly 10,000 task statements describing all the discrete functions performed by a stratified random sample of some 30,000 members of the Navy Hospital Corps resulted in the construction of 17 inventories. A series of 16 Quality Practice Control Boards used the analyzed data to establish optimum career lattices for each distinctive occupation.

Gilpatrick (1972) also used a process oriented job analysis approach to the Health Services Mobility Study through task identification, rating of each task on 16 skill scales, rating of the knowledge needed for each task, and statistical analysis to identify interrelated skills, knowledge categories, and task sequences based on these categories. Factor analysis allowed for designing both ladders and lattices among the twelve job titles studied in ambulatory patient care in a Community Health Center.

Sparling (1962) examined the percentage of necessary appendectomies in two teaching and three community hospitals in Baltimore by studying 1002 patients. The study focused on an efficiency factor of the necessary appendectomies as percentage of the total performed. The combined efficiency factor for the University (teaching) hospitals was significantly greater than that for community hospitals.

Another study of process described an effort to compare the quality of medical care given to 1356 elective admissions on two geographically separate private medical services, one a teaching unit and one a nonteaching unit. Differences in favor of the teaching section were evident. Trends showed that the teaching service generally seemed to provide more complete care than the nonteaching service and certified physicians seemed to provide a more complete workup than the noncertified (Stapleton and Zwerneman, 1965).

Trussell, Moorehead & Ehrlich (1962) conducted a medical audit of hospital records for a sample of Teamsters and their families for claims settled by Blue Cross for selected diagnoses. Medical care in the teaching hospitals was more likely to be good or excellent than was care in the nonteaching hospitals.

The second Teamster Study (Moorehead and Donaldson, 1964) also showed that medical care in hospitals affiliated with medical schools was much more likely to be rated optimal than care in hospitals whose teaching commitment was less or nonexistent.

A process and outcome study by Taylor, Schaeffer, Blumenthal & Grissell (1969) was based on the hypothesis that experimental treatment for identified percept-concept-motor function problems would effect

greater improvement in functional status than would control treatment commonly used for left hemiplegia. Evaluations were done pretreatment and after 20 days of multidisciplinary treatment on 47 experimental and control subjects. Statistical analysis failed to support the hypothesis.

A study of personal medical care in the Hawaiian Islands (Payne and Lyons, 1972) provided: (1) the first opportunity to measure quality of personal medical care on a state-wide basis, using as a technique the methodology described in the Hospital Utilization Review Manual, (2) the extension of the observation of personal medical care into the ambulatory setting of the out-patient clinic or physicians' office, (3) the measurement of quality care in three different modes of health delivery as well as in large and small hospitals, and by different specialty training, (4) a climate of acceptance in the medical community for a system of medical care appraisal for continuing self-evaluation, and (5) development and testing a methodology for measuring ambulatory medical care quality. Weighted scores determined by a panel of experts were totaled for each record studied and a Physicians' Performance Index, showing percentage of adherence to total weighted standards, was used to measure process and outcome.

Outcome studies are much more common in the literature. The quality of medical care furnished by the 26 medical groups under contract with the Health Insurance Plan of Greater New York was appraised by focusing on the actual medical services received by individuals from the medical groups. In Makover's study (1951) an equal number of randomly selected records were taken from each of the 26 medical groups and reviewed by the author, an expert in internal medicine, for health examinations, pediatric records, medical records of patients with cancer or suspected

cancer, and medical records for patients with gastrointestinal complaints. Rating was done so that the sum of the four categories had a possible 800 points with an additional 200 points related to other factors of direct care of patients as secured from interviews with the medical directors.

An outcome study of 208 patients, admitted for physical medicine rehabilitation with deficiencies in Activities of Daily Living and/or Mobility, showed that premorbid participation in household activities is significantly related to recovery of Activities of Daily Living and Mobility function during the 5 year period after hospitalization (Slater, Sussman & Stroud, 1970). In the past 10 years rehabilitation has shifted from primarily being patient-oriented to giving more attention to the family and social context of the patient's life situation. The evidence in this study suggests that for long term recovery the family context has more to do with rehabilitation outcome than considerations of the patient's condition, continued therapy or spontaneous physical recovery. These findings uphold the argument that rehabilitation outside of the patient's social role is meaningless if not futile.

Schoening and Iversen (1968) evaluated patient progress toward self-care goals in terms of bed activities, transfers, locomotion, dressing, personal hygiene, and feeding. Comparison of initial and weekly ratings of 195 patients discharged from the rehabilitation center over a one year period showed that learning curves (rating versus time) tended to be of rapid early progress, gradual and equal gains, or immediate continued use of moderate assistance rather than major dependency. These learning curves varied with the diagnosis of the patients.

Another clinical study by Tyler and Kogan (1965) attempted to assess the occupational therapy program by teaching preschool spastic children to make better use of their upper extremities. Results during a 3 year period with 77 children showed that self help gains were associated with minimal spasticity, higher initial scores, increased amount of therapy and a younger aged group.

In a follow-up clinical study of self care activities in traumatic quadriplegics, Runge (1966) used a scale to evaluate activities of daily living in studying the effectiveness of a rehabilitation program which included household activities, communication and avocational interests in addition to the traditional self care activities. Questionnaire data showed that the majority of the 48 patients had continued to perform the hospital learned self care activities but more intensive training of family members was indicated to maintain patients' functional levels and to offer emotional support.

Wolcott, Wheeler, Ballard, Crumb, Miles & Mueller (1966) compared the effectiveness of home care versus that of institutional rehabilitation of stroke patients and used the restoration of independent function abilities as the chief criterion. Results indicated that rehabilitation programs in the home and hospital were equally successful. Patient motivation for rehabilitation appeared identical, but recovery from aphasia was more common among home care patients.

An outcome study by Gersten, Miller, Cenkovitch & Dinken (1968) treated 62 homebound patients at home and 66 in the clinic as outpatients. No major differences in terms of degree of improvement could be seen between the two groups. There was lower cost and less intensive treatment

in the home setting. The clinic group appeared to prefer the clinic setting and showed slightly shorter lengths of treatment.

Using the Barthel index to assess change in physical function, Wylie (1967) evaluated 1233 patients with cerebral vascular accidents. Results showed: (1) an inverse relationship between scores and mortality, (2) severely disabled patients are less responsive to rehabilitation than others whose functioning is slightly or moderately impaired, and (3) lower scoring patients had longer lengths of stay, were older and more disabled. Higher scoring patients were more likely to be classified as clinically improved and patients who received early care improved more than those who delayed treatment.

Scranton et al (1970) studied the contribution of a number of psychosocial variables (initiative, ability to make decisions, attitude toward disability, family relationships, interests, and home environment) to improvement in clinical levels during and following rehabilitation efforts. One person did all ratings and no control group was used on 186 subjects studied at admission, at discharge and at follow-up. The study reported that patients improved in level of function in all variables, with greater improvement in the physical than in the psychosocial area; the rate of improvement and of final achievement level varied with the disability category. The greatest difficulties were encountered in vocational adjustments.

Using degree of clinical improvement following rehabilitation management, Hoff and Mead (1965) studied 55 patients with various orthopedic problems including some stroke patients, and compared expected with actual achievement. Correlations were done between clinical scores and scores on a personality inventory. Results showed that four

psychological variables tested (ego strength, flexibility, social presence and sociability) correlated significantly with clinical rehabilitation success scores.

Psychological characteristics were investigated by Solomon and Moos (1965). Sixteen female patients with rheumatoid arthritis were compared with their closest-aged, same-sexed, healthy siblings on a variety of personality trait dimensions found in arthritics by previous investigators. Results of personality tests and interview ratings indicated that arthritics showed more compliance and subservience, nervousness and restlessness, depression, conservatism and security, and sensitivity (to anger) than their siblings.

Using a psychologically oriented measurement, Rossman and Clarke (1965) observed the impact of work on 40 seriously ill homebound patients. Participating patients were paid full scale rates while a control group were not paid. Effects of the work program were measured in terms of psychological change, change in the subjective estimates of strength and endurance, pain and the use of drugs, and change in interpersonal family relationships. Results showed that work can be useful therapy in that it transforms the environment. It improved the patient's self image and improved the mood of the patient. It was considered to have aided in the restoration of the patient's perception of himself functioning in a valued and meaningful role.

Focusing on the sociological aspects of rehabilitation, Litman (1964) studied the feasibility of using the symbolic formulation of self concept and other life orientation factors as variables influencing the response of orthopedically disabled patients to a physical rehabilitation program. Interviews of 100 patients at two rehabilitation centers sought

information on the patient's self concept, family integration, social participation and leisure-time activities. Analysis of the data suggested that adjustment to a disability may be complicated by an inability to take the role of the disabled when well or to play the role of the disabled at the onset of disability.

Bloom (1967) studied the influence of a number of sociological variables on the effectiveness of a cooperative special education vocational rehabilitation program for 1600 educable mentally retarded high school age youths. Measurement was made of individual progress and employment together with attitudes, personal characteristics, age, level of education, sex, family life style and ethnic identification. Findings suggested that attempts to improve vocational attitudes of students had been effective; attitudinal differences appeared to be associated with the level of training in combination with sex or life style and to reimbursement or nonreimbursement while on job training.

In another sociological study, Mase (1968) dealt with the effect of a college education on the adjustment of the severely disabled. Family background, disability, factors in college attendance, employment, experience and personal adjustment were studied on 243 severely handicapped college graduates and 224 handicapped high school graduates. College education was found to be an important contributing factor to the occupational success of the handicapped. The college group rated higher on self-support, income, type of occupation, work satisfaction, job getting ability and occupational history. It also appeared that college experience contributed substantially to personal adjustment.

Focusing on the vocational approach, Baxt (1968) studied the feasibility of offering vocational rehabilitation services to older

disabled persons using 700 subjects 55 years of age and over who had been referred to a vocational rehabilitation workshop. A follow up study showed that 83% of the clients had completed the program and that 67% actually obtained employment. Characteristics associated with lack of success were the increased age of the client, secondary disabilities and severe physical condition.

Neff (1959) conducted a study to evaluate the outcome of the work of a vocational adjustment center using 197 graduates of an 8 week training program. Findings showed that work placement (outcome) was only minimally influenced by age, the nature of the disability or previous employment. Over two thirds of these originally classified unemployable persons were placed on jobs, while the attitude of the family about the client was found to be a major factor in the client's success.

Putting an emphasis on work, Copp (1966) made an attempt to determine whether rehabilitative efforts were worthwhile or whether patients would recover to a similar degree without benefit of a rehabilitation program. After assessment of pathology, 196 patients were assigned randomly to a "with rehabilitation" or a "without rehabilitation" group. A reassessment after three months showed that patients in the "with rehabilitation" group had advanced two grades of improvement over the "without rehabilitation" group. Two times as many rehabilitated patients had returned to work and income following disability was greater among patients who had been rehabilitated than among those who had not.

Still reflecting the work approach, Johannsen, Jones, & Thill (1967) studied the value of the so-called homemaker's laboratory, using 20 hemiplegic women who had received homemaker training plus occupational and physical therapy and a control group who had not received the homemaker training.

Evaluation included testing in terms of efficiency and speed in a rigorously standardized set of household tasks. Results showed practically no effect of homemaker's training on speed scores and only a slight effect on proficiency. Results suggested that the value of the homemaker's laboratory was questionable as a rehabilitation tool.

Summary

The literature was reviewed within the framework of structure, process and outcome, reflecting the three best known approaches in the assessment of quality. An overview of definitions formed the backdrop for exploring the relevancy of standards, methods of evaluation, continuing competencies, and reports of other studies.

Structural analysis is demonstrated mostly through accreditation, licensure, and certification methods, in which the major emphasis is on physical facilities, qualifications of personnel, records, and organizational administration in order to see how they measure up to standards.

Audits, peer reviews, and self-assessment studies stress structure, process, or a combination of both. Process studies concerned with the management or care of the patient generally use detailed characteristics to measure a particular setting against preexisting standards by some measure of quantification. Standards, either normative or empirical, are used as a baseline for this measurement. Rather than directly measuring quality, standards become the indicators of quality.

Outcome studies measure the end results, and are the most common type of studies found in the health care field. Most patient related studies can be divided into emphasis on psychological, sociological, clinical, or vocational approaches to measuring results.

Quality can be measured by any one of the three approaches; it is most completely measured by a combination of all three. This study was an attempt to measure quality of care in occupational therapy through structure, process, and outcome.

CHAPTER III

STATEMENT OF THE PROBLEM

While the literature shows a great diversity of standards and assessments in education and practice in the health care fields, it is unified in pointing out that they have been considered of great importance. The diversity ranges from single person efforts to government quality controls. Intra-professional assessments are the most common but the future augurs more attention to outside controlling forces. Emerging legislation will include demands for assessments of quality.

