A STUDY OF THE LEVEL OF MEDICAL INFORMATION AMONG ONE HUNDRED SELECTED CLINIC PATIENTS

by

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CHAPTER I

INTRODUCTION

Scope of the Problem

The need for adequate communication with patients about their health care has long been recognized by those concerned. The well informed patient generally accepts and participates in health care and treatments more effectively, safely, and comfortably than the poorly informed patient. (32)

During teaching rounds while presenting patients to students, doctors and nurses are often aware of the anxiety and confusion experienced by patients following a partial or complete misunderstanding of the physician's or nurse's words. (24)

Extensive efforts are being made to educate the public, both in regard to the early recognition of disease and to the benefits of timely treatment. (15) In 1955 Seligmann found that patients' level of medical information tended to improve with the level of education, independent of the individual's country of origin. (26) Nine years later, Mohammed stated in her study, Patients' Understanding of Written Health Information, that the majority of the lay public did not have sufficient background to grasp the subject matter of health

instruction; they had little accurate understanding of body functions, or the effect of food constituents, medicines or exercise on the body. (20) She stated that information presented to patients in difficult language or complex sentences was unwise and unnecessary, and that health teachers and authors of health information could benefit from a closer evaluation of their printed material.

There are many efforts to provide the public with health information. Some of this takes the form of advertising aimed at increasing sales; some is propaganda of questionable authenticity. Various organizations in allied health fields devote a sizeable amount of their budgets to disseminating health information. The result should be a public that is well-informed. Accordingly, it might be expected that today's patients would be better informed about medical matters than any previous generation. Aasterud observed that the patient who is known to be well educated or of above-average income and social status often has his understanding of health practice overestimated. The health team assumes the patient "knows all about it" so he is not told anything. It is easy to underexplain a procedure to a person who displays an attitude of sophistication regarding it, or who lightly dismisses the event as not being a cause for worry. (1)

The problem remains, what is the level of medical information among patients today? Have the efforts at public education been successful? Do patients have a clear and precise understanding of

diseases? It is the purpose of this study to seek some answers to these questions.

Statement of the Problem

Adequate medical care requires considerable understanding and participation by the patient at various stages of his illness. First, the patient must decide where and when to seek help. Second, he should be able to supply accurate and relevant information to the physician about his condition, including changes that occur and effects of therapy. Third, the quality of care often depends on the extent of his cooperation with the physician in carrying out treatment. The patient's ability and willingness to participate effectively in these three phases of his care depend in part on his conception of his own condition and of medical care in general. (26) Tyron wrote that the patient's participation in his care and treatment in the long run aids in his recovery. (31)

In providing health information, it must be known for what type of audience the material will be used. Understanding the type of audience to be reached with written information is fundamental in its construction. (20) The problem of this study is to determine the degree of medical information possessed by a group of clinic patients about five common diseases.

Purposes of the Study

This study was made for the following reasons:

1. To determine the level of medical information possessed by a group of selected clinic patients about five common diseases.
2. To assess the influence, if any, of four predetermined organismic variables on the level of medical knowledge. The variables were:
   a. Age
   b. Sex
   c. Birth (native or foreign born)
   d. Education (highest grade completed)

Since this is a descriptive study, no hypotheses have been formulated.

Limitations

This study was limited in the following ways:

1. To data received from the use of five of the ten items in a health information test "Level of Medical Information Among Clinic Patients" reported by Seligmann, McGrath, and Pratt in the Journal of Chronic Diseases, November, 1957.

2. To 100 patients who attended the University of Oregon Outpatient Clinic on April 13, 1967, and April 17, 1967.
3. To the General Medicine Clinic because it met the following predetermined criteria for selection:
    a. it was accessible
    b. the physical setting was such that tests could be administered without interfering with clinic routine
    c. the clinic was held daily, Monday through Friday
    d. it was attended by a large number of patients
    e. the patients were adults or late adolescents

Assumptions

For the purpose of this study it was assumed that:

1. The level of medical information could be measured by a multiple choice, self-administered questionnaire.
2. The selected data collecting device had merit in that the test could be used to determine the level of medical information.
3. The data obtained could have implications for more effective communication between patients and members of the health team.

