A STUDY TO DEVELOP AN INSTRUMENT TO ASSIST NURSES TO ASSESS THE ABILITIES OF PATIENTS WITH CHRONIC CONDITIONS TO FEED THEMSELVES

by

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We accept this thesis as conforming to the required standard

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ABSTRACT

Construction of a tool to assist nurses to assess the abilities of patients, with chronic conditions, to feed themselves was based upon twenty-one identified feeding behaviors derived from observations of a random sample of fifty such patients from two urban hospitals. Observations were also made of the nurses who cared for these patients. Identifying specific behavior items was concurrent with defining five categories along the dependence-independence continuum during analysis of the data.

A 3:1:1 ratio for weighting behavioral components was established arbitrarily. The Kenny Self-care five point numerical rating scale was adapted to provide a method of determining the amount of help a patient would require to feed himself. Experts in the field agreed, with minor modifications, that the tool could determine a measure of independent feeding. A reliability test, using eight pairs of registered nurses to assess thirty-two patients produced a reliability coefficient of .849; evidence that this tool is dependable and consistent in measuring the relative state of feeding dependence-independence of patients with chronic conditions. Rating behaviors provides written evidence of the degree to which the patient is able to feed himself.
The difference between what a patient can do and the criteria for independent feeding provides a measure of the help a patient will require to feed himself.

Further research is indicated in the areas of usefulness of the tool for registered nurses, identifying psychosocial behaviors more precisely, testing the tool in different feeding situations and expansion of the tool to include the other activities of daily living.

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CHAPTER I

INTRODUCTION TO THE STUDY

I. INTRODUCTION

Many factors are involved in determining the amount of basic nursing care a patient will receive. One of the primary factors will be the degree to which the patient is capable of satisfying his own needs. The individual who occupies a sick role for any length of time is gradually cut out of his established place in society, thus diminishing his capacity to meet his own needs. Clearly this is a problem of the chronically ill.

Attitudes of the patients themselves will influence the kind of care they will expect. Patients who see the care situation as one of rehabilitation and progress will have different expectations from those who see their care as custodial in nature. The elderly constitute a large part of the population who have chronic conditions. For those of this population who are hospitalized the problems of aging may complicate their view of the care they expect to receive.

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2R.E. Irvine, M.K. Bagnall and B.J. Smith, The Older
Managerial problems of handling large numbers of people on a twenty-four-hour-a-day basis have been solved by routinizing procedures, fragmenting practice and depersonalizing the patient. This bureaucratization determines the amount the patient will be allowed to do for himself.

Attitudes of those caring for the chronically ill will also affect the amount of care the patients will receive. The nurse's own feelings about patient participation and decision making will determine both the extent to which her patient will be allowed independent action as well as the degree to which he will be encouraged to meet his own needs. Doing either too much or too little for the patient deprives him of independence.

In the ups and downs of chronic illness the patient gains and loses his independence as his condition changes. It becomes a matter of management—a balanced attitude between demanding total function and accepting a degree of loss. For the chronically ill this management function is largely

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a problem for the nurse. Henderson's definition of nursing
would imply that the nurse, on the basis of the patient's
lack of "strength, will or knowledge" to meet his basic needs,
must intervene to assist the patient. She states:

The unique function of the nurse is to assist the
individual, sick or well, in the performance of those
activities contributing to health, or its recovery
(or to peaceful death) that he would perform unaided
if he had the necessary strength, will or knowledge.
And to do this in such a way as to help him to gain
independence as rapidly as possible.5

In the past, and in much of today's practice, nursing
uses the intuitive process in assessing patient needs.
Dumas represents the increasing recognition of nursing leaders
of the need for systematic investigation of patient problems
when she said, "It is...of utmost importance...that the nurse
identify with accuracy those patients who are in need of
her help."7

5Virginia Henderson, The Nature of Nursing (New

6R. Faye McCain, "Nursing Assessment Not Intuition,"

7Rhetaugh Dumas, "Psychological Preparation for
Surgery," American Journal of Nursing, Vol. 63, No. 8 (August,
1963), p. 58; Faye G. Abdellah et al., Patient-centered
pp. 1-69; Doris Schwartz et al., Elderly Ambulatory Patient
(New York: The MacMillan Company, 1964), pp. 3-10; Dorothy M.
Smith, "A Clinical Nursing Tool," American Journal of Nursing,
A preliminary study, observing nursing care in a sixty bed extended care hospital indicated that problems for nursing existed in the areas of toilet training, hygiene, feeding, transportation, socialization and rehabilitation. Feeding was chosen for the area of this study because some nurses expressed a concern about the increasing number of patients who depended upon nurses for feeding and the amount of time this required. Other nurses suggested that management considerations dictated the priorities of patient care. This resulted in decisions to feed patients who could feed themselves, given time and some degree of assistance and supervision. There was a general feeling that patients who were fed, whether they required it or not, would regress in other activities of daily living.

Nurses could not easily and clearly explain how they arrived at decisions to assist or feed patients nor was there any agreement among the nurses as to the degree of help any given patient required. Nurses and patients appeared less disturbed by observation by a stranger in the feeding activity than in the more personal activities of daily living where nursing problems existed.

The author's conclusion was that the feeding activity presented an opportunity to study an important aspect of patient care as well as obtain measurable data about the
feeding abilities of patients with chronic conditions. It was also felt that such data would lend itself to organization into an instrument that would assist nurses with the assessment of patient problems in the feeding activity.

II. PURPOSE OF THE STUDY

The purpose of this study was to construct an instrument to assist nurses to assess feeding behaviors of chronically ill patients. Functional aspects of feeding behaviors were explored as well as the motivation and interest that affect feeding. It is intended, that the study will contribute to the knowledge of nursing assessment by providing an instrument that will assist nurses to observe and rate the feeding behaviors of chronically ill patients and one that will constitute a record of these behaviors.

III. THE PROBLEM

Statement of the Problem. Can an instrument be developed that will assist nurses to assess the abilities that patients with chronic conditions will require in order to feed themselves? Will the instrument indicate if the patient requires help for feeding? Will the instrument assist the nurse to decide the degree of help the patient will require?
Specific Objectives. To answer the above questions it will be necessary to (1) determine the feeding behaviors a patient must demonstrate to feed himself independently; (2) rate the behaviors so as to determine the degree to which a patient is able to feed himself; and (3) construct an instrument that will provide a registered nurse with written evidence of an assessment of the feeding abilities of a patient with chronic conditions.

Significance of the Problem. In their survey of geriatric nursing problems Exton-Smith et al. concluded that "physical disabilities and mental states are shown to be factors governing the amount and kind of help patients receive." They stated that the factor, "The extent of knowledge of the patient's capabilities," pointed to a need for research in assessment so that the degree of help a patient might require could be determined.

This survey provided evidence that the feeding activity was the second most time-consuming, for nurses, of all the activities of daily living. Timing did not include bringing and removing the food but counted only the direct feeding assistance the patients received.

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8 Exton-Smith, Norton and McLaren op. cit., p. 52.
The preliminary study at the extended care unit would appear to support these findings. Twenty-two of the sixty patients, thirty-seven percent, were given total or partial help with feeding.

Abdellah suggests that the limited research done in the clinical area is, in part, due to "lack of adequate measuring instruments" and "lack of criterion measures of quality nursing practice." Schoening points out the need for "global measures that reflect the ability of the patient to function independently...also needed are global measures of the patient's emotional capacity to function within his environment or the manner in which he interacts on a social level...."

The need for criteria that will assist the nurse to determine the amount of help she must provide for feeding, in terms of assistance and supervision, would indicate this to be an area for study. Information obtained from such a study could provide a basis for nursing decision regarding intervention in the feeding process. It could also indicate

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Implications for nursing care feeding plans that go beyond the physiologic and safety needs of the patient to consideration of a degree of independence. If the method of designing the tool is effective it could be applied to other activities of daily living or other problem feeding areas.

IV. ASSUMPTIONS

This study is based on the assumption that (1) the independent state is a desirable goal for patients with chronic conditions; (2) determining nursing needs of a patient requires assessment of both independent and dependent behaviors; (3) written communication of nursing assessment is a function of the nurse.