The following themes in the literature surveyed in the preceding chapter are relevant to this study:

1. the importance of assessing the quality of care
2. the focus of assessment on the evaluation of structure, process and outcome
3. the need for detailed criteria in connection with standards to increase the reliability of studies
4. the need for a method of quantifying measurements of these criteria
5. the need for developing a methodology to assess the quality of care in occupational therapy
6. the dearth of process and outcome studies in occupational therapy
7. the implications of assessing the quality of care in occupational therapy for education and practice

Therefore, this investigation focused on an assessment of the quality of care in occupational therapy through a process and outcome study. Information from a limited study of structure was used to interpret the results.

Educational settings have long been used as a source of experts in the establishing of standards and at times they have been used as standards against which community settings in the health field were measured. Since all clinical studies comparing the two settings have shown a higher quality of care in educational settings, it is expected that the same result will hold true in comparing occupational therapy in the two settings. Therefore, Hypotheses I and IV are stated in directional form.

The following research hypotheses were tested by means of an external audit of hospital records for patients with residual hemiparesis or hemiplegia:

Hypothesis I:

Educational clinical settings will show higher quality, as measured by process scores, than noneducational settings on:

1. Evaluation of the patient/client
2. Planning of a therapeutic program for the patient
3. Implementation of a therapeutic program
4. Reevaluation of the program
5. Discharge planning
6. Total process
7. Each item of the five components of process
8. Therapist Performance Index (TPI) of total process

Hypothesis II:

There will be no difference in quality, as measured by process scores, within noneducational clinical settings on:

1. Evaluation of the patient/client
2. Planning of a therapeutic program for the patient
3. Implementation of a therapeutic program
4. Reevaluation of the program
5. Discharge planning
6. Total process

Hypothesis III:

There will be no difference in quality, as measured by process scores, within educational clinical settings on:

1. Evaluation of the patient/client
2. Planning of a therapeutic program for the patient
3. Implementation of a therapeutic program
4. Reevaluation of the program
5. Discharge planning
6. Total process

Hypothesis IV:

Educational clinical settings will show higher quality, as measured by outcome, than noneducational settings on:

1. Ratings of activity of daily living assessments
2. Ratings of job and homemaking assessments
3. Ratings of social objectives assessments

CHAPTER IV

METHOD

This chapter is divided into the following sections: preliminary procedures, development of the instruments, selection of hospitals and subjects, and data analysis.

Preliminary Procedures

Existing written standards in occupational therapy do not reflect current expectations for treatment of hemiplegic patients. The first task in this study was to establish normative standards against which the treatment process could be judged. For this purpose, a panel of ten experts in occupational therapy was selected to represent academic education and clinical practice. They were chosen from various geographical locations to reflect diversity of thinking and practice among recognized leaders of the profession. The writer constructed a tentative set of standards by updating existing ones to meet current expectations of practice, using past experience as a practicing therapist and a critical review of the literature. These were submitted to the experts who reacted to them either in person or by mail, suggesting revisions that would most clearly reflect their opinions on quality occupational therapy practice with hemiplegic patients. Subsequent mailing solicited reactions to revisions. The Revised Standards (Appendix A) included Evaluation, Program Planning, Program Implementation, Reevaluation, and Discharge, with appropriate criteria under each section.

Development of the Instruments

An instrument (Appendix B) was constructed for the retrospective study of the hospital records. The first part contained demographic, social and diagnostic information including registration number of the patient, date of birth, age, sex, code number of hospital, type of hospitalization payment, number and dates of cerebral vascular accidents (CVAs), primary and associated diagnoses, etiology of CVA, residual paralysis, side affected, dominance, admission and discharge dates for primary CVA admission and rehabilitation, or subsequent rehabilitation admissions or outpatient treatments, number of days in each of the admissions, number of hours spent in occupational therapy, and the period being evaluated in the study.

The second part of the instrument contained the Process information and used the occupational therapy section of the patient's record to substantiate the degree of adherence to the normative standards. In this study Process is divided into the following five components with appropriate subdivisions: (1) Evaluation: assessment of range of motion, patterns of movement, physical tolerance, sensory function, perceptual motor function, mentation, mobility, eating, dressing, hygiene, communication, recreation, household management, vocational concerns, self concept, and patient/family goals, (2) Program planning: determine objectives, set priorities, project length of program and consider complicating conditions, (3) Program implementation: activities promoting range of motion, muscle reeducation, physical tolerance, sensorimotor training, perceptual motor training, eating, dressing, hygiene, recreation, communication, work simplification, vocational planning and training, opportunities for realistic activities, techniques to deal with the general

public's reaction to the patient as a disabled person as well as patient/client's response to this, and home visits with program integrated into the patient's environment, (4) Reevaluation: reassessing the total occupational therapy program, and determining appropriate action, and (5) Discharge Plan: summary of program and plan for the future, including the patient/client and family in planning and treatment, discussing with patient/client and his family his capabilities and limitations, and actively assisting with reintegration of patient/client into the community.

Selected members of the panel of experts were asked to serve further by weighting each individual criterion of the Process Study with a weight between .5 and 2.0 to reflect the priority that each item would be assigned by the rater in his estimation of importance in relation to each of the five components. The assigned weights represent an average of opinions among the experts when consensus was not reached. They are included in the Process section of the instrument in Appendix B.

In the actual audit, whenever an item was found to be present in the hospital record, that item was scored with the weighted score. If it was not present, it was scored a zero. If patients were evaluated and found to be independent, or not in need of a specific program, they were given the weighted score under those items in Program Implementation so as not to penalize them on the Therapist Performance Index (TPI). Scores were totaled for each of the five components of process and for total process. These scores, as well as scores on individual items, were compared between educational and noneducational settings. The five components of process and total process scores were also compared within educational and noneducational settings.

The Therapist Performance Index (TPI), a ratio of total process points divided by the total number of possible points, was figured for both educational and noneducational settings to provide a measure of their achievement.

The third part of the study was an outcome assessment of physical function and social objectives achieved at discharge. The physical function assessment measured performance on Activities of Daily Living including eating, dressing, hygiene, communication and recreation, and on Work Performance, including job and/or homemaking. These items were rated on a four point scale: (1) Independent performance without equipment, (2) Practical performance with equipment, (3) Practical performance with human assistance, and (4) Cannot perform.

Social objectives included patient's ability to relate to family and friends, patient and family involvement in planning and treatment, patient and family involvement in discussion of his capabilities and limitations, and demonstration of ability to deal with the general public's reaction to his disability. These items were rated on a three point scale: (1) Minimally, (2) Moderately, and (3) Considerably.

Each of the Outcome measures described above was rated as (1) Satisfactory or (2) Unsatisfactory by means of the following method. First, each patient was rated as Moderately or Severely Involved as determined by the following criteria or combination thereof:

Moderate: Dominant side affected, some function, slight aphasia, mentation clear, (or) non dominant side affected, with no visual perceptual problems.

Severe: Dominant side affected, with no functional use of involved side, severe aphasia, (or) non dominant

side, severe position sense or perceptual loss, severe spasticity, possible hemianopsia.

The mildly involved patient was seldom seen in the occupational therapy program. When seen, he was included in the moderate category with the ratings listed below substantiating the rationale. Second, the satisfactory ratings were determined by the chart in Table 1 and were considered reasonable expectations of outcome, given differences in severity of involvement. It was felt that the method described above would provide a leveling process which would consider the great differences in individual patients, making it possible to compare achievement in physical and social objectives.

Another instrument (Appendix C) was constructed to determine elements of structure in each of the five facility settings. It contained the name of the institution, number of beds, number of registered occupational therapists, certified occupational therapy assistants, and occupational therapy aides, with average length of experience for each category, average length of stay for CVA patients, average length of occupational therapy program for CVA patients, socioeconomic status of majority of patients, administrative organization of the department, source of CVA referrals, and identification of registered occupational therapists working in other sections not specifically labeled occupational therapy. These findings were used only as background material in interpreting the other findings, since anonymity was provided to the hospitals participating in this study.

TABLE 1

RATINGS OF OUTCOME ASSESSMENTS

	Moderate		Severe	
	Sat (1)	Unsat (2)	Sat (1)	Unsat (2)
Eating	1,2	3,4	2,3	4
Dressing	1,2	3,4	2,3	4
Hygiene	1,2	3,4	3	4
Communication	1,2	3,4	2,3	4
Recreation	1,2	3,4	2,3	4
Job	1,2,3	4	4	
Homemaking	1,2,3	4	2,3	4
Relate to Family	2,3	1	2,3	1
Involved in planning and treatment	3	1,2	2,3	1
Discussion of potential	2,3	1	2,3	1
Dealing with public's reaction to disability	2,3	1	1,2,3	

Selection of Hospitals and Subjects

All clinical facilities selected for this study had occupational therapy programs in which adult hemiplegic patients were treated. Two educational hospitals that offered clinical training experience to occupational therapy students and three noneducational hospitals that did not offer this training were chosen. Selection of hospitals was determined by willingness of hospital administration and occupational therapy departments to participate, availability of patients who could meet the criteria, and location of the hospitals within commuting distance for the investigator. Attempts were made to match patient populations in choosing nonteaching versus teaching facilities through characteristics such as age, race, socioeconomic status, and urban versus rural roles, since normal social roles would serve as primary guides for rehabilitation objectives.

Subjects for this study were chosen from hospital based populations who had cerebral vascular accidents. It was felt that this type of patient would have sufficient physical and social deficits to permit demonstration of the contribution of occupational therapy in enhancing the individual's ability to perform with satisfaction those tasks and roles essential to productive living.

Subjects included 84 patients with residual hemiparesis or hemiplegia from three noneducational clinical occupational therapy settings and 100 patients from two educational clinical occupational therapy settings in selected Michigan hospitals. Criteria for patient selection included (1) hemiparesis or hemiplegia as the result of a cerebral vascular accident, (2) chronological age between 25 and 65 at admission for

program in present assessment, (3) treatment in occupational therapy initiated after January 1, 1971, and (4) discharge from the hospital (in the case of inpatients) or discontinuation of (outpatient) treatment by March 31, 1972.

Subjects were chosen by a proportionate stratified random sampling method. In this method a random sample proportionate to the size of the sampling unit is selected from every stratum. Several patients in the noneducational settings originally classified in the stratum had to be dropped from the study because they failed to meet all the criteria. The 84 patients in the final sample for the noneducational settings included 30 from Hospital A, 29 from Hospital B and 25 from Hospital C. All the patients who met the criteria in the noneducational settings within the time limits specified were used in the study. The 100 patients from the educational settings chosen by the above method included 27 from Hospital D and 73 from Hospital E.

Data Analysis

The data were analyzed on the IBM 360/67 Computer and the Michigan Terminal System. The Midas Program (Fox & Guire, 1972) was utilized for all analyses with the exception of the *z* scores. Descriptive statistics were obtained for the demographic, social, and diagnostic information. Frequencies and percentages were compiled on these data.

The Student's *t* test was used to test the significance of the difference in means between educational and noneducational settings on Evaluation, Program Planning, Program Implementation, Reevaluation, Discharge Planning, and Total Process. Means, standard deviations, differences in means, frequencies of records logging process components, and *t* values were given for both types of facilities.

A program was written for this study to compute z scores to test the significance of the difference in proportions for the individual items of each of the five components of process between the two types of settings. Frequencies, percentages, differences in percentages and z scores were given for the individual items of each of the five components of process to test the difference between educational and noneducational settings.

Percentages were computed and z scores were used to test the significance of the difference between educational settings and noneducational settings on the Therapist Performance Index.

In order to test that there will be no difference, as measured by process, within noneducational settings, the univariate analysis of variance was selected. When the F statistic, which is a ratio of two variances, showed a significant difference between components of process, t tests were then made between the means of the noneducational settings to show where these differences were. Means, F ratios, and ts, when appropriate, are shown.

The Student's t test was used to test the hypothesis of no difference, as measured by process, between the means of the two educational settings. Means, standard deviations, differences in means, and t values are given for both teaching facilities.

In the Outcome Study, z scores were used to test the significance of the difference between educational settings and noneducational settings on Ratings of Assessment of eating, dressing, and hygiene. Frequencies, percentages, and z scores were reported. Results of the data analysis will be reported in the next chapter.

CHAPTER V

RESULTS

Results are reported in the following sections: Descriptive Data, Process Study, and Outcome Study. The results of the Process and Outcome Studies are used in testing the hypotheses, while the descriptive data are used to explain the significance of these findings.

Descriptive Data

The information on the first part of the instrument relative to demographic, social, and diagnostic data was compiled for each patient. Frequencies and percentages were computed and reported.

Table 2 shows the distribution of subjects by age in noneducational and educational hospitals. The age range of patients in both types of settings was 27-65 years, with a mean of 55.7 years and a standard deviation of 7.89 for nonteaching hospitals and a mean of 52.7 and a standard deviation of 9.29 for teaching hospitals.

The sex of subjects in this study is reported in Table 3. Both settings had more males than females, while proportions of males to females were fairly similar in the two settings.

The type of hospitalization payment for these subjects is reported in Table 4. Blue Cross headed the list of third party payers carrying the greatest majority of patients in both settings, while Private or Commercial Insurance and Medicaid were the next largest carriers.