Procedures of the Study

Source of Data. The primary source of data was responses to the test, "Level of Medical Information Among Clinic Patients," administered to 100 patients in the General Medicine Clinic at the University of Oregon Outpatient Clinic, April 13 and 17, 1967. Secondary data were obtained from the general literature and related studies.

Methodology. This study was conducted as a descriptive study using the independent variable, namely, scores from the test plus information regarding the dependent variables, age, sex, place of birth, years of schooling completed, with the mean scores on the test and distribution tables employed to describe the findings.

The design of the study may be described in a series of steps as follows:

1. Established the purpose and scope of the study.
2. Reviewed the literature and related studies to discover what factors influence patients' level of knowledge about diseases and to develop a frame of reference regarding the level of medical information among patients.
3. Determined the assumptions and limitations.
4. Selected the test used by Seligmann, McGrath, and Pratt as reported in the Journal of Chronic Diseases. (26)

5. Obtained permission from Dr. Seligmann to use the test.
6. Modified the original test by selecting only the items that pertained to Tuberculosis, Stroke, Diabetes, Coronary Thrombosis, and Leukemia.
7. Carried out a pilot study by administering the test in person to ten patients in a general medicine outpatient clinic. The results indicated the questions needed no clarification; the findings lent themselves to tabulation and the construction of tables for depicting the data. Data from the pilot study were not included in the main study.
8. Established criteria for the selection of a clinic for collecting data.
9. Located a clinic that met those criteria.
10. Obtained administrative clearance for testing clinic patients.
11. Duplicated the necessary number of tests for administration to patients.
12. Administered test to all patients attending General Medicine Clinic on specified days. Continued administration of the test until the arbitrarily selected number (100) of patients was tested.
13. Tabulated the data, interpreted same.
14. Described the findings, summarized the study, drew

conclusions, and made recommendations for further study.

Presentation of the Study

This study is presented in four chapters: Chapter I, INTRODUCTION, which indicates the nature of the study, defines the purpose, and describes the plan for procedure; Chapter II, REVIEW OF THE LITERATURE AND RELATED STUDIES, presents a review of pertinent literature and related studies; Chapter III, REPORT OF THE STUDY, explains the procedure used and makes a presentation of the findings; Chapter IV, SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS, provides a summary of the study with conclusions and recommendations for further study based on the data obtained.

CHAPTER II

REVIEW OF THE LITERATURE AND RELATED STUDIES

Review of the Literature

A review of the literature and related studies was made to discover what factors influence patients' level of medical information about disease.

Communication is the art of conveying thought, a sharing of elements of behavior or modes of life, by the existence of sets of rules. Consequently, it is an essential factor in social interaction and man has evolved different systems of communication that render his social life possible. Among these systems of communication is human speech, language and writing. (5) Communication is the art of imparting or the interchange of information, thought, and opinions. (32) Communication proceeds by means of signs. Man is a user of signs in great variety; the spoken sounds of speech, written or printed letters and numerals, gestures, and facial expressions. The study of this whole broad field is called semiotics or linguistics. (5, 24) Semiotics represents different types of abstracting; syntactics, that concerns signs only; semantics concerns signs and their designations; and pragmatics, the most general, a level of study that

includes all personal psychological factors which distinguish one communication event from another. It is the "real-life" level. (5) All special fields of endeavor have to a certain extent a language of their own. Medicine is no exception. (21) Bigham said when we speak, only ten percent of the information we transmit is conveyed via the spoken word. The other 90 percent comes from the expression on the face, the movements of the body, the tone of voice, and the like. (2)