V. DEFINITIONS

Chronic condition. "...no precise definition exists, and at what point in time acuteness becomes chronicity is open to varying interpretations." For the purposes of this study a chronic condition is considered to be a "Prolonged, lingering state or mode in which a person exists" which includes some measure of disability in the activities of


daily living.

**Feeding behaviors.** Observable actions representing the physiological, psychological and social factors involved in consuming food.

**Nurse.** For the purpose of this study the term will refer to a registered nurse.

**Nursing assessment.** "An orderly and precise method of collecting information about the physiological, psychological and social behaviors of a patient" to determine nursing help needed.

**Feeding task.** The steps required to transfer food from dish to mouth, chew and swallow.

**Independent feeder.** Completes the feeding task without help. Assists self while eating and performs personal hygiene relative to eating. Responsible for own motivation and adjustment in order to eat.

**VI. LIMITATIONS OF THE STUDY**

The study is subject to the following limitations:

(1) who should give feeding assistance, what resources are

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13McCain, loc. cit..
available and how institutional variables affect implementation of nursing care plans in this area are beyond the scope of this study; (2) the random sample and reliability study populations were drawn from hospitals in an urban center; (3) the mean age of the random sample population was 77.77 years.
CHAPTER II

REVIEW OF THE LITERATURE

I. INSTITUTIONALIZATION AND CHRONIC CONDITIONS

There is increased emphasis in the literature of the need to help patients to deal with the extended sick role. Irvine, Bagnal and Smith point out that a feature of prolonged disability is the rapid deterioration of patients' abilities. They suggest that important contributing roles can be made available to those people who are chronically ill by maintaining or encouraging their independence and including them in a plan for their care. Little and Carnevali support this view and indicate that the concept of self-worth and individualized care have increased consideration of the "dimensions of prevention, restoration, rehabilitation and conservation." Rudd states that nurses may unwittingly reinforce the depersonalizing of care. He suggests that "harnessing the power of the human mind can put sensitive, responsive energy to work

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in favor of better patient care.  

There is a concern expressed by these authors about the independence and self-worth of persons who receive care for a prolonged period of time. Few studies have been done which shed much light on the problems of such institutional care. Townsend concludes that institutionalization is related to physical and/or mental disability. His study clearly shows that the absence of practical alternatives, supporting relatives, friends or social services, increases the probability of institutionalization. Townsend questions the use of institutional facilities for the aged, chronically ill. He feels that such care is incompatible with human needs for independence, freedom, dignity and productive living. Jaeger and Simmons, on the other hand, say "such organized care...may prove, in time and on the whole, to be among the more satisfactory solutions to many of the problems involved."

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Townsend's alarm about the effect of institutionalization upon long-term patients and Jaeger and Simmons' contention that the chronically ill will, nevertheless, be cared for in institutions leads to the conclusion that it will become increasingly necessary to add psychosocial assessment to the physical assessment of needs of patients in such institutions.

McClusky argues that adult performance in unexpected situations is determined by having abilities left over to deal with such situations after meeting life's obligations. Abilities are described as physical, psychological, social and economic assets. Obligations are defined as life tasks individualized by expectations and capacities. There are implications for nursing assessment for the chronically ill in his argument, in that the margin of abilities is reduced in people with such conditions. This leaves them fewer assets to deal with chronic illness and disability.

Jaeger and Simmons' study reveals some interesting statistics on how various levels of nurses; aides, Licensed Practical Nurses (LPN's), Registered Nurses (RN's) and degree Registered Nurses; cope with behavioral problems of their chronically ill patients. Nursing personnel seemed least

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accepting of those patients who do not conform to conventional patterns of behavior. The least accepting among this group were the aides and LPN's. The important point here is the fact that it is this group to whom the nurse delegates much of the actual nursing care. In order to instruct nursing assistants, nurses must improve their own ability to assess patients which will enable them to see alternatives to the way they now delegate their responsibilities.

The World Health Organization view is that health in the elderly is best measured in terms of function. Bayne supports this notion and extends it further into the need to define the functional positives and negatives of patients with chronic conditions. Weiss's experimental study of the nurse-patient interaction concluded that, in order to develop nursing care plans which will consider patients' autonomy, individual needs and self-worth, nurses must first perceive patient resources. "Both positive resources for development and negative resources for atrophy" are part of the


"...nursing diagnosis of the patients' nursing needs."

II. NURSING ASSESSMENT TOOLS

Some efforts have been made to evaluate the effectiveness of nursing practice by developing criterion measures of patient welfare. The independent variables used have been such things as increasing total staff, inservice education or observation of patient activities. The hypothesis that the nurse's ability to assess patient needs is basic to prediction and diagnosis has been proposed by a number of nursing leaders.

Both Abdellah's twenty-one nursing problems and Henderson's fourteen basic patient needs have served as guides to nursing assessment but failed to provide a concise and


easy-to-use method. The need for nurses to assess patients in a systematic, precise way was not recognized until recent years. "To practice effectively, a nurse must assess...but no precise method of such assessment has, as yet, been widely accepted."

Bonney and Rothberg's method of identifying the needs of the chronically disabled was geared to staffing patterns and proved to be a lengthy, time-consuming device. McCain argued that the functional abilities approach to assessment can be related to patient behaviors. Her guide, however, is largely unstructured, leaving the assessor free to determine what information will be collected under the thirteen functional areas identified. In addition it is very lengthy and rather medical in orientation. Manthey shares McCain's concern about random collection of patient data by nurses. She designed a guide for the nurse who was team leader to do an initial

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13 Ibid.
17 McCain, op. cit., p. 83.
admissions interview. "Often information about a patient is gathered in bits and pieces by many members of the nursing staff...using [a] form has helped us reduce the lag between patient admission and a working nursing care plan."  

The tool developed by Smith had as its purpose "--systematically, consistently, concisely and economically (in time)--to collect information relevant to nurse problems." The usefulness of this tool to baccalaureate prepared nurses has been demonstrated. Validity and reliability tests have not been reported. McPhetridge supports Smith's view and adds that knowing what the patient perceives about his illness and hospitalization and what he prefers about his care enables the nurse to personalize nursing care. Development of an instrument to measure a patient's ability to meet his own needs was reported by Williams. Testing of reliability of this tool, 


19Ibid., p. 2090.

20Smith, op. cit., p. 2385.


using eight pairs of nurses, rating two hundred and forty-one patients, showed a positive correlation of .85. Hamdi and Hutelmeyer separate nursing diagnosis into assessment of patients and recognition of problems. They relate the two facets to the planning, implementation and validation of nursing care plans. They further relate this process to "identification of nursing function and the development of nursing science." These authors argue that if a tool is to be used in nursing, it must be so designed that it can be used by registered nurses who are responsible for most nursing care. They also contend, along with other authorities on testing, that before a tool can be put into general use, it must be tested for validity and reliability.

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23Suzanne Dziak, "Reliability of the Patient Profile" (Unpublished Master's theses, University of Pittsburgh, 1958), p. 44.


25Ibid.

Abdellah identified a need to develop instruments that measure patient care directly as a priority area for further research. "Measurement of quality care will have to be both direct and indirect before a complete assessment of the effect of nursing practice upon patient welfare can be made." One of the techniques for measurement discussed was the development of rating scales. Abdellah warns that, when using rating scales, problems exist with weighting the different components of the scales. "A problem in scaling that must be solved is the way in which different components of the measurement scale are to be weighted in the process of arriving at a total."

A review of various tools, which measure activities of daily living, currently used in several hospitals leaves some doubt as to the basis on which reported behaviors were selected. In one instance patients were classified as requiring heavier care because they are over seventy years of age. It was noted that in many of the tools reviewed there were no criterion behaviors of independence. Most such tools are either far too long or assessment of feeding behaviors is confined to a catalog of past events. None of these tools

28Ibid. p. 16.
provide a quantification of the relative value of the individual's behaviors.

An examination of tools described in the literature indicated useful approaches to the design of a feeding assessment tool. Rick and Dent felt that behavioral statements would be objective and free from emotional evaluation and therefore not acceptable for their study designed to measure attitudes. An extensive series of patient behavior statements was developed by Brodt and Anderson in order to overcome the lack of precision in a preliminary tool that appeared to be based on a review of the literature and insufficient direct observation. The purpose of the PETO system of assigning intensity of care ratings was to manage the balancing of work-load and was limited to physical assessment. The authors themselves say they


hoped the system was flexible enough to "provide for some of the intangibles."