TABLE 2

DISTRIBUTION OF SUBJECTS BY AGE IN NONTEACHING AND TEACHING HOSPITALS

AGE	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
25-29	1	1.2	1	1.0
30-34	1	1.2	3	3.0
35-39	2	2.4	2	2.0
40-44	2	2.4	13	13.0
45-49	10	11.9	22	22.0
50-54	14	16.7	12	12.0
55-59	20	23.8	16	16.0
60-64	30	35.7	27	27.0
65-69	4	4.7	4	4.0
TOTAL	84	100.0	100	100.0

TABLE 3

DISTRIBUTION OF SUBJECTS BY SEX IN NONTEACHING AND TEACHING HOSPITALS

SEX	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
Male	48	57.1	54	54.0
Female	36	42.9	46	46.0
TOTAL	84	100.0	100	100.0

TABLE 4

DISTRIBUTION OF SUBJECTS BY TYPE OF HOSPITALIZATION PAYMENT IN NONTEACHING AND TEACHING HOSPITALS

Type of Payment	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
Medicare	1	1.2	6	6.0
Medicaid	5	6.0	13	13.0
Blue Cross	69	82.1	63	63.0
Private or Commercial Insurance	8	9.5	13	13.0
Private Pay	1	1.2	1	1.0
Other	0	-	4	4.0
TOTAL	84	100.0	100	100.0

Table 5 reports the number of cerebral vascular accidents (CVAs) for the subjects. This was the first CVA for the majority of the patients in both settings.

The distribution of subjects by year of their primary CVA is reported in Table 6. Over two thirds of the patients in both settings had their primary CVA during the period evaluated in the study.

Table 7 shows the incidence by year of the second or most recent CVA. Most of these CVAs were also associated with the period evaluated in the study. Table 8 shows the number of days spent in the hospital by subjects in both settings. Time in the hospital ranged from 5-99 days with a mean of 33.8 and a standard deviation of 24.26 for nonteaching hospital patients, while days for teaching hospital patients ranged from 1-99 days with a mean of 37.1 and a standard deviation of 22.69.

TABLE 5

DISTRIBUTION OF SUBJECTS BY NUMBER OF CVAS
IN NONTEACHING AND TEACHING HOSPITALS

Number of CVAs	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
1	71	84.5	90	90.0
2	10	11.9	7	7.0
3	3	3.6	2	2.0
4	0	-	1	1.0
TOTAL	84	100.0	100	100.0

TABLE 6

DISTRIBUTION OF SUBJECTS BY YEAR OF PRIMARY CVA
IN NONTEACHING AND TEACHING HOSPITALS

Year of Primary CVA	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
1960	1	1.2	0	-
1962	1	1.2	0	-
1965	0	-	1	1.0
1966	1	1.2	2	2.0
1968	2	2.4	4	4.0
1969	5	6.0	5	5.0
1970	13	15.5	18	18.0
1971	57	67.8	64	64.0
1972	4	4.7	6	6.0
TOTAL	84	100.0	100	100.0

TABLE 7

DISTRIBUTION OF SUBJECTS BY YEAR OF SECOND OR MOST RECENT CVA IN NONTEACHING AND TEACHING HOSPITALS

Year of Most Recent CVA	Nonteaching Hospital Patients f	%	Teaching Hospital Patients f	%
1970	0	-	2	16.7
1971	11	78.6	6	50.0
1972	3	21.4	4	33.3
TOTAL	14	100.0	12	100.0

TABLE 8

DISTRIBUTION OF SUBJECTS BY NUMBER OF DAYS SPENT IN HOSPITAL IN NONTEACHING AND TEACHING SETTINGS

Days Spent in Hospital	Nonteaching Hospital Patients f	%	Teaching Hospital Patients f	%
0-9	2	2.4	8	8.0
10-19	23	28.0	20	20.0
20-29	23	28.0	14	14.0
30-39	13	15.9	14	14.0
40-49	7	8.5	17	17.0
50-59	3	3.7	11	11.0
60-69	1	1.2	8	8.0
70-79	5	6.2	3	3.0
80-89	1	1.2	2	2.0
90-99	4	4.9	3	3.0
TOTAL	82	100.0	100	100.0

The number of hours spent in occupational therapy was reported in Table 9. They ranged from 1-99 hours with a mean of 14.3 and a standard deviation of 21.13 for nonteaching hospital patients, while hours for teaching hospital patients ranged from 1-58 hours with a mean of 16.2 and a standard deviation of 12.14.

TABLE 9

DISTRIBUTION OF SUBJECTS BY NUMBER OF HOURS SPENT IN OCCUPATIONAL THERAPY IN NONTEACHING AND TEACHING HOSPITALS

Hours Spent in Occupational Therapy	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
0-9	46	59.0	33	35.9
10-19	17	21.7	27	29.3
20-29	7	9.0	18	19.6
30-39	1	1.3	10	10.8
40-49	1	1.3	2	2.2
50-59	2	2.6	2	2.2
60-69	0	-	0	-
70-79	1	1.3	0	-
80-89	1	1.3	0	-
90-99	2	2.5	0	-
TOTAL	78	100.0	92	100.0

Table 10 shows that most of the CVA patients had other conditions associated with the primary diagnosis of CVA. This was reflected in

four leading categories of aphasia, cardiovascular disease, hypertension and other conditions.

TABLE 10

CONDITIONS ASSOCIATED WITH PRIMARY DIAGNOSIS OF CVA FOR SUBJECTS IN NONTEACHING AND TEACHING HOSPITALS

Associated Conditions	Nonteaching Hospital Patients f N=84 %	Teaching Hospital Patients f N=100 %
Aphasia	50 59.5	51 51
Hemianopsia	8 9.5	16 16
Cardiovascular Disease	35 41.6	32 32
Hypertension	35 41.6	38 38
Diabetes	15 17.8	19 19
Respiratory Disease	6 7.1	6 6
Previous CVA	3 3.5	4 4
Other	29 34.5	62 62
None	1 1.1	1 1

Note:
Patients may have one or more of Associated Conditions; consequently, percentages exceed 100%.

The etiology of CVA for subjects in both types of settings was reported in Table 11. Highest percentages of CVA etiology in the nonteaching hospitals were found for cerebral thrombosis, acute but ill defined cerebrovascular disease, and subarachnoid hemorrhage. Etiology in teaching hospitals also rated high on cerebral thrombosis, and followed with subarachnoid hemorrhage, and occlusion of precerebral arteries.

Table 12, in reporting the side affected by the CVA, showed almost equal division of residual paralysis of right and left sides for the two types of settings. Table 13 reports the dominant side of subjects in the study. The overwhelming majority of patients in both types of hospitals were dominantly right handed.

TABLE 11

ETIOLOGY OF CVA FOR SUBJECTS IN NONTEACHING AND TEACHING HOSPITALS

Etiology of CVA	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
Subarachnoid Hemorrhage	9	10.8	12	12.2
Cerebral Hemorrhage	1	1.2	6	6.1
Occlusion of Precerebral Arteries	0	-	9	9.2
Cerebral Thrombosis	41	49.4	47	48.0
Cerebral Embolism	6	7.2	8	8.2
Acute but Ill Defined Cerebrovascular Disease	23	27.7	7	7.1
Other and Ill Defined Cerebrovascular Disease	3	3.7	9	9.2
TOTAL	83	100.0	98	100.0

TABLE 12

SIDE AFFECTED BY CVA FOR SUBJECTS IN NONTEACHING AND TEACHING HOSPITALS

Side Affected	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
Left	38	45.2	46	46.0
Right	46	54.8	54	54.0
TOTAL	84	100.0	100	100.0

TABLE 13

DOMINANT SIDE OF SUBJECTS IN NONTEACHING AND TEACHING HOSPITALS

Dominant Side	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
Left	7	9.0	8	8.1
Right	71	91.0	91	91.9
TOTAL	78	100.0	99	100.0

Table 14, in reporting the admission period studied for subjects in both types of settings, indicated that most of the nonteaching facility patients were receiving rehabilitation in connection with their primary CVA admissions, while the majority of the teaching facility patients were admitted later for rehabilitation only.

TABLE 14

ADMISSION PERIOD STUDIED FOR SUBJECTS IN NONTEACHING AND TEACHING HOSPITALS

Period Studied	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
Primary CVA Admission & Rehabilitation	68	82.9	12	12.0
Admission for Rehabilitation Only	14	17.1	88	88.0
TOTAL	82	100.0	100	100.0

Process Study

Scores were totaled for each item, for the five components of process and for total process. The hypotheses are now shown in testable form. A rejection of the null hypothesis (H_0) implies acceptance of the alternate hypothesis (H_1). Because a one tailed test was used on Hypothesis I and IV, H_1 assumes the directional thrust that educational clinical settings will show higher quality than noneducational settings.

Hypothesis I:

H_0: There is no difference in quality, as measured by process scores, between educational and noneducational clinical settings on:

1. Evaluation of the patient/client
2. Planning of a therapeutic program for the patient
3. Implementation of a therapeutic program
4. Reevaluation of the program
5. Discharge planning
6. Total process
7. Each item of the five components of process
8. Therapist Performance Index (TPI) of total process

H_1: Educational clinical settings will show higher quality, as measured by process scores, than the noneducational settings on each of the above subsections.

In order to test the null hypothesis that there is no difference in quality, as measured by process scores, between educational and noneducational settings on Evaluation, Program Planning, Program Implementation, Reevaluation, Discharge Planning, and Total Process, the Student's *t* test was selected. This is a univariate *t* test in which the null hypothesis tested is that the means of the two strata are equal. The *t* statistic

is derived under the assumptions of normal distribution and equal variances. The .05 level of significance was chosen and the t's were interpreted as a one tail test because of the directional hypothesis. Results are shown in Table 15.

TABLE 15

ANALYSIS OF PROCESS COMPONENT SCORES IN NONTEACHING AND TEACHING HOSPITAL RECORDS

Process Components	HOSPITAL RECORDS						Diff. in Means	t
	Nonteaching			Teaching				
	N	Mean	SD	N	Mean	SD		
Evaluation	84	6.30	2.55	100	10.79	3.15	- 4.49	-10.46*
Program Planning	33	3.47	.99	86	3.99	.98	- .52	- 2.56*
Program Implementation	84	5.61	2.85	99	8.81	2.78	- 3.20	- 7.66*
Reevaluation	21	3.23	.99	33	3.21	.99	.02	.09
Discharge Plan	24	2.58	1.34	89	2.79	1.82	- .21	- .51
Total Process	84	14.82	6.28	100	26.48	7.49	-11.66	-11.3 *

*$p < .05$

The t values showed statistically significant differences on four of the six values at the .05 level. The null hypothesis was rejected and the alternate hypothesis was accepted for these four values. Educational clinical settings show higher quality, as measured by process scores, on Evaluation, Program Planning, Program Implementation, and Total Process. The t values on Reevaluation and Discharge Planning were not significant. The null hypothesis was not rejected.

To test the null hypothesis that there is no difference in quality, as measured by process scores, between educational clinical settings and

noneducational settings on the 41 individual criteria of the five components of process, the following formula was used to compute a $\underline{z}$ for a difference between uncorrelated proportions (Guilford, 1965):

$$\underline{z} = \frac{p_1 - p_2}{\sqrt{\bar{p}_e \bar{q}_e \left(\frac{N_1 + N_2}{N_1 N_2} \right)}}$$

where $\bar{p}_e = \frac{N_1 p_1 + N_2 p_2}{N_1 + N_2}$ (Weighted mean of two sample proportions to estimate a population)

and $\bar{q}_e = 1 - \bar{p}_e$.

This test of significance of a difference between proportions is not suited to small sample techniques. The sampling distribution of $p_1 - p_2$ approaches the normal form when both of the Nps, or Nqs, whichever is smaller in either sample, are as large as 10. The test of significance made through the $\underline{z}$ ratio, is judged through a one tail test because of the directional hypothesis. The hypothesis tested is that there is no difference or a negative one, where the difference tested is $p_2 - p_1$. By the alternative hypothesis, $p_2 - p_1$ is expected to be a positive difference. With the significance level set at .05, the region for rejection is above a $\underline{z}$ score of 1.64. The results are reported in Table 16.

Under Evaluation, 9 of 11 items tested showed statistically significant differences at the .05 level. The null hypothesis was rejected. The alternate hypothesis was accepted for these 9 items. Educational settings show higher quality, as measured by process scores, than non-educational settings on Range of Motion, Physical Tolerance, Sensory

Function, Perceptual Motor Function, Mentation, Mobility, Dressing, Hygiene, and Communication. The z scores on Patterns of Movement and Eating were not significant. The null hypothesis was not rejected.