Weaver, in Cherry's book, On Human Communication, refers to the problem of communication as being "conceived with the identity, satisfactorily close approximation, in the interpretation of meaning by the receiver, as compared with the intended meaning of the sender." (5) The receiver of any message is guided in his interpretation of that message and in his resulting actions by his view of the relative roles and status between himself and the sender. (32) To hospitalized patients, communication with nurses and physicians is extremely important. Studies seem to indicate that a patient is most concerned with his physical comfort, with being told what to expect, and with having his questions answered. (16) Patients use what nurses and physicians say to judge technical skills of those serving them, to stem their own anxieties about their illnesses, to protect themselves from errors in medication and treatment, to find out how to behave. They also seek such conversation as a way to

make the days pleasanter. Skipper reported communication had two primary meanings for hospitalized patients: the securing of information and interpersonal contact. Patients desired information about their illness, technical procedures, and the general social organization of the hospital. This type of information seemed to help stem patients' anxieties over their illnesses and aided them to learn what nurses and physicians expected of them. Personal contact with hospital personnel was necessary since patients needed attention. They wanted emotional support, someone to talk to, to help pass the time, and to keep them from feeling lonely. This type of communication was used by the patients as a sign that not only were their nurses and physicians dedicated and interested in their care and cure and would not reject them, but also that these medical persons were qualified, technically and intellectually, possessing knowledge and skill to get them well. (27) A study by Skipper, Mauksch, and Tagliacozzo reports barriers to this essential communication. Patients in their study hesitated to ask for information from the nurse because they perceived the nurses as being too busy, because of their own prior experience with unsatisfactory answers. (28)

The nurse is frequently responsible for re-explaining information that has been imparted by other members of the health team. (27) Difficulties evidence themselves in nursing, toward doctor-patient-nurse communications possibly because of the discord about

the nurse's duties and responsibilities.

The nurse today has functions divided generally into two major areas of activity: dependent, and independent. The former is concerned with carrying out the plan of therapy indicated by the physician. Independent functions, those related to the patient's basic physiologic requirements, his personal hygiene, nutrition, emotional, spiritual and psychologic needs are far less well understood. Related to these functions is another area of activity in which the nurse is expected to co-ordinate all the services performed on "behalf of the patient by workers in other disciplines and to bring them into focus so that the patient's best interests are served. One finds as much variation in nursing programs as there are programs." (30)

The teaching of patients has been accepted as an integral part of the nurse's function. Bordick mentions five arguments given by nurses regarding omission of patient teaching.

1. The patient will be more frightened if he knows.
2. Patient teaching is against hospital policy.
3. How do you get away with it?
4. We don't have time to teach patients.
5. Our doctors won't let us teach patients.

To these statements Bordick has three answers:

1. Human beings in a democracy have a right to know those things that concern them. Patients are human beings.
2. Human beings are afraid of the unknown.
3. Fear is dangerous and intensifies pain. (3)

Janis states, " . . . patients have an intense 'hunger' for information, which, if not satisfied by the medical authorities, will lead them to seek elsewhere." Janis asserts that if the physician is not aware of the patient's need, then the nurses concerned with his care should anticipate this need and act accordingly. Patients feel they are not getting their full complement of care from the professional nurse. (14) Ingles, et al., note when the cultural backgrounds of the nurses and patient differ, some common ground of understanding must be established in order for communication and better nursing to take place. A nurse may be insensitive to some of the patient needs and therefore not provide explanations because of her culturally engendered expectations of behavior. (1, 13, 19).

Nurses who genuinely want to comfort patients or help them in solving problems often fail in their attempts. Ineffective communication may be the reason and it is often the nurse's own words, inadvertently that block communication between herself and the patient. Patients do not therefore always receive the information they want. (8) To help nurses study their own interactions with patients, Hewitt and Pesznecker identified five major verbal blocks to effective communication:

1. changing the subject
2. stating one' own opinions and ideas about the patient and his situation
3. false or inappropriate reassurance

4. jumping to conclusions or offering solutions to the problem
5. inappropriate use of medical facts or nursing knowledge.