Till's report on the assessment of patient's needs emphasizes the usefulness of areas of ability as motivation for the learning needed to improve a condition or adapt to a disability. Rating is achieved by letter grading, A through E, to indicate the degree of assistance that will be required. This method of rating limits the use of the tool to one of assessment. The Kenny self-care evaluation used numerical scoring to establish the self-care status of the patient. Ability to handle functional needs is the basis for selecting behaviors in each of the activities of daily living categories. The numerical scoring system is used basically to measure improvement. In the process, however, an assessment of the patient's physical needs is achieved. The authors demonstrate the usefulness of the tool as an assessment device, individual nursing case-load score and as a work-load score for a unit of a hospital. Kerlinger supports the use of numerical rating

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scales in behavioral research as concise and easy to use with a wide range of applications and applicable where a large number of characteristics are involved.

III. FEEDING STUDIES

Anthropological literature attests to the fact that the individual is deeply involved with food in relation to communication, religion, culture and diversion. Wilson discusses food habits, not so much in terms of cooking and eating practices but in terms of "their emotional value for the persons holding them."

Little research relative to feeding has been done in the area of patients with chronic conditions. Studies that have been done are confined, largely, to the development of feeding devices or to assist in the development of motor control for the severely handicapped. Exton-Smith, Norton and


McLaren's survey of basic nursing care on geriatric wards includes a section on the provision of nourishment. It was found that this aspect of nursing care was the second most time-consuming area of nursing service.

Physical and mental states are shown to be the factors governing the amount and kind of help patients receive. But there are other factors, some of which are shown to increase a patient's handicap and thereby create greater feeding difficulties.39

These authors stress the need for a written record of feeding capabilities of each patient.40


40Ibid., p. 13l.
CHAPTER III

METHOD

I. OVERVIEW

A methodological approach was indicated for the development of an instrument that will measure abilities of a patient for self-feeding. Data about feeding and related abilities were collected during meal times by observing, examining and questioning a population of (1) patients hospitalized with chronic conditions and (2) the nurses who care for them, as well as aides, etc. A preliminary instrument was constructed and submitted to a panel of experts for validation. The final instrument was tested for reliability using eight pairs of nurses rating two patients each.

II. SAMPLE

The random sample on which observations of feeding behaviors were made, was drawn from a population of patients from two hospitals caring for people with chronic conditions. One hospital had sixty-five patients admitted to its extended care floor. The second hospital was a private hospital with sixty-six patients. Both hospitals were situated in a large urban area and operated under government regulations.
set down by the British Columbia Hospital Insurance Service (BCHIS).

The patient sample consisted of thirty-two females and eighteen males. More than one half of these patients had two or more chronic conditions. The patients' consent to participate in the study was obtained wherever possible. In the few instances where patient consent was impossible, owing to the patient's condition, hospital consent was obtained.

For the reliability test, patients were selected randomly from a list of patients who were designated by the head nurse as requiring varying degrees of help with feeding. The nurses who normally cared for these patients were asked to use the tool to assess feeding behaviors. Consent was obtained in the case of each nurse. Three hospitals in a large urban area were used for the reliability test, two of which had not been used for gathering the original feeding behavior data.

III. FEEDING BEHAVIOR DATA COLLECTION

Fifty patients were observed from the time the tray

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1 British Columbia Hospital Insurance Service, BCHIS Manual, Department of Health Services and Hospital Insurance (Victoria: The Government of the Province of British Columbia, 1948), chapter VIII.
was brought to the patient until the patient finished eating. A tape recorder was used by the author to record conversations, observed behaviors and physical condition, as well as answers to questions regarding the feeding function. This information was gathered from the patients and the nurses, aides and others, who cared for them. Data were collected concerning the physical capabilities for feeding as well as psychological and social factors related to the feeding area. Information concerning age, diagnosis and written orders concerning feeding was recorded from the patients' charts.

IV. ANALYSIS OF FEEDING BEHAVIOR DATA

Identifying specific items of feeding behavior was concurrent with defining categories during analysis of the data. Patients' abilities and disabilities of a physical, psychological and social nature were listed to identify items related to feeding. The amount and kind of help received by patients was the basis for defining five dependence-independence categories. Behavioral items were ordered using a framework of performance skill development. The ordered items were used to reanalyze the data included under each category to develop a list of clear, discreet feeding behaviors. This list was the foundation for establishing the assessment tool, the criteria for independent
feeders. A detailed discussion of the analysis of feeding behavior data appears in chapter IV.

V. CONSTRUCTION OF PRELIMINARY TOOL

The feeding behaviors, evident in the data, were ordered into neuromuscular, motivation and adjustment areas. Twenty-one behaviors were identified which measure not only the physical capacity but also provide some measure of the patient's emotional capacity to function and interact in his hospital environment in relation to feeding.

A rating scale, adapted from the Kenny numerical scoring of self-care, was used to provide a method of scoring behaviors. The advantage of numerical scoring is that it gives the assessor a simple method of rating. It will define degrees of ability from which the nurse may receive clues to the amount and kind of help the patient will need to feed independently. A series of observations provides a concise, written reference to a patient's change of state in the area of self-feeding.

VI. VALIDATION

A preliminary tool was designed and submitted to a panel of five experts. Two of the experts were directors of nursing in hospitals caring for patients with chronic conditions.
Three of the experts were head nurses on wards of such hospitals. Face validity was established. Two nurses offered suggestions to improve the preciseness of three behavior descriptions.

VII. RELIABILITY TESTING

Three pairs of nurses used the validated tool to separately assess two patients each, giving six pairs of observations. Observations of patients were to be made within twenty-four hours or less. The purpose of the tool, the code for judging behaviors, and the code for rating was explained verbally and in writing. A series of questions concerning use of the tool was also put to each nurse. Some testing was incomplete due to illness among the staff and patients. A second test was done. Five pairs of nurses used the tool to assess two patients each. Prepared instructions were read to each nurse and the questions altered in light of the previous results. Seventy percent agreement was considered acceptable for this test.
CHAPTER IV

ANALYSIS OF THE DATA

I. ANALYSIS OF FEEDING BEHAVIOR DATA

In each of the fifty cases drawn in the random sample, feeding behaviors were divided into abilities and disabilities in the physical, psychological and social areas. Clues from nurses, aides, etc. were determined from the amount and kind of help given to the patient during the meal and answers to questions asked for clarification of observed actions. Patients were roughly divided into categories according to the varying amounts and kinds of help they received from those who cared for them. The division was accomplished by first separating patients into those who ate their meal with no assistance or supervision and those who required help to eat their food. Those who received no help were designated independent, Category I. Of those who received help, the patients who were fed all of their meal and were reported by staff not to feed themselves were designated dependent, Category V. Of the remaining patients, those who received no direct help during the meal observed and were reported by staff to receive help incidental to feeding, for instance, medication for pain, were designated as minimally assisted independent, Category II. The remaining patients were separated by whether or not they received help with the feeding task, which is defined as the
steps required to transfer food from dish to mouth, chew and swallow it. Those who were fed either part of the meal or were reported by staff to receive such help were designated as partially dependent, Category IV. The remaining patients were those who were observed to feed themselves independently and were reported by staff to do so but received varying amounts of assistance for activities associated with feeding. They were designated as assisted independent, Category III. This category is defined by the fact that the patient does not fit into any of the other categories. No attempt was made to define the varying amounts of assistance for activities associated with feeding.

Observations in each category were translated into positive behavioral terms which were ordered into a framework based on the development of performance skills. This framework is the basis for later construction of the preliminary tool. Examples of translation from raw data follow.

Observations typical of patients who behaved independently; some teeth missing, no problem chewing or swallowing--was translated to, able to chew well enough to swallow. Used napkin, salted food, wiped hands and mouth--were behavioral in nature and were used without translation. Talked to observer about past--was translated to (1) responds to verbal stimuli (2) responds realistically to others, and
(3) alert to surroundings.

Observations typical of patients who behaved dependently; orderly fed patient entire meal, says patient unable to use hands--was translated to, able to use fingers or utensils to put food in mouth (negative) and eats entire meal independently (negative). Patient fed by Levine tube--was translated to, able to swallow food without choking (negative). Did not respond or look at observer, blank expression during meal--was translated to, shows emotion (negative). Patient was repositioned several times during the meal as he fell over--was translated to, controls trunk to sit erect (negative).