TABLE 16

UTILIZATION OF EVALUATION CRITERIA IN NONTEACHING AND TEACHING HOSPITAL RECORDS

Evaluation Criteria	Nonteaching Hospital Records N=84 f	%	Teaching Hospital Records N=100 f	%	Diff. in %	z
Range of Motion	48	57.1	79	79.0	21.9	3.19*
Patterns of Movement	62	73.8	76	76.0	2.2	-0.34
Physical Tolerance	16	19.1	43	43.0	23.9	3.47*
Sensory Function	17	20.2	55	55.0	34.8	4.81*
Perceptual Motor Function	18	21.4	73	73.0	51.6	6.97*
Mentation	47	55.9	80	80.0	24.1	3.51*
Mobility	13	15.4	66	66.0	50.6	6.89*
Eating	44	52.3	45	45.0	7.3	1.00
Dressing	47	55.9	72	72.0	16.1	2.27*
Hygiene	34	40.4	55	55.0	14.6	1.96*
Communication	17	20.2	54	54.0	33.8	4.69*
Recreation	1	1.1	38	38.0	36.9	[a]
Household Management	7	8.3	26	26.0	17.7	[a]
Vocational Concerns	5	5.9	8	8.0	2.2	[a]
Self Concept	1	1.1	11	11.0	9.9	[a]
Patient/Client/ Family Goals	1	1.1	14	14.0	12.9	[a]

*$p < .05$

[a] Nps too small for valid judgments

The following items under Evaluation had Nps that were so small that valid judgments could not be made about them: Recreation, Household

Management, Vocational Concerns, Self Concept, and Patient/Client/Family Goals. No statistical test was made on them.

Under Program Planning, reported in Table 17, the three items tested showed statistically significant differences at the .05 level. The null hypothesis was rejected. The alternate hypothesis of higher quality in educational settings was accepted for the items Determine Objectives, Set Priorities, and Consider Complicating Conditions. The item Project Length of Program had Nps so small that no valid judgment could be made. Consequently, no testing was done.

TABLE 17

UTILIZATION OF PROGRAM PLANNING CRITERIA IN NONTEACHING AND TEACHING HOSPITAL RECORDS

Program Planning Criteria	Nonteaching Hospital Records N=84 f	%	Teaching Hospital Records N=100 f	%	Diff. in %	z
Determine objectives	28	33.3	83	83.0	49.7	6.86*
Set priorities	29	34.5	81	81.0	46.5	6.40*
Project length of program	0	0.0	9	9.0	9.0	[a]
Consider complicating conditions	10	11.9	31	31.0	19.1	3.10*

*$p < .05$

[a] Np too small for valid judgment

In Program Implementation, reported in Table 18, 7 of 9 items tested showed statistically significant differences at the .05 level. The null hypothesis was rejected. The alternate hypothesis of higher

quality in educational settings was accepted on Range of Motion, Physical Tolerance, Sensorimotor Training, Perceptual Motor Training, Dressing, Hygiene, and Communication. The z scores for Muscle Reeducation and Eating were not significant. The null hypothesis was not rejected for these two items.

TABLE 18

UTILIZATION OF PROGRAM IMPLEMENTATION CRITERIA IN NONTEACHING AND TEACHING HOSPITAL RECORDS

Program Implementation Criteria	Nonteaching Hospital Records N=84 f	%	Teaching Hospital Records N=100 f	%	Diff. in %	z
Range of Motion	45	53.5	71	71.0	17.5	2.44*
Muscle Reeducation	59	70.1	78	78.0	8.0	1.20
Physical Tolerance	28	33.3	61	61.0	27.7	3.74*
Sensorimotor Training	27	32.1	74	74.0	41.9	5.68*
Perceptual Motor Training	19	21.3	68	68.0	47.7	6.14*
Eating	45	53.5	44	44.0	- 9.5	-1.29
Dressing	47	55.9	70	70.0	14.1	1.97*
Hygiene	33	39.2	52	52.0	12.8	1.72*
Recreation	1	1.1	26	26.0	24.9	[a]
Communication	15	17.8	51	51.0	33.2	4.67*
Work Simplification	9	10.7	27	27.0	16.3	[a]
Vocational Planning and Training	3	3.5	5	5.0	1.5	[a]
Opportunities for Realistic Activities	1	1.1	12	12.0	10.9	[a]
Techniques to Deal with Public's Reaction	0	0.0	1	1.0	1.0	[a]
Home Visits	4	4.7	18	18.0	13.3	[a]

*$p < .05$

[a] Nps too small for valid judgment

The following items in Program Implementation had such small Nps that they were not included in the testing as no valid conclusions could be drawn: Recreation, Work Simplification, Vocational Planning and Training, Opportunities for Realistic Activities, Techniques to Deal with Public's Reaction, and Home Visits.

The Reevaluation criteria, reported in Table 19, showed one significant z score. The null hypothesis was rejected. The alternate hypothesis of higher quality in educational settings was accepted for the item Reassess Total Program. The z score for the item Determine Future Action was not significant. The null hypothesis was not rejected.

TABLE 19

UTILIZATION OF REEVALUATION CRITERIA IN NONTEACHING AND TEACHING HOSPITAL RECORDS

Reevaluation Criteria	Nonteaching Hospital Records N=84 f	%	Teaching Hospital Records N=100 f	%	Diff. in %	z
Reassess total program	15	17.8	33	33.0	15.2	2.33*
Determine future action	19	21.3	20	20.0	- 1.3	- .43

*$p < .05$

In Discharge Planning, reported in Table 20, z scores for the two items tested showed statistically significant differences at the .05 level. The null hypothesis was rejected. The alternate hypothesis that educational settings show higher quality, as measured by process scores, than noneducational settings was accepted for the items Summary of Program and Include Patient/Family in Planning. The last two items, Discuss Patient's

Potential and Assist with Reintegration, were too small to submit to testing for valid conclusions.

TABLE 20

UTILIZATION OF DISCHARGE PLAN CRITERIA IN NONTEACHING AND TEACHING HOSPITAL RECORDS

Discharge Plan Criteria	Nonteaching Hospital Records N=84 f	%	Teaching Hospital Records N=100 f	%	Diff. in %	z
Summary of program	19	21.3	84	84.0	62.7	8.35*
Include patient/ family in planning	13	15.4	32	32.0	16.6	2.60*
Discuss patient's potential	3	3.5	23	23.0	19.5	[a]
Assist with reintegration	1	1.1	8	8.0	6.9	[a]

*$p < .05$

[a] Nps too small for valid judgments

The Therapist Performance Index of 25.6% for noneducational settings on Total Process scores compared with 45.6% for educational settings, was significant at the .05 level, with a z score of 2.25. The null hypothesis was rejected. The alternate hypothesis that educational settings show higher quality, as measured through process, was accepted.

Hypothesis II:

H_0: There will be no difference in quality, as measured by process scores, within noneducational clinical settings on:

1. Evaluation of the patient/client

2. Planning of a therapeutic program for the patient
3. Implementation of a therapeutic program
4. Reevaluation of the program
5. Discharge planning
6. Total process

H_1: There will be a difference in quality, as measured by process scores, within noneducational clinical settings on each of the above subsections.

Logically, it might appear that the significant differences between noneducational settings and educational settings in process scores were due to some similarities within each type of program. However, this also must be questioned. In order to test the hypothesis that there is no difference, as shown through process scores, within noneducational settings, the univariate analysis of variance was chosen. The F statistic, which is a ratio of two variances, tests the null hypothesis that the strata means are equal. A significant F shows that there are non chance variations among means somewhere in the lists of sets. It does not specify where these differences exist. Assumptions for the F test include random sampling, approximately equal variances, and normal distributions with the contributions to the total variance being additive. When a significant F is found, t tests between all combinations of pairs will show where the differences exist.

Tables 21 and 22 show results of the Analysis of Variance and the subsequent t tests for Process components in noneducational facilities. In Evaluation, the F ratio was significant at the .05 level. To determine which differences in means were significant, a t test was used between the means of the Evaluation scores for the three nonteaching hospitals with a significance level set at the .05 level. The t between

Hospital A and Hospital B was not significant. The null hypothesis was not rejected. However, the *t* between Hospital B and C and the *t* between Hospital A and C were both significant, leading to the rejection of the null hypothesis and the acceptance of the alternate hypothesis.

TABLE 21

ANALYSIS OF VARIANCE OF PROCESS COMPONENT SCORES IN NONTEACHING HOSPITAL RECORDS

Process Components	Nonteaching Hospital Records						*F* Ratio
	Hospital A		Hospital B		Hospital C		
	N	Mean	N	Mean	N	Mean	
Evaluation	30	6.00	29	5.24	25	7.90	9.08*
Program Planning	11	3.68	7	2.64	15	3.70	3.52*
Program Implementation	30	5.95	29	4.29	25	6.72	5.79*
Reevaluation	4	2.50	13	3.39	4	3.50	1.44
Discharge Plan	11	2.82	8	2.63	5	2.00	.62
Total Process	30	14.67	29	12.41	25	17.80	5.47*

*$p < .05$

In Program Planning, the *F* was significant at the .05 level. The *t*s between Hospital A and B and between Hospital B and C were both significant, leading to the rejection of the null hypothesis and the acceptance of the alternate hypothesis. The *t* between Hospital A and C was not significant. The null hypothesis was not rejected.

In Program Implementation, the *F* was significant. Subsequent *t* tests showed significant *t*s between Hospital A and B and B and C. The null hypothesis of no difference between means was rejected for both

TABLE 22

ANALYSIS OF PROCESS COMPONENT SCORES IN RECORDS BETWEEN NONTEACHING HOSPITALS

Process Components	Nonteaching Hospital Records Means			t		
	Hospital A	Hospital B	Hospital C	A vs. B	B vs. C	A vs. C
Evaluation	6.00	5.24	7.90	1.25	-4.17*	-3.00*
Program Planning	3.68	2.64	3.70	2.31*	-2.49*	- .049
Program Implementation	5.95	4.29	6.72	2.35*	-3.29*	-1.05
Total Process	14.67	12.41	17.80	1.45	-3.30*	-1.94

*$p < .05$

sets of hospitals. The *t* between Hospital A and C was not significant. The null hypothesis was not rejected.

Neither *F* for Reevaluation or Discharge Plan was significant. It was not necessary to look for further differences.

On Total Process, the *F* was significant. Conducting further *t* tests disclosed a significant *t* between Hospital B and C, leading to a rejection of the null hypothesis. Neither the *t* between Hospital A and B nor that between Hospital A and C was significant. The null hypothesis was not rejected.

Hypothesis III:

H_0: There will be no difference in quality, as measured by process scores within educational clinical settings on:

1. Evaluation of the patient/client
2. Planning of a therapeutic program for the patient
3. Implementation of a therapeutic program
4. Reevaluation of the program
5. Discharge planning
6. Total process

H_1: There will be a difference in quality, as measured by process scores, within educational clinical settings on each of the above subsections. As within noneducational settings, it was also expected that similarities within the two educational settings would account for the differences found between the two types of settings. This also was questioned.

In order to test the hypothesis of no difference as evidenced by process scores, between Teaching Facility D and E, the Student's *t* was selected. The results are shown in Table 23. A significant difference, at the .05 level was found for Program Planning and for Discharge

Planning. The null hypothesis for these two components was rejected and the alternate was accepted. Evaluation, Program Implementation, and Total Process were not significant. The null hypothesis of no difference between teaching facilities was not rejected on these three components.

TABLE 23

ANALYSIS OF PROCESS COMPONENT SCORES IN RECORDS BETWEEN TEACHING HOSPITALS

Process	Teaching Hospital Records						Diff. in Means	t
	Hospital D			Hospital E				
	N	Mean	SD	N	Mean	SD		
Evaluation	73	10.90	3.06	27	10.48	3.41	.42	.58
Program Planning	62	3.80	.86	24	4.48	1.13	- .68	-3.00*
Program Implementation	73	8.86	2.91	26	8.65	2.44	.21	.33
Reevaluation	16	2.38	.80	17	4.00	.00	-1.62	-
Discharge Plan	68	2.36	1.58	21	4.17	1.90	-1.81	-4.35*
Total Process	73	25.70	6.52	27	28.56	9.48	-2.85	-1.70

*$p < .05$

Outcome Study

The method described in Chapter IV was used to (1) rate each patient as Moderately or Severely involved, and (2) rate each Discharge Assessment of Activities of Daily Living, Work Performance, and Social Objectives as Satisfactory or Unsatisfactory. These latter ratings were used in the analysis of the outcome study since they took the severity of the involvement into consideration, and therefore made comparisons possible. Table 24 shows the Severity of Involvement of Subjects in Teaching and Nonteaching Settings.

TABLE 24

SEVERITY OF INVOLVEMENT OF SUBJECTS IN NONTEACHING AND TEACHING HOSPITALS

Severity of Involvement	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
Moderate	39	53.5	25	25.8
Severe	32	46.5	72	74.2
TOTAL	71	100.0	97	100.0

Hypothesis IV:

H_0: There is no difference in quality, as measured by outcome, between educational and noneducational settings on:

1. Ratings of Activity of Daily Living assessments
2. Ratings of Job and Homemaking assessments
3. Ratings of Social Objectives assessments

H_1: Educational clinical settings will show higher quality, as measured by outcome, than noneducational settings on each of the above subsections. In analyzing the Outcome study, the z formula for testing differences of proportions was used to test the significance of differences in the Ratings of Activities of Daily Living Assessments. On the Evaluation of Eating rating, a z of .56 was not significant. The null hypothesis was not rejected. Table 25 shows the Rating of Eating Assessments of nonteaching and teaching hospital patients.