Observations typical of patients who received assistance and/or supervision of a minimal nature and aside from the feeding process; patient given morphine half an hour before meal for pain--was translated to, assistance (medication) to be physically comfortable in order to eat. Patient not eating, said she was angry at another patient, nurse talked to her and moved her to the sunroom--was translated to, assistance with mental stress in order to eat. Patient given more time to eat as she was very slow eating because she felt tired--was translated to, supervision to be physically comfortable in order to eat.
Observations typical of patients who receive assistance and/or supervision of an extensive nature including partial feeding; patient rubbed fork on plate instead of eating, aide gave her a few mouthfuls and encouraged her to continue eating—was translated to, assistance and supervision to be able to focus attention on eating. Nurse said patient was aphasic, patient made sounds to get attention, nurse made several attempts to understand aphasic patient's sounds—was translated to, assistance to make needs known. Nurse helped patient with slurred speech to practice words—was translated to, assistance to be able to speak coherently.

Observations typical of patients who do not fit in other categories; aide gave patient a straw to make it easier to drink—was translated to, assistance to use utensils in order to eat. Orderly changed patient's bib because of spillage—was translated to, assistance to manage spillage. Aide supervised a blind patient who could not locate her food—was translated to, supervision to cope with inability to see sufficiently to distinguish objects.

A list of twenty-one specific feeding behaviors which describe the independent feeder was identified concurrent with the defining of five categories along the dependence-independence continuum. The data from the fifty cases
observed were tabulated in Table I, and shows the number and percent of positive behaviors in each category. A key to Table I follows the table.

One hundred percent of the patients in the Independent Category were able to perform all twenty-one feeding behaviors. This is the basis for the definition of Category I. One hundred percent of the patients in the Minimal Assistance Category could perform the feeding task, assist themselves with feeding and be responsible for their own motivation with one exception. "Eats at a normal rate of speed" was performed by only 50 percent of this category. Patients in this category were not all capable of feeding adjustment behaviors. 57.14 percent of these patients did not receive medication, reassurance or nursing care for mental or physical comfort in order to eat. 91.30 percent were independent in focussing attention on the eating process and showing emotion. 92.85 percent responded realistically to others and were alert to surroundings. On the basis of these percentages Category II was defined as receiving minimal assistance and/or supervision.

Category III determines that the patient is entirely independent for the feeding task, however, there is some reduction of independence in those behaviors related to assisting self with the feeding task and feeding adjustment. Less
TABLE I

TABULATION OF FEEDING BEHAVIORS OF RANDOM SAMPLE OF PATIENTS WITH CHRONIC CONDITIONS. NUMBER AND PERCENTAGE OF POSITIVE BEHAVIORS BY CATEGORY
<table>
<thead>
<tr>
<th>Category</th>
<th>Cat. I.</th>
<th>Cat. II.</th>
<th>Cat. III.</th>
<th>Cat. IV.</th>
<th>Cat. V.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Feeding Behaviors, Neuromuscular</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Perform the Feeding Task</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Able to use fingers to put food in mouth.</td>
<td>9100.00</td>
<td>14100.00</td>
<td>14100.00</td>
<td>8100.00</td>
<td>00.00</td>
</tr>
<tr>
<td>2. Able to use utensils to put food in mouth.</td>
<td>9100.00</td>
<td>14100.00</td>
<td>14100.00</td>
<td>8100.00</td>
<td>00.00</td>
</tr>
<tr>
<td>3. Able to chew food well enough to swallow it.</td>
<td>9100.00</td>
<td>14100.00</td>
<td>14100.00</td>
<td>8100.00</td>
<td>360.00</td>
</tr>
<tr>
<td>B. Assist Self with Feeding Tasks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Controls trunk to sit erect.</td>
<td>9100.00</td>
<td>14100.00</td>
<td>1071.43</td>
<td>450.00</td>
<td>00.00</td>
</tr>
<tr>
<td>5. Swallows without choking.</td>
<td>9100.00</td>
<td>14100.00</td>
<td>1178.57</td>
<td>787.50</td>
<td>240.00</td>
</tr>
<tr>
<td>6. Eats at a normal rate of speed.</td>
<td>9100.00</td>
<td>750.00</td>
<td>535.71</td>
<td>112.50</td>
<td>00.00</td>
</tr>
<tr>
<td>7. Pours tea, butters bread etc.</td>
<td>9100.00</td>
<td>14100.00</td>
<td>642.86</td>
<td>00.00</td>
<td>00.00</td>
</tr>
<tr>
<td>C. Perform Personal Hygiene</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Able to use napkin or put on bib.</td>
<td>9100.00</td>
<td>14100.00</td>
<td>642.86</td>
<td>112.50</td>
<td>00.00</td>
</tr>
<tr>
<td>9. Able to manage own spillage.</td>
<td>9100.00</td>
<td>14100.00</td>
<td>857.14</td>
<td>37.50</td>
<td>00.00</td>
</tr>
<tr>
<td>10. Able to wipe hands and mouth.</td>
<td>9100.00</td>
<td>14100.00</td>
<td>1285.71</td>
<td>25.00</td>
<td>00.00</td>
</tr>
<tr>
<td>II. Feeding Behaviors, Motivation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Eats entire meal independently.</td>
<td>9100.00</td>
<td>14100.00</td>
<td>14100.00</td>
<td>00.00</td>
<td>00.00</td>
</tr>
<tr>
<td>12. Speaks coherently.</td>
<td>9100.00</td>
<td>14100.00</td>
<td>1178.57</td>
<td>25.00</td>
<td>120.00</td>
</tr>
<tr>
<td>13. Makes needs known.</td>
<td>9100.00</td>
<td>14100.00</td>
<td>1392.85</td>
<td>450.00</td>
<td>240.00</td>
</tr>
<tr>
<td>14. Responds to verbal stimuli.</td>
<td>9100.00</td>
<td>14100.00</td>
<td>1392.85</td>
<td>450.00</td>
<td>360.00</td>
</tr>
<tr>
<td>15. Sees sufficiently to distinguish objects.</td>
<td>9100.00</td>
<td>14100.00</td>
<td>1285.71</td>
<td>562.50</td>
<td>240.00</td>
</tr>
<tr>
<td>III. Feeding Behaviors, Adjustment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Responds realistically to others.</td>
<td>9100.00</td>
<td>1392.85</td>
<td>1071.43</td>
<td>225.00</td>
<td>120.00</td>
</tr>
<tr>
<td>17. Alert to surroundings.</td>
<td>9100.00</td>
<td>1392.85</td>
<td>964.29</td>
<td>112.50</td>
<td>00.00</td>
</tr>
<tr>
<td>18. Can focus attention on eating process.</td>
<td>9100.00</td>
<td>1291.30</td>
<td>857.14</td>
<td>112.50</td>
<td>120.00</td>
</tr>
<tr>
<td>19. Shows emotion.</td>
<td>9100.00</td>
<td>1291.30</td>
<td>964.29</td>
<td>112.50</td>
<td>120.00</td>
</tr>
<tr>
<td>20. Mentally comfortable.</td>
<td>9100.00</td>
<td>857.14</td>
<td>1392.85</td>
<td>675.00</td>
<td>480.00</td>
</tr>
<tr>
<td>21. Physically comfortable.</td>
<td>9100.00</td>
<td>857.14</td>
<td>1178.57</td>
<td>37.50</td>
<td>360.00</td>
</tr>
<tr>
<td>Total number in category</td>
<td>9141485</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td># of persons</td>
<td>% of persons</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------</td>
<td>--------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independent category</td>
<td>9</td>
<td>100.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimally Assisted Independent</td>
<td>8</td>
<td>57.14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assisted Independent category</td>
<td>11</td>
<td>78.57</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partially Dependent category</td>
<td>3</td>
<td>37.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependent category</td>
<td>3</td>
<td>60.00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
erosion is seen in the motivation area as it averages 90 percent achievement of these behaviors. This category does not clearly differentiate mild, moderate, or severe handicaps but includes them all.