On the Evaluation of Dressing rating, a z of .95 was not significant. The null hypothesis was not rejected. Table 26 shows the Rating of Dressing Assessments of nonteaching and teaching hospital patients.

TABLE 25

RATING OF EATING ASSESSMENTS OF NONTEACHING AND TEACHING HOSPITAL PATIENTS

Rating of Eating Assessments	Nonteaching Hospital Patients f	%	Teaching Hospital Patients f	%	z
Satisfactory	40	93.0	44	95.7	.56
Unsatisfactory	3	7.0	2	4.3	
TOTAL	43	100.0	46	100.0	

TABLE 26

RATING OF DRESSING ASSESSMENTS OF NONTEACHING AND TEACHING HOSPITAL PATIENTS

Rating of Dressing Assessments	Nonteaching Hospital Patients f	%	Teaching Hospital Patients f	%	z
Satisfactory	39	86.7	49	92.5	.95
Unsatisfactory	6	13.3	4	7.5	
TOTAL	45	100.0	53	100.0	

On the Evaluation of Hygiene rating, a z of .59 was not significant. The null hypothesis was not rejected. Table 27 shows the Ratings of Hygiene Assessments of nonteaching and teaching hospital patients.

Tests were not conducted on the Evaluation of Communication or Recreation because the small Nps involved would not allow valid conclusions (Tables 28 and 29 in Appendix D). Likewise, tests were not conducted on Job or Homemaking ratings because of the small Nps. Again it was felt that no valid conclusions could be drawn (Tables 30 and 31 in

TABLE 27

RATING OF HYGIENE ASSESSMENTS OF NONTEACHING AND TEACHING HOSPITAL PATIENTS

Rating of Hygiene Assessments	Nonteaching Hospital Patients f	%	Teaching Hospital Patients f	%	z
Satisfactory	29	82.9	42	87.5	.59
Unsatisfactory	6	17.1	6	12.5	
TOTAL	35	100.0	48	100.0	

Appendix D). Finally, the hypothesis for the three Social Objectives, Ratings of Patient Relationships, Patient Planning and Discussion of Patient's Potential, was not submitted to statistical testing because of the paucity of evaluations reported (Tables 32-34 in Appendix D). Tables 35-44 (Appendix D) show original Discharge Assessments of Activities of Daily Living, Job or Homemaking Performance, and Social Objectives before transforming to ratings for comparison purposes.

Summary

Results presented in this chapter included Descriptive Data, the Process Study and the Outcome Study. On Hypothesis I results of the Process Study testing accepted the alternate hypothesis that educational settings show higher quality than noneducational settings on: 3 of 5 components of process as well as on total process; 9 of 11 items in Evaluation; 3 of 4 items in Program Planning; 7 of 9 items in Program Implementation; 1 of 2 items in Reevaluation; 2 of 4 items in Discharge Planning; and the Therapist Performance Index. The null hypothesis of no difference within noneducational settings for Hypothesis II was supported

only on Reevaluation and Discharge Planning. The null hypothesis of no difference within educational settings for Hypothesis III was supported on Evaluation, Program Implementation, Reevaluation, and Total Process. Results of the Outcome Study testing supported Hypothesis IV, that there is no difference in quality, as measured by outcome, between educational and noneducational settings on Eating, Dressing, and Hygiene. The summary of results is presented in Table 45. The foregoing data analyses are discussed in the next chapter.

TABLE 45

SUMMARY OF RESULTS

Hypotheses	Null Hypothesis	Alternate Hypothesis
Hypothesis I:		
H_0: No difference between educational and noneducational settings in Process on:		
1. Components of Process		
a. Evaluation	Rejected	Accepted
b. Program Planning	Rejected	Accepted
c. Program Implementation	Rejected	Accepted
d. Reevaluation	Not Rejected	
e. Discharge Planning	Not Rejected	
2. Total Process	Rejected	Accepted
3. Individual Items of 5 Components		
a. Evaluation		
9 of 11 items	Rejected	Accepted
2 of 11 items	Not Rejected	
b. Program Planning		
3 items tested	Rejected	Accepted
c. Program Implementation		
7 of 9 items tested	Rejected	Accepted
2 of 9 items tested	Not Rejected	

TABLE 45--Continued

Hypotheses	Null Hypothesis	Alternate Hypothesis
d. Reevaluation		
1 of 2 items tested	Rejected	Accepted
1 of 2 items tested	Not Rejected	
e. Discharge Planning		
2 items tested	Rejected	Accepted
4. Therapist Performance Index	Rejected	Accepted
Hypothesis II:		
H_0: No difference within non-educational settings in Process on:		
1. Components of Process		
a. Evaluation	Rejected	Accepted
b. Program Planning	Rejected	Accepted
c. Program Implementation	Rejected	Accepted
d. Reevaluation	Not Rejected	
e. Discharge Planning	Not Rejected	
2. Total Process	Rejected	Accepted
3. Between 3 noneducational settings		
a. Evaluation		
Hospital B vs. C	Rejected	Accepted
A vs. C	Rejected	Accepted
Hospital A vs. B	Not Rejected	
b. Program Planning		
Hospital A vs. B	Rejected	Accepted
B vs. C	Rejected	Accepted
Hospital A vs. C	Not Rejected	
c. Program Implementation		
Hospital A vs. B	Rejected	Accepted
B vs. C	Rejected	Accepted
Hospital A vs. C	Not Rejected	
d. Total Process		
Hospital B vs. C	Rejected	Accepted
Hospital A vs. B	Not Rejected	
A vs. C	Not Rejected	

TABLE 45--Continued

Hypotheses	Null Hypothesis	Alternate Hypothesis
Hypothesis III:		
H_0: No difference within educational settings on:		
1. Components of Process		
a. Evaluation	Not Rejected	
b. Program Planning	Rejected	Accepted
c. Program Implementation	Not Rejected	
d. Reevaluation	Not Rejected	
e. Discharge Planning	Rejected	Accepted
2. Total Process	Not Rejected	
Hypothesis IV:		
H_0: No difference in outcome between educational and noneducational settings on:		
1. Eating	Not Rejected	
2. Dressing	Not Rejected	
3. Hygiene	Not Rejected	

CHAPTER VI

DISCUSSION

Results presented in the preceding chapter are discussed under the following headings: Process Study, Outcome Study, and Implications.

It was felt that the validity of this study is inherent in its measurement of the actual criteria established for an ideal program by the panel of experts. Use of detailed criteria is one way of insuring measurement of what is wanted; when these criteria are direct reflections of the standards, a double measure of insurance is attained. Measurement of these criteria becomes one method of measuring quality.

The question arises of the validity of the written record as a reflection of the occupational therapy program. It is generally assumed that the written record is a valid representation of what has been done for the patient. Obviously, when a patient is being studied retrospectively, the record is the only tangible evidence of the program. Staff interviews were considered in order to add valuable information to existing records. Over this period of time, however, there had been several staff changes in most of the institutions, and it was not felt that such information could be obtained on only some of the patients without introducing a great amount of bias. Therefore, this study was based on the premise that if information was not included in the record, the assumption must be made that it had not been done.

Process Study

Between Types of Settings

The results of the Process Study showed significantly higher quality in educational clinical settings on three of the five components of process as well as on Total Process. This difference appeared on Evaluation, Program Planning, and Program Implementation. The overall scores on Total Process also reflected significant differences in favor of educational settings.

Reasons for the differences in quality between types of facilities were sought among the descriptive data on the patients. The age of the patient did not seem significant since the means for noneducational and educational settings were 55.7 and 52.7 years, respectively. However, teaching facilities had a higher percentage in the lower 40-44 year range (13% versus 2.4%), and when this is coupled with the statistic that 74% of the teaching facility patients were rated as severely involved as compared with 46.5% of the noneducational facility patients, it would appear that the higher quality of treatment associated with the educational facilities could also be associated with sending the more severe cases to teaching settings.

The type of hospitalization payment may be an even more direct reflection of quality care. The largest carrier for both types of settings, Blue Cross, covered 82.1% of the nonteaching facility patients and 63% of the teaching facility patients. Private or commercial insurance covered 13% teaching and 9.5% nonteaching hospital patients. Occupational therapy treatment charges are covered by most Blue Cross policies and some private and commercial insurances, but during the period of the study, Medicaid, which covered twice as many patients in educational settings

(13% versus 6%), did not cover occupational therapy treatments. Hospitals who offered full programs to Medicaid patients had to be willing to absorb some of the costs. It would appear that the educational settings were more willing to absorb these costs in their effort to provide quality care.

Even more relevant to the results were the data concerned with the period studied. About 17% of nonteaching facility patients were admitted only for rehabilitation, while 88% of the teaching facility patients were admitted solely for rehabilitation. This means that the majority of the nonteaching facility patients were being rehabilitated in connection with the acute phase of their illness. It would appear that higher quality of care was associated more strongly with those admitted for rehabilitation only.

The fact that 90% of the teaching facility patients, as opposed to 84.5% of the nonteaching ones were being treated after their first CVA may also account for some of the higher quality treatment in the teaching facilities since primary CVA patients are considered to have better rehabilitation potential.

An average of 4 more days spent in teaching facilities may also have some relevancy when interpreted in the light of mostly rehabilitation cases. Also, over 56% of the nonteaching facility patients stayed less than 29 days, while the same percentage of teaching facility patients was spread out over 39 days of admission. The actual number of hours in occupational therapy averaged 14.3 hours for nonteaching facilities and 16.2 hours for teaching facilities, showing them to be very similar. However, the distribution was such that 80% of the nonteaching facility patients were clustered in less than 19 hours of treatment, with

49% of these actually less than 9 hours, while the distribution of teaching facilities showed 83% as having less than 29 hours of treatment, with only 35.9% having less than 9 hours. This treatment time differential gave a definite advantage to the educational settings and may account for some of the higher quality of treatment found there.

Further reasons for this were sought among structural elements in educational and noneducational clinical settings. The first element considered was the experience of the therapists. The average length of experience of registered therapists in educational settings was eight years compared with three years in noneducational settings. Several therapists had graduate degrees in the educational settings, while the baccalaureate degree was the highest level of education of the therapists in the noneducational settings. Certified occupational therapy assistants (COTAs) in educational settings reflected one and a half years of experience while those in noneducational settings averaged five years of experience. Aides working in educational settings averaged five years of experience while noneducational settings did not incorporate services of aides. It would appear that the level of education and experience among therapists in the educational settings might account for a greater degree of sophistication, where thorough evaluations and treatment planning would be fairly common procedure rather than implementing only objectives as directed by referrals. It also appeared that therapists with more experience assumed the responsibility for evaluating the needs of the patient and planning a program. A thorough evaluation was apparently seen as necessary by therapists in educational settings in order to plan a good treatment program which could void, substantiate or complement requests made through referrals. Every patient in both

settings had some evaluation; the difference was in the thoroughness of the evaluation. The appreciable difference in means (-4.49) showed that therapists in educational settings were doing much more evaluation than those in noneducational settings. This may reflect a greater degree of self confidence on the part of therapists in educational settings to evaluate the needs of the patient and plan a program accordingly.

Pursuing consideration of the utilization of the different Process components, Program Planning showed great disparity between the two types of settings. Less than 40% of the patients in noneducational settings had any program planning documented, while over 80% of the patients in educational settings had documented program planning. The significant differences in means (-.52) again showed that much more planning was done in educational settings. Program Implementation was represented in almost every record of both settings. The degree of program implementation reflected the objectives that had been evaluated originally, and showed an appreciable increase of program implementation in the educational settings.

The Reevaluation component was seldom documented. Only 21 of the 84 patients in noneducational settings and 33 of the 100 patients in educational settings reflected this. The actual brevity of some programs may have accounted for some of this lack, but the general absence could imply that Reevaluation was a component that was seldom implemented.

There is also a dearth of Discharge Planning in the noneducational settings. Educational settings were more likely to reflect more formalized structure in their records and routinely included discharge planning. One reason for this might well be the necessity for therapists' notes to reflect the expectations of the teaching program for students.

Both Reevaluation and Discharge Planning in this study had differences in means that were too small to be significant. However, both Reevaluation and Discharge Planning are important in reviewing what has been done in the past and in making realistic plans for the future. They deserve a place in any well written occupational therapy record.

It might be interesting to speculate about the difference between therapists' qualifications and those of the panel of experts. Just as educational settings reflected higher qualifications, experience, and a higher level of performance among staff than noneducational settings, so, too, the panel of experts reflected still higher qualifications and experience. This may account for the obviously higher expectations of the panel, as evidenced in the Standards, than that of the therapists, as shown in their performance.