Category IV is defined as covering patients who can successfully perform the feeding task but receive extensive assistance with associated activities of feeding. There is considerable erosion of independence in the latter activities. An average of only 32.5 percent of patients in this category can assist themselves with feeding or perform personal hygiene, 37.5 percent had abilities to promote interest in independent feeding and only 29.16 percent showed abilities which might overcome distractions in order to eat.

Patients in Category V were unable to place any food in their mouths. 60 percent of them could chew well enough to swallow the food. The others were fed by levine or at the time of the observation were considered unsafe to feed due to a sudden worsening of their physical condition. None of these patients could assist themselves with the feeding activity with the exception that 40 percent could swallow without choking. Only 33 percent of the patients in this category had abilities to promote interest in eating or abilities to overcome distractions in order to eat.
Figure 1 shows the profile of the decreasing percentage of achieved behaviors by category. It illustrates the erosion of independence as patient's disabilities overtake his abilities in the activities related to feeding.

Figure 2 provides a percentage pattern of dependent and independent behaviors. This demonstrates the progressively reducing area of independence and illustrates the five categories along the feeding dependence-independence continuum. Defining categories provides a measurement of the degree of help a patient will require to feed himself. The following categories were derived from the data.

**Category I. Independent feeder:** completes, without help, the steps required to transfer food from dish to mouth, chew and swallow. Assists self while eating and performs personal hygiene relative to eating. Responsible for own motivation and adjustment in order to eat.

**Category II. Minimally assisted independent feeder:** completes the feeding tasks, assisting self with feeding, and personal hygiene and is responsible for own motivation. Requires minimal assistance and supervision to overcome distractions in order to eat.

**Category III. Assisted independent feeder:** completes the feeding tasks but receives varying amounts of assistance
Figure 1. Analysis of feeding behaviors of the random sample of patients with chronic conditions. Profile of behaviors. Percentage of positive behaviors for the twenty-one items by category.
Figure 2. Analysis of feeding behaviors of patients with chronic conditions. Patterns of behaviors.
or supervision with other associated activities as defined for the independent feeder.

**Category IV, Partially dependent feeder:** receives some assistance with the feeding tasks as well as extensive assistance with other associated activities as defined for the independent feeder.

**Category V, Dependent feeder:** totally dependent on others for the feeding task including extensive assistance with other associated activities as defined for the independent feeder.

II. CONSTRUCTION OF THE TOOL

Twenty-one behaviors were identified from the raw data which would describe the abilities of an independent feeder. These behaviors were divided into neuromuscular, motivation and adjustment factors. The neuromuscular abilities were further divided into the feeding task, assistance of self with the feeding task and personal hygiene. This allows for the weighting of the neuromuscular factor without which independent feeding is not possible. The feeding task consists of those steps needed to get food from the plate into the mouth, chewing and swallowing it. Those steps which are needed to assist oneself with the feeding task are the
contributing activities to the feeding task. Responsibility for personal hygiene completes the neuromuscular abilities needed for self-feeding.

The abilities most likely to promote interest in independent feeding were included to provide some measure of the patient's motivation toward independent feeding. Those abilities which contributed significantly to overcoming distractions in order to eat were included to provide some measure of the patient's ability to adapt to situations which might interfere with his ability to feed himself.

To provide a method of determining the amount of help a patient would require to feed independently, a numerical rating scale, adapted from the Kenny numerical scoring of self-care status, was used. The rationale for the use of this scoring method is that it provides, "Quantification of the relative value...of the total functional capacity of the patient...it becomes a numerical description of the patient's functional nursing needs." Abilities were graded in terms of whether the behavior was performed independently, with assistance or supervision, or not at all. The independent (full ability) and dependent, (no abilities) categories are defined

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as the two extremes of the self-care continuum and rated as (0) and (4) respectively. A (1) rating is based upon the criteria that a patient requires assistance and/or supervision with one or two steps of an activity and can perform all other steps independently. A (3) rating is based upon the criteria that a patient requires assistance with one or two steps, or is independent in one step but cannot perform any other steps independently. These four ratings describe independence (0), minimal assistance and/or supervision (1), extensive assistance (3) and dependence (4). The (2) rating is used for all other combinations which will include mild, moderate and severe limitations of abilities. Figure 3 shows an outline of the procedure for rating feeding behaviors.

I. Rating Code. II. Codes for judging items.

0 = independent  + = independent
1 = minimal assistance and/or \(\pm\) = requires assistance and/or supervision.
2 = moderate assistance.  - = dependent
3 = extensive assistance.
4 = completely dependent.

III. Criteria for assignment of rating.

0 = all '+'s.
1 = 1 or 2 \(\pm\)'s; all others '+'s
2 = all other combinations.
3 = 1 or 2 \(\pm\)'s (or 1 +); all others '-'s.
4 = all '-'s.

Figure 3. Outline of procedure for rating feeding behaviors; classification and symbolization.
The procedure for rating feeding behaviors includes the rating code, codes for judging items and criteria for the assignment of ratings. This has been adapted from the Kenny self-care rating scale. Schoening explains that the rating scale is actually a seven-point scale with the middle three points compressed into one. The problem of defining each point on the scale is thus simplified. The rationale for defining ratings may be seen in Figure 4.

![Figure 4. Five-point and seven-point rating scales. Rationale for defining ratings.](image)


4 Ibid., p. 225.
Points one, two, six and seven are defined by using the criteria for assignment of rating in Figure 3. Points three, four and five become the number two rating. Rationale for this approach is based upon the fact that the patient is not likely to progress through each category at an even rate but is more likely to follow the sigmoid learning curve. Acceleration occurs toward the center of the curve allowing for the central three points to approximately equal the other points. The list of behaviors and adapted rating scale were combined to form the preliminary tool. The format for this tool may be seen in Table II.

II. ANALYSIS OF PATIENT SAMPLE DATA

Categories were derived from analysis of the feeding behavior data previously described. Of the fifty patients in the study sample, nine could be defined as independent, fourteen as minimally assisted, fourteen as being assisted but remaining independent in the feeding task, eight as being partially dependent and five as being dependent. Table III outlines the age range and mean age of patients in these categories.

It is interesting to note that the independent category has the highest mean age and the dependent category

\[\text{Ibid.}\]
### TABLE II

**THE PRELIMINARY TOOL FOR ASSESSMENT OF ABILITIES RELATED TO INDEPENDENT FEEDING**

**RATING SCALE OF ABILITIES RELATED TO INDEPENDENT FEEDING.**

**NEUROMUSCULAR ABILITIES NEEDED TO:**

**A. PERFORM THE FEEDING TASKS.** Circle appropriate code.

1. Able to use fingers to put food in mouth.
2. Able to use utensils to put food in mouth.
3. Able to chew food well enough to swallow it.

**B. ASSIST SELF WITH FEEDING TASKS.** Rating.

4. Controls trunk to sit erect.
5. Swallows without choking.
6. Eats at a normal rate of speed.
7. Pours tea, butters bread etc..

**C. PERFORM PERSONAL HYGIENE.** Rating.

8. Able to use napkin or put on bib;
9. Able to manage own spillage.
10. Able to wipe hands and mouth.

**ABILITIES WHICH PROMOTE INTEREST IN INDEPENDENT FEEDING.** Rating.

11. Eats entire meal independently.
12. Speaks coherently.
15. Sees sufficiently to distinguish objects.
<table>
<thead>
<tr>
<th></th>
<th>ABILITIES TO OVERCOME DISTRACTION IN ORDER TO EAT.</th>
<th></th>
</tr>
</thead>
</table>
| 16. | Responds realistically to others.               | +  
| 17. | Alert to surroundings.                          | +  
| 18. | Can focus attention on eating process.          | +  
| 19. | Shows emotion.                                  | +  
| 20. | Mentally comfortable.                          | +  
|     | (medication or reassurance not needed)          | +  
|     | (medication or nursing care not needed)         | +  
|     | Rating.                                         |   |
|     | Rating total.                                   |   |
has the lowest. The significance of this can only be
disclosed by further investigation. There are only two people
in this sample under the age of sixty-five. The mean age
of patients with chronic conditions was 77.77. These aver­
ages cannot be seen to represent the total population with
chronic conditions.

TABLE III
DESCRIPTION OF RANDOM SAMPLE OF PATIENTS WITH CHRONIC CONDITIONS
AGE RANGE AND MEAN AGE BY CATEGORY

<table>
<thead>
<tr>
<th>Category</th>
<th># in Category</th>
<th>Mean Age.</th>
<th>Age range.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Independent</td>
<td>9</td>
<td>82.44</td>
<td>68-91</td>
</tr>
<tr>
<td>II Minimally Assisted Independent</td>
<td>14</td>
<td>74.14</td>
<td>56-89</td>
</tr>
<tr>
<td>III Assisted Independent</td>
<td>14</td>
<td>78.86</td>
<td>67-96</td>
</tr>
<tr>
<td>IV Partially Dependent</td>
<td>8</td>
<td>80.00</td>
<td>67-89</td>
</tr>
<tr>
<td>V Dependent</td>
<td>5</td>
<td>73.40</td>
<td>66-87</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>77.77</td>
<td>56-96</td>
</tr>
</tbody>
</table>

The number and percentage of patients in the random
sample who had two or more chronic conditions is shown in
Table IV. The lowest incidence or two or more chronic
conditions occurs in the independent and dependent categories.
This suggests that the severity of the chronic condition may be a factor in the dependency of patients. Further study is needed to clarify this point as well as to explore the possible significance of the high occurrence of two or more chronic conditions in categories II and IV.

**TABLE IV**

**DESCRIPTION OF RANDOM SAMPLE OF PATIENTS WITH TWO OR MORE CHRONIC CONDITIONS. NUMBER AND PERCENTAGE BY CATEGORY**

<table>
<thead>
<tr>
<th>Category</th>
<th># in Category</th>
<th>2 or more chronic conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Independent</td>
<td>9</td>
<td>2 22.22</td>
</tr>
<tr>
<td>II Minimally Assisted Independent</td>
<td>14</td>
<td>8 57.14</td>
</tr>
<tr>
<td>III Assisted Independent</td>
<td>14</td>
<td>11 78.57</td>
</tr>
<tr>
<td>IV Partially Dependent</td>
<td>8</td>
<td>7 87.50</td>
</tr>
<tr>
<td>V Dependent</td>
<td>5</td>
<td>1 20.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
<td><strong>29 mean→58.00</strong></td>
</tr>
</tbody>
</table>

All patients who were involved, even partially, in the feeding task had a wide range of time spent eating. The dependent patients had no range of time. They were fed, in all cases, in fifteen minutes. This suggests that it is quicker to feed patients than to allow time for involvement.
in self-feeding. The range and mean of minutes spent eating is presented in Table V.

TABLE V

DESCRIPTION OF RANDOM SAMPLE OF PATIENTS WITH CHRONIC CONDITIONS

<table>
<thead>
<tr>
<th>Category</th>
<th># in Category</th>
<th>Minutes spent eating</th>
<th>Range</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Independent</td>
<td>9</td>
<td>10-45</td>
<td>18.33</td>
<td></td>
</tr>
<tr>
<td>II Minimally Assisted</td>
<td>14</td>
<td>10-45</td>
<td>26.79</td>
<td></td>
</tr>
<tr>
<td>III Assisted Independent</td>
<td>14</td>
<td>10-45</td>
<td>26.07</td>
<td></td>
</tr>
<tr>
<td>IV Partially Dependent</td>
<td>8</td>
<td>10-45</td>
<td>33.75</td>
<td></td>
</tr>
<tr>
<td>V Dependent</td>
<td>3*</td>
<td>15-0</td>
<td>15.00</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td></td>
<td>Mean 23.99</td>
<td></td>
</tr>
</tbody>
</table>

*Two unconscious patients not included in timing for category V.

It may further indicate that, if time is the major criterion for patient care, patients will be more likely to be required to surrender some degree of their independence in the feeding area. The F ratio, the statistical treatment for which is detailed in Appendix C, was not significant at the .05 level. The null hypothesis that the five means of
minutes spent eating do not differ significantly is accepted.

Relatives fed patients on a regular basis for one meal each day in one out of five cases in Category V and in four out of eight cases in Category IV. In four cases relatives were encouraged to assist patients with feeding, particularly if there was a danger of a low, overall caloric intake or a need for stimulation to eat.

Abilities of the patient were not considered by relatives when giving feeding help. In two cases patients had become used to being fed by family members and no longer assumed any responsibility for feeding themselves. In two other cases relatives insisted on patients being fed even though the patients were able to handle finger food and utensils. The whole question of the kinds and amount of help given by relatives and the rationale for such help needs further investigation.

Contrary to some nurses opinions, as expressed in the recorded notes, it was found that missing teeth or dentures did not necessarily affect the independent status of the patient. Patients stated that mincing or cutting of food was necessary to their coping with eating. Others felt that this indicated a deteriorating condition and preferred to struggle on with the chewing difficulties of a regular diet.
Mobility and socializing of the patient did not appear to be a factor in determining the amount of help a patient needed with feeding but there was evidence that ability to develop interpersonal communications was important.
CHAPTER V

VALIDATION AND RELIABILITY TESTS

I. VALIDATION

The preliminary tool was submitted to a panel of five experts along with a sample of typical observations from which feeding behaviors were derived. The list of typical observations from raw data as well as the questions asked of the experts is reproduced in Appendix A. The panel consisted of two directors of nursing and three head nurses, all of whom worked closely with patients with chronic conditions. This panel agreed that, in general, the preliminary tool had face validity. There was agreement by all five experts that behaviors listed on the scale could be derived from the sample observations submitted for their consideration.

Three of the experts, one director of nursing and two head nurses, agreed that each behavior represented a factor of independent feeding for a person with a chronic condition and that all twenty-one behaviors described an independent feeder. The third head nurse felt that item twelve, speaks coherently, and item thirteen, makes needs known, would be more meaningful if combined to read, able to communicate needs. This nurse felt the remaining behaviors described an independent feeder
"in a much more meaningful manner than the oft used, strictly functional assessment." With the suggested modifications above she agreed that each behavior represented a factor of independent feeding.

The second director of nursing suggested substituting communication for speaks, in item twelve. She questioned adding the explanation for item twenty, mentally comfortable (medication or reassurance not needed) and item twenty-one, physically comfortable (medication or nursing care not needed), as tending to bias opinion. In addition, she questioned whether an independent feeder would use a bib. The remaining seventeen behaviors along with the four modified ones, were considered by her to describe the independent feeder. She agreed that each of the items in the revised list represented a factor of independent feeding for a person with a chronic condition.

One director of nursing stated the tool would be of considerable value in the training of personnel. There was general agreement among the experts that this tool would assist nurses to assess the feeding abilities of patients with chronic conditions.
Eight pairs of nurses were asked to assess two patients each, using the Rating Scale of Abilities Related to Independent Feeding. This scale was not altered from the preliminary tool form which is reproduced in Table II. The nurses were asked to use the rating scale to record their assessments, without discussing either the recording or the patients involved with any other nurse. The test was then carried out using the procedure described on page twenty-eight. Scores for each patient were totalled and the results obtained by each pair of nurses were compared. The scores obtained are shown in Appendix B. The number of pairs of scores which come within the range of scores assigned to a defined category were considered to be in agreement. Pairs of scores which did not fit into a single category were considered to be in disagreement. Twelve of the sixteen pairs of scores were in agreement. Four were not. This produces a percentage agreement of 75 percent.

A Pearson product-moment correlation of the scores of eight pairs of nurses, rating two patients each, and using the feeding assessment tool is detailed in Appendix C. The correlation was .849. This correlation indicates that the tool will provide consistent measurement of feeding
abilities. The time interval between measurements was twenty-four hours or less. This time interval would tend to produce a lower correlation due to the likelihood of change in patients with chronic conditions. Since major decisions about individuals on the basis of a single test is not the purpose of this tool, a reliable measuring instrument has been produced.

Because there was only 61.95 percent agreement between pairs of nurses on specific items in the tool an item analysis was done. The statistical treatment is detailed in Appendix C. The item analysis of agreement of pairs of nurses using the feeding assessment tool to rate the self-feeding ability of selected patients is described in Table VI. One third of those ratings with the highest percentage agreement were compared with the one third with the lowest percentage agreement.