In the overall summation of all of the components of process, there were significant differences indicating higher quality in the educational settings.

Comparing the individual items on Process under each of the five components was pursued to give further insight into where the true differences exist, since overall scores on the components did not provide this information.

Under Evaluation in the educational settings, priorities were heavily weighted toward concerns of physical restoration such as range of motion, pattern of movement, physical tolerance, sensory function, perceptual motor function and mobility. Noneducational settings also emphasized range of motion, patterns of movement and mobility, but paid less attention to the other physical restoration objectives. Sensory and perceptual motor assessments are more recent evaluation techniques,

and therefore might more likely appear in teaching settings. It was the feeling of the panel of experts that all criteria should be evaluated for every patient to show that these things had been considered.

Activities of Daily Living such as eating, dressing, and hygiene, may be classified as both physical and social objectives. Eating was evaluated by 52% of the nonteaching facilities and 45% of the teaching facilities. Organizational structure may explain parts of both of these unexpected low percentage rates. In one of the nonteaching facilities, in which only 5 out of 29 cases were evaluated, nursing service had reportedly assumed the primary responsibility for eating, dressing, and hygiene. However, there was no objective substantiation of this in the hospital record. One of the teaching facilities had an Activities of Daily Living Unit, which is part of nursing service, but includes three registered occupational therapists on the staff of this unit. These notes were well substantiated but did present a problem for this study evaluating the quality of occupational therapy. It was decided to give credit for Evaluation, Program Implementation or Discharge Assessment of Activities of Daily Living only when the note was signed by a registered occupational therapist. The fact that 39 patients in this institution had Activities of Daily Living records signed by nursing personnel is mentioned in that, while these cases were not credited in this study, they contribute to the picture of the total patient program. The occupational therapist's signature more often appeared on the notes concerned with household management and home visits. The other educational setting had separate rehabilitation sections, and whereas the specific job roles overlapped in some Activities of Daily Living areas, it did not present the same problems in identifying the role of occupational

therapy in Evaluation or Program Implementation but did present some problems in the area of Discharge Assessments when these were written by a different member of the team. Once again, occupational therapy was only credited for the notes signed by the occupational therapist.

The more socially oriented items of Communication and Recreation were evaluated more frequently in educational settings, while both Household Management and Vocational Concerns were minimally represented in both settings. Complete evaluations should have shown that these items were considered, even though they may not have warranted inclusion in the program. Patient/Family Goals were recorded infrequently.

In summary, the pattern of objectives evaluated in educational settings appeared to assign priority to physical restoration, while the same tendency existed in noneducational settings with fewer objectives included. Second priority was assigned to combinations of physical and social objectives, while the objectives most clearly social received least attention of all.

In Program Planning, records from educational settings reflected more than twice as many cases in which objectives had been determined and priorities had been set than did those from noneducational settings. Only one section of one of the teaching facilities had made it a policy to project the length of the program; this information was nonexistent in all of the others. While the consideration of complicating conditions was statistically significant in educational settings and appeared almost three times as often as in noneducational settings, still it only represented 31% of all the educational setting cases.

Program Implementation reflected the same priorities shown in Evaluation, with emphasis placed on physical restoration, combinations

of physical and social restoration, and with the least emphasis placed on social objectives. The distribution pattern logically follows the Evaluation pattern in that objectives that had been evaluated were included in the program. Significant differences on 9 of 11 items tested followed the same distribution pattern, while 5 items, all with social objectives included, were too small to lend themselves to valid testing. However, the priorities may also be explained in terms of organizational structure. All the occupational therapy departments in this study were placed administratively in Physical Medicine Departments, except during the last four months when one nonteaching facility became an autonomous unit. Whereas Physical Medicine purports to include both physical and social rehabilitation, it is actually heavily weighted toward physical restoration. Occupational therapy programs and records in these settings logically reflected the heavy emphasis on physical restoration due to the nature of referral patterns. One of the rehabilitation units within one of the educational settings broke through some of these constraints to realistic patient goals by providing trips out into the community for shopping or dining out, home visits, and inclusion of client and his family in all planning and treatment. Few cases in either type setting showed strength in this aspect of the program. One might question whether occupational therapy can carry out its potential program in traditional settings or whether more effective methods of delivering service must be found.

The comparison of Reevaluation items showed that the total program was reassessed twice as often in educational settings as in noneducational settings, but this still amounted to only 33% of the total patients in educational settings. Future action was determined in only 20% in both

settings. It is apparent that this component of process has little support in practice.

Discharge Planning indicated that 84% of the records in educational settings included discharge summaries. This was almost four times as many as in noneducational settings, but falls short of the supposition that every record should reflect a discharge summary. The patient and family were included in planning in only 32% of the teaching facility cases and 15.4% of the nonteaching facility cases. The patient's potential was discussed seven times more often in educational settings, but still only 23% of the time. Adequate evidence of social reintegration objectives was lacking. The component of Discharge Planning was deficient in most of the objectives.

The Therapist Performance Index was figured on Total Process scores and is computed by dividing the total achieved points by the total possible points. Noneducational settings had an Index of 25.6% while educational settings had an Index of 45.6%. The TPI provides an overall indicator of the quality of care. While the educational settings showed significantly higher quality of care on the TPI, this measurement also indicated definite room for improvement in both types of settings. Unlike Payne's study (1972), which reported a Physician Performance Index of 42% for the same diagnosis, the therapists were not made aware in advance of the specific criteria used in each component since this study was done retrospectively. It would be interesting to know if such advance knowledge would have produced different results.

Within Types of Settings

The analysis of variance showed significant differences within the nonteaching facilities on Evaluation, Program Planning, Program

Implementation, and Total Process. This was contrary to the expectation that similarities within types of settings would account for differences between types of settings.

The significant differences between means of the nonteaching facilities on Evaluation would appear to be associated with Hospital C. In structure, this hospital comes closest to the teaching facilities. It is possible that its higher quality is a reflection of the organization and administration of the department in which it is located. While it did not have a teaching program, many other departments in this facility did have them, which may have contributed to the atmosphere for quality achievement.

In Program Planning's significant differences, Hospital A and Hospital C were both superior to Hospital B. In Program Implementation, Hospital A and Hospital C were both superior to Hospital B. In Total Process, Hospital C was superior to Hospital B.

Of the nonteaching facilities, Hospital A is an acute treatment general hospital where the patient is often hospitalized from several days to several weeks prior to being seen in occupational therapy. His treatment average is about seven treatments over the last two weeks of hospitalization. He is often too ill to participate in a full program, and it is not unusual for him to be discharged before the program is finished. Several referrals were of one day duration.

Hospital B is a community general hospital, housing a rehabilitation unit into which the patients are usually transferred before they are seen in occupational therapy. Patients are treated an average of two months, and since most of its patients are from the same community, there were more outpatient treatments carried out here than in any other

facility. In spite of superior physical facilities and fewer problems with the length of occupational therapy treatment, the quality of Hospital B was significantly lower than that of the other nonteaching facilities. Part of this might be explained by the report that Nursing was carrying out some of the Activity of Daily Living objectives, while the therapists' program was almost exclusively on physical restoration.

Hospital C is also a community general hospital with the least experienced professional staff, but well experienced technical staff. Occupational therapy referrals are from departments such as Neurology and Medicine as well as Physical Medicine. It was mentioned that the structure of this department is the closest to that of the teaching facilities. Noticeably different was the amount of staff experience and the rapid turnover of staff associated with this facility. Patients are seen in occupational therapy programs for an average of three to five weeks but much of this time is early post CVA so that programs are limited. Limitations on programs in Hospital A and C due to trying to carry out a program during the acute phase of a patient's illness suggest that acute versus chronic medical and social conditions may account for some of the difference in quality between educational and noneducational settings.

Within the educational settings the only significant differences were found in Program Planning and Discharge Planning in favor of Hospital E. Both within Physical Medicine programs, these two institutions have experienced staffs whose programs reflect more organization. One institution deals completely with patients brought in exclusively for rehabilitation; the other also has many patients during the acute phase of illness as well as those brought in only for rehabilitation. It would appear that therapists in Hospital E had more latitude in Program Planning than

those in Hospital D. Routinely, Discharge Planning was reflected in both institutions' records. More family involvement and documentation of social adjustment appeared in records of Hospital E.

It had been expected that similarities within types of facilities might account for differences between types of facilities. However, the number of significant differences within noneducational settings, and to a lesser extent, within educational settings, point up the fact that differences within types of settings also contribute to differences between settings.

Outcome Study

After transforming the Activities of Daily Living Assessments into Satisfactory or Unsatisfactory ratings, they were submitted to statistical analysis which did not support the hypothesis of significant differences on Eating, Dressing or Hygiene ratings between noneducational and educational settings. Ratings on Communication and Recreation were too small to submit to analysis. This was also true for Evaluation of Job and Homemaking. Statistical analysis on ratings of Social Objectives was also deferred due to the few cases reported.

The frequency of reporting on Eating, Dressing and Hygiene hovered around 50% of the total cases. The other ratings became smaller until they reached microscopic proportions on the Social Objectives ratings.

The outcome studies proved disappointing. Ideally, they would have added a measure of reliability to the study by providing a second reading on all the Activities of Daily Living, Work Performance and Social Objectives. This part was planned as an assessment of performance and an assessment of how satisfactory the rehabilitation program had been in terms of results.

The most significant implication of the outcome study is the lack of documentation on so many of the cases. There is no way to determine the outcome of programs that do not assess progress.

The Process Study measured quality through an additive method of counting weighted criteria as compared with existing standards. It could not measure the effectiveness of each patient's program in terms of his achievements. The outcome study could have contributed immensely to this.

In this day of third party payers, the records of health professions must show not only what was done in treatment, but also what was achieved. Even more important is the therapist's need to know how effective the past programs have been in order to improve the quality of programs for the future. Good documentation is absolutely essential if this is to materialize.

Implications

The method of assessing the quality of care in this study is based upon the retrospective use of written records. The value of accurate and complete records in health care cannot be too strongly stressed. Occupational therapy records serve the following purposes: (1) to assist in planning a comprehensive occupational therapy program for the recipient, (2) to document progress, (3) to assist in integrating the occupational therapy program with that of other health professions, (4) to communicate with third party payers, (5) to inform others about occupational therapy, and (6) to provide a permanent record of occupational therapy services.

The deficiencies discovered in records used in this study show a need for inservice programs aimed at improving the quality of written

records. It is conceivable that these programs might be offered in such a way that both types of settings could share their thinking on this undertaking, with the end result reflected in better record keeping and ultimately better care for the patient.

Records reflect both normative and empirical standards of the profession. Inherent in this study is the implication that standards for practice need to be sufficiently explicit to be used in assessment of the quality of the care provided. Existing standards for hemiplegic programs were revised for this study. Those for other diagnoses should also be updated. Revisions are a continuous process as new objectives and techniques are incorporated into the service process. Quality control of records can best be accomplished through an effective system of peer review. There is evidence that peer review is being done in some facilities resulting in improved records. More specific standards could improve the validity of the peer reviews. Both inter- and intra-peer review mechanisms in educational and noneducational settings would provide excellent learning experience for the therapists.

Assessing the quality of a program by comparing its records against existing standards is the most common way to assess process. Along with other health professions in this age of accountability, occupational therapy must regularly assess the quality of its programs in order to determine comparability by normative standards. The profession assumes the responsibility for the provision of quality care to assure the recipient that he is receiving good care and to satisfy the fiscal intermediaries that they are paying for quality care.

Most assessments used by accreditation bodies are structural in nature. They assess the facilities and the qualifications of the

providers of care, but rarely include the assessment of care provided. Evidence of a continuing audit or peer review process would enhance the decisions which these bodies must make. Admittedly, process, or management and care of the patient, is more difficult to assess, but its measurement and that of outcome must be added if assessment is going to be complete.

Assessments of quality will not only help to evaluate the progress of the past but will furnish guidelines for the future. This is the first known assessment of a total process study in occupational therapy. It is hoped that it will be the first of many studies whose methodology will improve the evaluation of process and leave its mark in improved service to the recipient of occupational therapy care.

Outcome studies were also mentioned as necessary additions to assessments of the quality of care. Outcome studies measure the results of treatment, and are extremely important if the effectiveness of programs is to be judged. Outcome studies in occupational therapy have measured physical function or some combination of physical and social function. Future outcome studies should also measure impact in terms of social participation and life satisfaction. Outcome studies in different systems of health care delivery would indicate where occupational therapy has been the most effective or where efforts should be expended or deleted.

The official definition of occupational therapy (1972) states that its fundamental concern is the development and maintenance of the capacity, throughout the life span, to perform with satisfaction to self and others those tasks and roles essential to productive living and to the mastery of self and the environment.