There were no negative correlations in the twenty-one items. The feeding task, items one to three, and the assisting self with feeding task, items four to seven, received acceptable percentage agreement with the exception of item seven, pours tea, butters bread etc. With only fifty percent agreement and a .2 discrimination index, this item requires

### Table VI

**Item Analysis of Agreement of Pairs of Nurses, Using the Feeding Assessment Tool, to Rate the Degree of Self-Feeding Ability of Selected Patients**

<table>
<thead>
<tr>
<th>Item</th>
<th>Number of Items = 21</th>
<th>Number of Nurses = 16</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Response agreed</td>
<td>% Level of Agreement</td>
</tr>
<tr>
<td>Item</td>
<td>Upper (5)</td>
<td>Lower (5)</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>5</td>
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<td>4</td>
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<td>1</td>
</tr>
<tr>
<td>21</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>
rephrasing. The section, performs personal hygiene, received unacceptable percentage agreement. Since the meaning of these items appears to be quite clear the problem may lie in the ability of the nurse to discriminate between the assistance and supervision given and that needed. More careful instruction of nurse raters might help here, for instance, defining + as needs no help to perform the task, ± as can perform the task if helped and - needs total help; unable to perform the task.

The group motivation behaviors received acceptable percentage agreement with the possible questioning of items thirteen, makes needs known and fourteen, responds to verbal stimuli. There was not sufficient evidence in the discrimination index to indicate a need for change. Further testing of these items will be required.

Rating abilities to overcome distraction in order to eat, produced two unacceptable items; sixteen, responds realistically to others, and twenty, mentally comfortable. Item sixteen might be considered to be represented in items seventeen, eighteen and nineteen; alert to surroundings, can focus attention on eating process and shows emotion, and therefore it could be eliminated. There was comment from some nurse raters that mental and physical comfort should not be separated. As there was a discrimination of .4 in
both cases, items twenty and twenty-one, mentally comfortable and physically comfortable, they might be combined and reworded.

III. ASSESSMENT OF NURSES' RESPONSES TO QUESTIONS ON USE OF THE TOOL

Nurses who participated in the reliability tests were asked to comment on the usefulness of the tool for assessing feeding behaviors. Responses of the first three pairs of nurses are seen in Table VII. The four questions used for this group are listed in Appendix B.

TABLE VII.

PERCEIVED USEFULNESS OF THE TOOL TO THE FIRST THREE PAIRS OF NURSES PARTICIPATING IN RELIABILITY TEST, GROUP I

<table>
<thead>
<tr>
<th>Did this rating scale assist you to:</th>
<th>Yes</th>
<th>No</th>
<th>No answer</th>
<th>Total # of nurses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Assess feeding ability.</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>2. Decide if patient needed feeding help.</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>3. Decide degree of feeding help needed.</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>4. Discover new information.</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Total percentage.</td>
<td>50</td>
<td>33.33</td>
<td>16.66</td>
<td>100</td>
</tr>
</tbody>
</table>

A second group of five pairs of nurses responded to
a revised set of three questions listed in Appendix B. The responses from this group are seen in Table VIII. In group I, the nurse who did not answer the questions stated that she had been assessing patients for years and did not need to mark a chart to decide the amount of assistance a patient would need. She commented that such a tool would have been useful in her early work with such patients.

**TABLE VIII**

PERCEIVED USEFULNESS OF TOOL TO THE SECOND GROUP, FIVE PAIRS OF NURSES, PARTICIPATING IN RELIABILITY TEST

<table>
<thead>
<tr>
<th>Does this scale assist you to:</th>
<th>Yes</th>
<th>Yes with reservations</th>
<th>No</th>
<th>Total # of nurses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Decide degree of feeding help.</td>
<td>9</td>
<td>1</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>2. Provide evidence of feeding ability for new staff.</td>
<td>9</td>
<td>1</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>3. Assess feeding ability of a new patient.</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total percentage.</strong></td>
<td><strong>86.66</strong></td>
<td><strong>6.66</strong></td>
<td><strong>6.66</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Two nurses stated the tool would not be useful to them. However, one of them commented that it might be useful in assessing new patients. Three nurses stated the tool would assist them to assess patients. Two of these nurses
stated that the tool would be particularly helpful in assessing new patients. Further favorable comments included such remarks as, "became more aware of patients abilities and disabilities," "great help in identifying what help the patient might need," and "helps in passing on information, especially with so much staff changeover."

The nurse who had reservations concerning questions one and two in Table VII qualified her answer. She felt that, in both these cases, the information obtained would only signify the extent to which the patient can feed himself, not the extent to which he will do so. A second nurse disagreed with the above view by remarking that both ability and willingness were revealed by the use of the tool. The two nurses in this group who felt the tool was not useful for assessing the feeding abilities of new patients said they would need a medical history, diagnosis, medications used and observation of the patient for some time before attempting assessment. Four nurses emphasized the changeability of behavior in patients with chronic conditions. They suggested the value of this instrument would be in its use over a longer period of time. One nurse questioned dividing physical and mental comfort, saying, "almost all geriatric patients need reassurance, attention and/or the help of drugs at times."
SUMMARY, CONCLUSIONS AND RESEARCH IMPLICATIONS

I. SUMMARY

The purpose of this study was to construct a nursing assessment tool based upon feeding behaviors of patients with chronic conditions. The intent was to include behaviors representative of the psychosocial as well as physical abilities. The function of such a tool would be to assist nurses to assess the abilities of patients with chronic conditions to feed themselves.

To determine the abilities patients would require to be independent feeders and identify the dependence-independence continuum, a random sample of fifty patients was drawn from two urban hospitals admitting patients with chronic conditions. The feeding behavior data were collected by observing, examining and questioning patients and the nurses, aides etc. who cared for them. The data were analyzed to define five categories, I Independent, II Minimally assisted independent, III Assisted independent, IV Partially dependent, and V Dependent. Observations were translated into positive behavioral terms and were classified according to the amount and kind of help the patient received.
These classifications were symbolized as + meaning no help, ± meaning assistance and/or supervision, and − meaning total help.

A preliminary tool was designed using a framework of performance skill development. Twenty-one behaviors were identified which measure physical abilities and provide some measure of motivation and adjustment abilities of the patient. Weighting of tasks was arbitrarily set by rating the physical abilities as three separate tasks and by rating motivation and interest as two separate tasks. This produces a 3:1:1 ratio. The Kenny Rehabilitation Center five point numerical rating scale was adapted to provide a method of determining the amount of help a patient would require to feed himself.

Five experts currently working in institutions admitting patients with chronic conditions reviewed the twenty-one behaviors and sample raw data from which the behaviors were derived. Face validity was established for determining a measure of independent feeding.

A reliability test with eight pairs of nurses using the tool to assess thirty-two patients, chosen to represent patients within the five categories, produced a reliability coefficient of .849. This gives supporting evidence that
use of this tool by registered nurses will produce dependable and consistent measurement of the relative state of feeding dependence-independence. An item analysis indicated that eighteen of the twenty-one feeding behaviors were understandable and applicable. Three behaviors require rephrasing or modification to improve their clarity.

The nurses who participated in the reliability test were asked to comment on the usefulness of the tool. Two sets of questions were used.

II CONCLUSIONS

Valid and reliable behaviors have been identified which describe independent feeding abilities of patients with chronic conditions. The rating of these behaviors allows for dependable and consistent measurement at five points along the dependence-independence continuum. The arbitrary setting of the 3:1:1 ratio of neuromuscular: motivation: adjustment abilities is probably sound in that the neuromuscular abilities are basic to independent feeding. However, the concern of some nurses over the difficulty of assessing in the psychosocial area indicates that this section of the tool could be improved.

Rating of behaviors provides written evidence
concerning the degree to which the patient is able to feed himself. The difference between what a patient is able to do and the criteria for independent feeding gives the nurse a measure of the help a patient will require to feed himself.

The question of the usefulness of this tool to nurses has not been answered satisfactorily. The decision regarding the usefulness of this tool must be deferred until a more controlled test is done. Having the nurses assess patients, first without and then with the instrument, and comparing the results would provide evidence of a concrete nature. Sampling opinion cannot provide such evidence. There appeared to be some reluctance on the part of these nurses to commit the more difficult parts of their assessments to writing, indicating little recognition of the value of communicating all of the patients' needs. There is a possibility that nurses are not too sure of the accuracy of their assessments. This whole question could be an area for further research, since making accurate assessments and communicating them is essential to the effectiveness of this tool.