When a person becomes physically impaired from a CVA and is unable to participate in those social roles normally expected of him, he is described as being disabled. Immediately following the stroke, he assumes the sick role during which he is dependent on others, and is expected to do only those things expected of him by the physician and other members of the health professions. Following the sick role, he assumes the disabled role during which he is expected to make efforts to overcome his handicap, adapt to his disability, compensate by use of the unaffected parts, work and be socially active to some extent (Kutner, 1971).

Four of the five institutions used in this study had patients who were receiving their rehabilitation immediately after the CVA. It would seem apparent that that stage of acute illness would find the patient occupying the sick role. A sudden transition to the disabled role is expected either in the same location of the original facility, or by transfer to a location devoted specifically to rehabilitation. Only the one teaching facility admitted all of their patients solely for the rehabilitation phase. Extended inhospital rehabilitation forces the patient to assume both the sick and the disabled role (Keith, 1971). Such role confusion can only detract from the success of the rehabilitation phase. The success of the occupational therapy program would be adversely affected by this role confusion.

Of equal importance is the focus of most rehabilitation programs on the recovery of physical function. While lip service is given to comprehensive care and treatment of the whole person, the field of rehabilitation, with few notable exceptions, is oriented toward physical diagnosis and physical treatment (Kutner, 1971). Occupational therapy does have a place within the institutional rehabilitation setting but

the author feels that it is time to examine whether this is the optimal place to provide its service.

Since its inception, occupational therapy has professed to assist the patient with the psychosocial adjustment to his disability. Yet this study shows that most of the concentration is on objectives dealing with physical restoration. The logical question is whether the programs that are centered around the medical model with its emphasis on physical restoration can ever give equal emphasis to psychosocial problems.

The results of the study showing some emphasis on combined physical and social objectives raise the question of whether the gains that have been reached by the patient in the hospital will find him able to function well at home, at a job and in the community. None of these questions were answered in this study. Outcome studies in the patient's environment would be needed to ascertain these answers. Evidence of the end results of treatment, including assumed roles and life satisfactions is needed to assess total rehabilitation.

Realizing that organizational dimensions may be hampering rather than fostering full attainment of occupational therapy objectives, an alternate model of delivery of care suggests the offering of service in the patient's natural environment. This would decentralize the bureaucratized rehabilitation systems so that rehabilitation services are readily available in the environments of patients and their families (Sussman, 1972). Such a program would eliminate the transitional phase from the institution to home and allow for family involvement at all stages. By functioning in the patient's home environment the professional has autonomy to practice within the limits of his expertise without the constraints inherent in institutional practice. Service could continue

to be offered within the institution during the acute phase, but would include plans to implement most of the program in the patient's own environment. Professional staff could be reduced considerably in institutions, utilizing their skills where evaluation, planning and decision making is needed, while highly skilled certified occupational therapy assistants (COTAs) could do the routine programs for objectives such as Activities of Daily Living. Changes in the delivery system of occupational therapy could change the focus of treatment from primarily physical restoration to include broader aspects of social rehabilitation than are now being achieved.

A further implication in the findings that educational settings provided better programs than did noneducational settings might suggest the use of the process study by the centers themselves as a means of self assessment, using the TPI as a quick indication of quality. With the expectation that some measures of improvement would be incorporated, a later measurement would show areas of improvement. Curriculums interested in using new clinical affiliation centers could use the results of the process study in combination with standards for clinical affiliations as an assessment of the quality of care offered by that institution's occupational therapy department. Use of the outcome study by both educational and noneducational centers could result in better discharge evaluations by making the therapists aware of the necessity of recording results of treatment.

It is interesting to speculate about further reasons for apparent superiority of educational clinical settings. There is a noticeable motivation for quality in educational settings that seems to accompany the desire and effort to provide student experiences. These same

institutions often include related disciplines which also have instructional programs, thus setting a climate for seeking quality. Finally, the fact that institutions showing higher quality include education as well as patient care in their basic philosophy seems to affect the motivation for quality.

Implications for curriculums on both the professional and technical level logically follow. Additional sociology, appropriately integrated into the curriculum, would enhance the understanding of normal, sick and disabled roles in society. The standards from this study have potential for incorporation into the preparation of the professional and technical therapist in the treatment of individuals who are hemiplegic as the result of cerebral vascular accidents. Explorations of new patterns for delivery of service will necessitate changes in the curriculum to prepare students for these new areas. If the focus of treatment changes, students must be adequately prepared to implement these changes.

With the standards as format, the process study will provide valuable information in teaching students the art of record writing. It could also serve as a guide in teaching the treatment process, utilizing the criteria to fill in the framework of the components from evaluation to discharge. Senior seminars could benefit by being introduced to the philosophy of assessing programs while utilizing opportunities to try this assessment tool on actual records.

And finally, continuing education, the shared responsibility of both education and practice, may provide the arena for learning the basics of program assessment in its constant attempt to increase skills and modernize concepts dealing with real life aspects of care.

CHAPTER VII

SUMMARY

The purpose of this study was to develop and test a methodology for assessing the quality of care in occupational therapy. This was accomplished by: (1) comparing the quality of occupational therapy practice, as measured by process, between educational and noneducational clinical settings, (2) comparing the quality of occupational therapy practice, as measured by process, within educational and noneducational clinical settings, and (3) comparing the quality of occupational therapy practice, as measured by outcome, between educational and noneducational settings.

Records from 84 patients with residual hemiparesis or hemiplegia in three noneducational occupational therapy clinical settings and 100 patients in educational occupational therapy clinical settings were chosen by proportionate stratified random sampling. An external audit using the information from the hospital record was used to conduct a retrospective process and outcome study. A questionnaire was used to determine structure in the different settings. Standards drafted by the investigator were revised and established as normative by a panel of experts for use in judging the occupational therapy programs.

The study tested the following hypotheses:

1. Educational clinical settings will show higher quality, as measured by process scores, than the noneducational settings on:

a. Evaluation

b. Program Planning

c. Program Implementation

d. Reevaluation

e. Discharge Summary

f. Total Process

g. Each item of the five components of process

h. Therapist Performance Index of total process

2. There will be no significant difference in quality, as measured by process scores, within noneducational clinical settings on:

a. Evaluation

b. Program Planning

c. Program Implementation

d. Reevaluation

e. Discharge Summary

f. Total Process

3. There will be no significant difference in quality, as measured by process scores, within educational settings on:

a. Evaluation

b. Program Planning

c. Program Implementation

d. Reevaluation

e. Discharge Summary

f. Total Process

4. Educational clinical settings will show higher quality, as measured by outcome, than the noneducational settings on:

a. ratings of Activity of Daily Living assessments

b. ratings of Job and Homemaking assessments

c. ratings of Social Objectives assessments

Results on testing Hypothesis I showed significantly higher quality in educational clinical settings on three of the five components of process, namely, Evaluation, Program Planning and Program Implementation, as well as on Total Process.

The comparison on individual items on Process under each of the five components found significantly higher scores in educational settings on the majority of items tested in Evaluation, Program Planning and Program Implementation and half the items tested in Reevaluation and Discharge Planning. Most of the components had some items whose percentages were not submitted to testing because they were too small for valid conclusions.

The Therapist Performance Index of 25.6% for noneducational settings on total process scores compared with 45.6% for educational settings showed significantly higher scores for the educational clinical settings.

The testing of Hypothesis II to determine that there were no differences within noneducational settings in Process showed significant differences on Evaluation, Program Planning, Program Implementation and Total Process. Subsequent testing between the three facilities showed significant differences between Facility B and C, and Facility A and C on Evaluation, between Facility A and B, and Facility B and C on Program Planning, between Facility A and B and Facility B and C on Program Implementation, and between Facility B and C on Total Process. The null hypothesis was supported on Reevaluation and Discharge Planning.

The testing of Hypothesis III to determine that there were no differences within educational clinical settings in Process showed significant differences between the two settings on Program Planning and Discharge Planning. The null hypothesis was supported on Evaluation, Program Implementation, Reevaluation, and Total Process.

The testing of Hypothesis IV to determine whether there was higher quality in Outcome in educational clinical settings showed no significant differences on Eating, Dressing or Hygiene between the two types of settings. The small percentages involved precluded use of tests on other items of Activities of Daily Living, Job, Homemaking, and all of the Social Objectives. The hypothesis was not supported.

The Process Study showed significantly higher quality in the educational clinical settings. The Outcome Study did not show significant differences. The most striking finding in the latter study is the fact that end results of treatment were not regularly recorded so that the numbers on which to judge quality were relatively few in both types of settings. Also missing were data relative to Job and Homemaking concerns. Throughout both studies data on Social Objectives were noticeably deficient. In essence, there was little material to tell what the results of treatment were in terms of physical performance and almost none relative to social performance.

Limitations

Limitations of this study include the fact that the use of hospital based programs demonstrates only one facet of occupational therapy's delivery system of service. Application of this study to other settings may necessitate adaptation of the criteria listed in the process study. A second limitation is the assumption that records reflect the total

program. While the rationale has been presented earlier for presuming that the quality of care is related to the quality of recording, this continues to need empirical confirmation. Rosenfeld (1957) has shown a positive correlation between recording and the quality of care. Another limitation is a question of reliability in using a single rater. It was not possible to build any tests of inter-rater reliability into this study.

Recommendations

It is recommended that future studies be done replicating this study as well constructing other process studies. This may necessitate development of current occupational therapy standards for different diagnoses, and construction of instruments with criteria suitable to the particular diagnostic category being studied. It is suggested that the same components of practice be used, namely, Evaluation, Program Planning, Program Implementation, Reevaluation and Discharge Planning. It is further suggested that many different outcome studies be conducted, particularly adding a measurement of the individual's concept of his health and life satisfaction as he returns to his former role or to an altered role in the community.

APPENDIX A

REVISED STANDARDS

APPENDIX A

REVISED STANDARDS

(Defined by Panel of Experts)
(April, 1972)

1. Evaluation: The purpose of the occupational therapy evaluation of patients with residual hemiplegia is to assess the patient's level of physical function (range of motion, coordination, strength, mobility) and his level of social adjustment (activities of daily living, job, home management) in order to determine potential performance and to establish base lines for occupational therapy programs which will be implemented according to priorities. Evaluation will be made through an assessment of:

    1. Range of motion (passive, active)
    2. Patterns of movement (no voluntary movement, voluntary mass movement, selected motion, including strength, and selected control, including strength and coordination)
    3. Mobility (sitting, standing, transfer, ambulation)
    4. Activities of daily living (eating, bathing, dressing, hygiene, communication, recreation)
    5. Physical tolerance (time, strength, endurance)
    6. Household management (simulation of home situation, at any appropriate level)
    7. Vocational concerns
    8. Sensory function including somatic and special senses (proprioceptive, stereognostic)
    9. Perceptual motor function
    10. Self concept (including body image)

11. Mentation (affect, memory, response, comprehension)

12. Patient's and/or family's goals

2. Program planning: Objectives will be determined and priorities will be set depending upon evaluation.

3. Program implementation: Activities will be selected to promote the following:

    1. Range of motion

    2. Muscle reeducation (including movement patterns and strengthening)

    3. Activities of daily living

    4. Physical tolerance

    5. Work simplification for household management and/or job

    6. Vocational planning and training (including work habits or skill retraining)

    7. Sensory motor techniques (including proprioceptive neuromuscular facilitation)

    8. Perceptual motor training (integration of sensory input through meaningful motor activities)

    9. Opportunities for realistic activities (shopping, laundromat, movies, dining out - with discussion about patient's reaction to his limitations and others' reactions to him)

    10. Training to deal with general public's reaction to him as a disabled person as well as patient's response to same

    11. Home visit(s) and program integration

4. Reevaluation: Periodic review will include:

    1. Reassessment of the above

    2. Determination of appropriate future action

5. Discharge: A discharge will:

    1. Include family, as well as patient, in planning and treatment

    2. Take trial weekends at home if possible

3. Discuss patient's capabilities and limitations with him and his family

4. Actively reintegrate patient into the community

5. Plan for future action

APPENDIX B

INSTRUMENT FOR RECORDING DATA FROM HOSPITAL RECORDS

APPENDIX B

INSTRUMENT FOR RECORDING DATA FROM HOSPITAL RECORDS

Card No. ___ (1)

Hospital Reg. No. _____ | | | | | | | | | (2-9)

Hospital Code No. _____ (10) ___ (10)

Date of Birth _____ (11-16) | | | | | | | (11-16)

Age _____ (17-18) ___ (17-18)

Sex _____ (19) ___ (19)

1. Male
2. Female

Type of Payment _____ (20) ___ (20)

1. Medicare
2. Medicaid
3. Blue Cross
4. Insurance (Private or Commercial)
5. Private Pay
6. Other (specify)

Number of CVAs _____ (21) ___ (21)

Dates of Cerebrovascular Accidents

Primary _____ ___ (22-23)
Most Recent _____ ___ (24-25)

Admission Date for Primary CVA and Rehab _____

Discharge Date _____
No. of days _____ (26-27) ___ (26-27)

Admission Date or O.P. Trt. Date for Rehab Only _____

Discharge Date _____
No. of days _____ (28-29) ___ (28-29)

No. of Hours in O.T. _____ (30-31) ___ (30-31)

Period being evaluated in Study _____ (32) ___ (32)

1. Primary Stroke Admission and Rehab Services
2. Rehab Services Only

Diagnoses: Primary _____ (33) ___ (33)

Associated

Aphasia (34)	___ (34)
Hemianopsia (35)	___ (35)
Cardiovascular disease (36)	___ (36)
Hypertension (37)	___ (37)
Diabetes (38)	___ (38)
Respiratory disease (39)	___ (39)
Previous CVA (40)	___ (40)
Other (specify) (41) _____	___ (41)
None (42)	___ (42)

Etiology _____ (43) ___ (43)

1. Subarachnoid Hemorrhage
2. Cerebral Hemorrhage
3. Occlusion of Precerebral Arteries
4. Cerebral Thrombosis
5. Cerebral Embolism
6. Acute but Ill-defined Cerebrovascular Disease
7. Other and Ill-defined Cerebrovascular Disease

Residual Paralysis _____ (44) ___ (44)

1. Yes
2. No

Side Affected _____ (45) ___ (45)

1. Left
2. Right

Dominance _____ (46) ___ (46)

1. Left
2. Right

PROCESS

Evaluation	Wgt.	Score
Range of Motion	1.0	___ (47-48)
Patterns of Movement	1.5	___ (49-50)
Physical Tolerance	1.5	___ (51-52)
Sensory Function	1.5	___ (53-54)
Perceptual Motor Function	1.5	___ (55-56)
Mentation	1.5	___ (57-58)
Mobility (sitting, standing, transfer, ambulation)	1.0	___ (59-60)
Eating	1.5	___ (61-62)
Dressing	1.5	___ (63-64)
Hygiene	1.5	___ (65-66)
Communication (writing, typing, telephoning)	1.5	___ (67-68)
Recreation	1.0	___ (69-70)
Household Management	1.0	___ (71-72)
Vocational Concerns	1.0	___ (73-74)
Self Concept	1.0	___ (75-76)
Patient/Client and/or Family Goals	1.5	___ (77-78)
Program Planning		
Determine Objectives	2.0	___ (79-80)
Set Priorities	1.5	___ (2:11-12)
Project Length of Program	1.0	___ (13-14)
Consider Complicating Conditions	1.5	___ (15-16)

Program Implementation	Wgt.	Score
Range of Motion	1.0	___ (17-18)
Muscle Reeducation (including movement patterns and strengthening)	1.0	___ (19-20)
Physical Tolerance	1.0	___ (21-22)
Sensorimotor Training (including proprioceptive neuromuscular facilitation)	1.0	___ (23-24)
Perceptual Motor Training (integration of sensory input through meaningful motor activities)	1.0	___ (25-26)
Eating	2.0	___ (27-28)
Dressing	2.0	___ (29-30)
Hygiene	2.0	___ (31-32)
Recreation	1.5	___ (33-34)
Communication (writing, typing, telephoning)	1.5	___ (35-36)
Work Simplification (home or job)	1.0	___ (37-38)
Vocational Planning and Training	1.0	___ (39-40)
Opportunities for Realistic Activities	1.0	___ (41-42)
Techniques to Deal with General Public's Reaction to Him as a Disabled Person as Well as Patient/Client's Response to Same	1.5	___ (43-44)
Home Visit(s) and Program Integration into Patient's Environment	1.5	___ (45-46)
Reevaluation		
Reassess Total Program	2.0	___ (47-48)
Determine Appropriate Future Action	2.0	___ (49-50)
Discharge Plan		
Summary of Program and Plan for Future Action	1.5	___ (51-52)
Include Patient/Client and Family in Planning and Treatment	2.0	___ (53-54)

Discharge Plan, continued	Wgt.	Score
Discuss Patient/Client Capabilities and Limitations with Him and His Family	2.0	___ (55-54)
Actively Assist with Reintegration of Patient/ Client into the Community	1.5	___ (57-58)

OUTCOME

Assessment of Physical Function at Discharge

Activities of Daily Living

1.	Eating	___ (59)	___ (66)	
2.	Dressing	___ (60)	___ (67)	
3.	Hygiene	___ (61)	___ (68)	
4.	Communication	___ (62)	___ (69)	
5.	Recreation	___ (63)	___ (70)	

(59-65)
(1) Independent performance without equipment
(2) Practical performance with equipment
(3) Practical performance with human assistance
(4) Cannot perform

(66-72)
Sat (1) Unsat (2)

Independence at Work

1.	Job	___ (64)	___ (71)
2.	Homemaking	___ (65)	___ (72)

Social Objectives Achieved at Discharge

1.	Patient/Client Appears to Relate to Family and Friends	___ (73)	___ (77)
2.	Patient/Client and Family Have Been Involved in Patient's Planning and Treatment	___ (74)	___ (78)
3.	Family and Patient Have Been Involved in Discussion of His Capabilities and Limitations	___ (75)	___ (79)
4.	Patient Demonstrated Ability in Dealing with General Public's Reaction to His Disability	___ (76)	___ (80)

(73-76)
(1) Minimally
(2) Moderately
(3) Considerably

(77-80)
Sat (1) Unsat (2)

APPENDIX C

QUESTIONNAIRE TO DETERMINE STRUCTURE OF HOSPITAL SETTINGS

APPENDIX C

QUESTIONNAIRE TO DETERMINE STRUCTURE

Name of Institution _____

Number of Beds _____

No. of OTRs _____ Average length of experience _____

No. of COTAs _____ Average length of experience _____

No. of O. T. Aides (actually working in patient programs) _____

Average length of experience _____

Average Length of Stay for CVA patients/clients _____

Average Length of O. T. Program with CVA patient/client _____

Check socioeconomic status of majority of your patient/clients.

Lower class _____
Middle class _____
Upper class _____

Is your occupational therapy department

____ autonomous
____ part of Physical Medicine
____ part of another department (please specify) _____

What is the source of your CVA referrals

____ Physical Medicine
____ Other departments (please specify) _____

Do you have OTRs working with CVA patients in other sections not specifically labeled as Occupational Therapy? If so, please list section and give name of OTRs working there from Jan. 1971 thru March 1972.

_____

_____

_____

APPENDIX D

TABLES 28 THROUGH 44

APPENDIX D

TABLE 28

RATING OF COMMUNICATION ASSESSMENTS OF NONTEACHING AND TEACHING HOSPITAL PATIENTS

Rating of Communication Assessments	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
Satisfactory	6	75.0	6	75.0
Unsatisfactory	2	25.0	2	25.0
TOTAL	8	100.0	8	100.0

TABLE 29

RATING OF RECREATION ASSESSMENTS OF NONTEACHING AND TEACHING HOSPITAL PATIENTS

Rating of Recreation Assessments	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
Satisfactory	0	-	3	100.0
Unsatisfactory	0	-	0	-
TOTAL	0	-	3	100.0

TABLE 30

RATING OF JOB ASSESSMENTS OF NONTEACHING AND TEACHING HOSPITAL PATIENTS

Rating of Job Assessments	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
Satisfactory	0	-	1	100.0
Unsatisfactory	1	100.0	0	-
TOTAL	1	100.0	1	100.0

TABLE 31

RATING OF HOMEMAKING ASSESSMENTS OF NONTEACHING AND TEACHING HOSPITAL PATIENTS

Rating of Homemaking Assessments	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
Satisfactory	3	75.0	10	55.6
Unsatisfactory	1	25.0	8	44.4
TOTAL	4	100.0	18	100.0

TABLE 32

RATING OF PATIENT RELATIONSHIP ASSESSMENTS OF NONTEACHING AND TEACHING HOSPITAL PATIENTS

Rating of Patient Relationship Assessments	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
Satisfactory	4	100.0	5	62.5
Unsatisfactory	0	-	3	37.5
TOTAL	4	100.0	8	100.0

TABLE 33

RATING OF PATIENT PLANNING ASSESSMENTS OF NONTEACHING AND TEACHING HOSPITAL PATIENTS

Rating of Patient Planning Assessments	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
Satisfactory	3	75.0	18	52.9
Unsatisfactory	1	25.0	16	47.1
TOTAL	4	100.0	34	100.0

TABLE 34

RATING OF ASSESSMENTS OF DISCUSSION OF PATIENT'S POTENTIAL OF NONTEACHING AND TEACHING HOSPITAL PATIENTS

Rating of Assessments of Discussion of Patient's Potential	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
Satisfactory	1	100.0	12	70.6
Unsatisfactory	0	-	5	29.4
TOTAL	1	100.0	17	100.0

TABLE 35

DISCHARGE ASSESSMENT OF EATING IN NONTEACHING AND TEACHING HOSPITAL PATIENTS

Discharge Assessment of Eating	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
Performs independently without equipment	27	62.8	19	41.3
Practical performance with equipment	8	18.6	11	23.9
Practical performance with human assistance	5	11.6	16	34.8
Cannot perform	3	7.0	0	-
TOTAL	43	100.0	46	100.0

TABLE 36

DISCHARGE ASSESSMENT OF DRESSING IN NONTEACHING AND TEACHING HOSPITAL PATIENTS

Discharge Assessment of Dressing	Nonteaching Hospital Patients f	%	Teaching Hospital Patients f	%
Performs independently without equipment	28	62.2	17	32.1
Practical performance with equipment	2	4.4	9	17.0
Practical performance with human assistance	11	24.4	25	47.2
Cannot perform	4	8.9	2	3.8
TOTAL	45	100.0	53	100.0

TABLE 37

DISCHARGE ASSESSMENT OF HYGIENE IN NONTEACHING AND TEACHING HOSPITAL PATIENTS

Discharge Assessment of Hygiene	Nonteaching Hospital Patients f	%	Teaching Hospital Patients f	%
Performs independently without equipment	23	65.7	13	27.1
Practical performance with equipment	1	2.9	4	8.3
Practical performance with human assistance	9	25.7	28	58.3
Cannot perform	2	5.7	3	6.3
TOTAL	35	100.0	48	100.0

TABLE 38

DISCHARGE ASSESSMENT OF COMMUNICATION IN NONTEACHING AND TEACHING HOSPITAL PATIENTS

Discharge Assessment of Communication	Nonteaching Hospital Patients f	%	Teaching Hospital Patients f	%
Performs independently without equipment	6	75.0	6	75.0
Cannot perform	2	25.0	2	25.0
TOTAL	8	100.0	8	100.0

TABLE 39

DISCHARGE ASSESSMENT OF RECREATION IN NONTEACHING AND TEACHING HOSPITAL PATIENTS

Discharge Assessment of Recreation	Nonteaching Hospital Patients f	%	Teaching Hospital Patients f	%
Performs independently without equipment	0	-	1	33.3
Practical performance with human assistance	0	-	2	66.7
TOTAL	0	-	3	100.0

TABLE 40

DISCHARGE ASSESSMENT OF JOB IN NONTEACHING AND TEACHING HOSPITAL PATIENTS

Discharge Assessment of Job	Nonteaching Hospital Patients f	%	Teaching Hospital Patients f	%
Performs independently without equipment	0	-	1	100.0
Cannot perform	1	100.0	0	-
TOTAL	1	100.0	1	100.0

TABLE 41

DISCHARGE ASSESSMENT OF HOMEMAKING IN NONTEACHING AND TEACHING HOSPITAL PATIENTS

Discharge Assessment of Homemaking	Nonteaching Hospital Patients f	%	Teaching Hospital Patients f	%
Performs independently without equipment	3	75.0	2	11.1
Practical performance with equipment	0	-	3	16.7
Practical performance with human assistance	0	-	6	33.3
Cannot perform	1	25.0	7	38.9
TOTAL	4	100.0	18	100.0

TABLE 42

DISCHARGE ASSESSMENT OF PATIENT RELATIONSHIPS IN NONTEACHING AND TEACHING HOSPITAL PATIENTS

Discharge Assessment of Patient Relationships	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
Minimally	0	-	3	37.5
Moderately	2	50.0	2	25.0
Considerable	2	50.0	3	37.5
TOTAL	4	100.0	8	100.0

TABLE 43

DISCHARGE ASSESSMENT OF PATIENT PLANNING IN NONTEACHING AND TEACHING HOSPITAL PATIENTS

Discharge Assessment of Patient Planning	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
Minimally	1	25.0	16	47.1
Moderately	2	50.0	8	23.5
Considerably	1	25.00	10	29.4
TOTAL	4	100.0	34	100.0

TABLE 44

DISCHARGE ASSESSMENT OF DISCUSSION OF PATIENT'S POTENTIAL IN NONTEACHING AND TEACHING HOSPITAL PATIENTS

Discharge Assessment of Discussion of Patient's Potential	Nonteaching Hospital Patients		Teaching Hospital Patients	
	f	%	f	%
Minimally	0	-	5	29.4
Moderately	1	100.0	4	23.5
Considerably	0	-	8	47.1
TOTAL	1	100.0	17	100.0

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