Making major decisions about individuals on the basis of a single measurement is not the purpose of this tool. Assessment should be a continuing process. If used on a regular basis this assessment tool produces a concise record
of a patient's change of condition. Reliable information would then be available from which a feeding work-load could be derived and staffing patterns justified. This information about change of condition would also be of use to nurses in evaluating their nursing care plans in regard to feeding.

It is entirely possible to use the method developed in this study to produce similar tools which will assess the other activities of daily living, such as dressing, personal hygiene etc. Combined, the larger tool would allow nurses to assess the patient as a whole, using more systematic and precise methods of measurement than have yet been available. Such methods should produce nursing care plans which will give a scientific rationale for practice and provide measurable data for research into the evaluation of the impact of nursing practice, in the activities of daily living, upon the patient.

III INDICATIONS FOR FURTHER RESEARCH

Since the question of the usefulness of this tool for feeding assessment by nurses has not been answered satisfactorily it is a subject for further research. It is also recommended that testing this tool in feeding situations in other than chronic conditions would determine its usefulness in other areas.
The concern of nurses over the difficulty of assessing in the psychosocial area indicates a need for research to identify a more precise measurement of psychosocial behaviors than was accomplished in this study.

This study does not intend to imply that feeding is the only important activity of daily living for patients with chronic conditions. Extending this study to include behaviors for all activities of daily living is a further area for research. This extension would provide a better solution to the problem of weighting components of the rating scale. However, if this tool is to be used as designed, the problem of the adequacy of the 3:1:1 ratio of weighting the components will require further study.
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BIBLIOGRAPHY

A. BOOKS


**B. PUBLICATIONS OF GOVERNMENT, LEARNED SOCIETIES, AND OTHER ORGANIZATIONS**


**C. PERIODICALS**


D. ARTICLES IN COLLECTIONS


E. UNPUBLISHED MATERIALS


APPENDIX A

THE QUESTION SHEETS PRESENTED TO THE EXPERTS FOR VALIDATION OF THE PRELIMINARY TOOL
The purpose of checking the accompanying list of behaviors is to establish, (1) if each represents a factor of independent feeding for a person with a chronic condition, (2) if the total twenty-one behaviors describes an independent feeder.

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Do the total 21 behaviors describe an independent feeder?
TYPICAL OBSERVATION FROM WHICH BEHAVIORS WERE DERIVED

1. Patient was observed putting food in mouth using fingers.
2. Used spoon to drink soup.
3. Picked partially chewed pieces of meat out of her mouth and put back on plate. Said "this meat is tough as a cow."
4. Patient slipped over to the left side several times during the meal.
5. (a) Patient coughed when drinking fluids but did not choke on fluids. (b) Levine feeding was required.
6. Left hand shook when using spoon to eat. Patient ate very slowly.
13 and 17. Patient made agitated noises until nurse buttered her bread.
8. (a) Patient took out his napkin and placed it on his knee. (b) Patient's bib fell off (untied) and she was unsuccessful in putting it back on.
9. Patient spilled a great deal. The orderly changed his bib partway through the meal.
10. Patient used napkin to wipe hands and mouth after meal.
   (b) The aide wiped the patient's fingers and mouth.
11. The nurses report this patient eats breakfast and lunch by herself but her husband feeds her the entire evening meal.
12. The patient responded to observer's questions with sounds-"ji-ji-ji." (b) The patient responded to a question about
how well she could chew with the comment, "Where is this mountain we are on?"

13. Patient rang for nurse to feed him his jellied soup.

14. The patient opened her eyes, turned toward observer and looked at the observer when spoken to. (b) The patient responded to questions.

15. The patient tapped with spoon around dishes until he found his dessert. Was unsuccessful in getting jelly onto spoon.

16. (see 12 b) "I have my food minced because I haven't enough teeth to chew anymore. I don't like those plates."

17. (a) The patient introduced the observer to others in room.

(b) The patient did not look up or take any notice of the aide when she asked why she wasn't eating.

18. The patient played with the patterns on her plate, was reminded frequently to eat.

19. (a) The patient smiled at observer. (b) The patient showed no expression when reprimanded for spilling.

20. The nurse gave the patient a tranquilizer because she becomes very depressed about her physical condition.


QUESTION

Could the behaviors listed on the rating scale be derived from these sample observations?
APPENDIX B

THE INSTRUCTIONS GIVEN TO REGISTERED NURSES BEFORE USING THE ASSESSMENT TOOL, THE QUESTIONS TO BE ANSWERED AFTER ITS USE AND THE SCORES OF THE EIGHT PAIRS OF NURSES RATING SIXTEEN PATIENTS ON THEIR FEEDING ABILITIES
THE INSTRUCTIONS GIVEN TO REGISTERED NURSES BEFORE USING THE ASSESSMENT TOOL.

The purpose of this rating scale is to assist registered nurses to assess the abilities of patients with chronic conditions to feed themselves independently. In order to test the reliability of this rating scale you have been asked to use the scale to rate two patients who will be assigned to you. You are asked not to discuss either the way you have rated your assigned patients, or who they might be, with any of your co-workers.

KEY TO THE RATING SCALE

A. Code for judging the tasks.
   + = Performs the task independently.
   ± = Requires assistance and/or supervision to perform the task.
   - = Is unable to perform the task.

   Instruction: For each of the twenty-one independent feeding behaviors (tasks) circle the code which applies to the patient being assessed.

B. How to assign the rating.
   0 = all +’s
   1 = 1 or 2 ±’s; all others +’s.
   2 = all other combinations not described by 0, 1, 3, 4.
   3 = 1 or 2 ±’s (or 1 +); all others -’s.
   4 = all -’s.
QUESTIONS TO BE ANSWERED AFTER THE USE OF THE TOOL

Questions asked of first three pairs of nurses.

1. Did this rating scale assist you to assess the patient's ability to feed himself? Yes....No....Comment........

2. Did this rating scale assist you to decide if the patient requires your help with feeding? Yes....No....Comment........

3. Did this rating scale assist you to decide the degree of help this patient will need to feed himself? Yes....No....Comment........

4. Did this rating scale help you discover some factors about your patient's feeding abilities which you had not noticed before? Yes....No....If yes, what were the factors? (write overpage).

The information you provide will remain entirely confidential. Thank you for assisting with this study of feeding.

Questions asked of the next five pairs of nurses.

1. Does this scale tell you the degree of this patient's ability to feed himself? Yes....No....Comment................

2. Does this scale provide written evidence of this patient's ability to feed himself which would assist another nurse who did not know the patient? Yes....No....Comment....

3. Would this rating scale help you assess the feeding ability of a new patient? Yes....No....Comment................

General comments would be appreciated:
THE SCORES OF THE EIGHT PAIRS OF NURSES RATING SIXTEEN PATIENTS ON THEIR FEEDING ABILITIES USING THE FEEDING ASSESSMENT TOOL

<table>
<thead>
<tr>
<th>Patient</th>
<th>Score of Nurse X</th>
<th>Score of Nurse Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
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</tr>
<tr>
<td>16</td>
<td>7</td>
<td>5</td>
</tr>
</tbody>
</table>
APPENDIX C

STATISTICAL TREATMENT
1. The F ratio of minutes spent eating of the 5 categories of the random sample of patient population with chronic conditions used the formula:

\[ F = \frac{\text{variance among the means}}{\text{variance within the group}} \]

2. The reliability coefficient of 16 pairs of nurses rating 2 patients each, using the feeding assessment tool, was obtained using the Pearson product moment correlation:

\[ r = \frac{\sum X Y - (\sum X)(\sum Y)}{\sqrt{(\sum X^2 - (\sum X)^2)(\sum Y^2 - (\sum Y)^2)}} \]

where 

X = score of nurse X

Y = score of nurse Y

N = number of patients

3. An item analysis of agreement of pairs of nurses in rating the degree of self-feeding:

(a) \% level of agreement = \frac{\text{number in the upper } 1/3 \text{ of ratings}}{\text{total number being analyzed}}

(b) Discrimination index = \frac{\text{no. in upper } 1/3 - \text{no. in lower } 1/3}{\frac{1}{2} \text{ total number being analyzed}}

Where the upper 1/3 = Those pairs with the highest total number of agreements.

The lower 1/3 = Those pairs with the lowest total number of agreements.

Number being analyzed = 10