Other reasons for blocking were the nurses' own anxiety, their attitudes about the patient, and preconceived notions of how patients should behave. Recognition of their own word blockage would be necessary before they could deal with the underlying reason for poor communication. Nurses could use the five categories to examine their own errors in response to patients. These blocks should also be examined by medical and paramedical personnel, for appropriate use of facts is important for all of those giving or constructing health information to patients. (11)

Collins' study of 100 ante partum patients was designed to determine how many words the patients understood from a list of 20 words commonly used during the nursing or medical interview for use in dietary instruction. The investigation had certain implications useful and worthy of consideration in the art of communications:

1. Medical and paramedical personnel need to review terminology used in talking with patients.
2. Literature given to patients should be clear, concise, and explained when distributed.
3. Educational materials should be reviewed for the appearance of difficult words.
4. Positive statements are more effective in teaching than are negative views.
5. An occasional check to see if the patient understands what is being said to him would surely be advantageous to more effective lines of communication and comprehension of medical information. (6)

Extensive efforts are being made to educate the public both in regard to early recognition of disease and to the benefits of timely treatment. Efforts are being expanded constantly that more people be made aware of symptoms as well as the likely treatment of a given disease or disorder. The literature reveals that patients overwhelmingly want to be informed of the nature of their illness to a far greater extent than the average physician anticipates. (29) Many patients consistently attribute more importance to the receiving of medical information than either their physicians or nurses. Medical personnel are, in fact, reluctant to relinquish medical information. (8)

> The professional nurse of today believes that, due to the pressure of doing so many things for the patient, she is wasting time if she spends a few minutes 'just talking' with the patient. Complaints are constantly heard in social circles and written in popular publications concerning the lack of information given about procedures. (17)

The ability of patients to understand the meaning of certain verbal symbols commonly used by medical personnel in conversations with patients about their illness, its course, and its treatment has been found to be less than perfect. (25, 24, 6, 18) A study by Samora was primarily concerned with hospital patients' differences in ability to comprehend terms commonly used in medical discourse. The research attempted to isolate and make explicit some of the factors associated with observed differences in levels of understanding.

Samora cited vocabulary deficiency, little formal education, ethnic group membership, and persons from a low social class environment as factors that inhibited clear, precise and complete transmissions and reception of medical information between patient and doctor.

> These, then, were not people who could be expected to have a high degree of verbal facility. But, on the other hand, in terms of such characteristics as low social class status, minimal education, and ethnic group membership, they are not unlike a good many millions of Americans who, at one time or another, find reason to seek medical care and thus come into interaction with clinic and hospital personnel. (25)

Findings of the U. S. Bureau of the Census in 1950 substantiate Samora's study. It was estimated by the Bureau there were over ten million foreign-born persons in the United States, many of whom must have been reared in homes where other than English was spoken, and in 1952, there were more than 44 million people 14 years of age and older with eight or fewer grades of school completed. (7) Facts as these suggest the potentiality for impaired communication. Even under the best of circumstances communication is rendered difficult by the tremendous differences in conceptualization of body processes between professionally trained persons and even well-informed laymen.

Doctors must have a vocabulary which patients can understand. The language to use with a patient must of course be composed of words familiar to that person in his cultural and educational

background. For communicating with each other, physicians have alternative terms which few nonprofessional people can understand. Some of these are short-cuts. Others may be used in the presence of patients, theoretically so as not to disturb them. This does not allay the patient's fear of the unknown, although many of these words are more precise than any the patient knows. If a doctor uses a term the patient does not understand, the doctor should be asked to tell what it means. It may be important for the patient to know. (21)

Questions have been raised about the adequacy of communications between patients and those who treat them in hospitals and clinics. (12, 27) "The patient asks questions. The nurse's answers should show her desire to help, her respect for the patient and her awareness of his problem." Her tone of voice and indication of interest, or her reticence and disinclination to answer his questions, convey a great deal to the patient. If her answer is, "I don't know, ask your doctor," the patient will be quick to sense the routine of "buck-passing" that implies he should stop bothering the staff. (31) Research by Samora, et al. has not disclosed that patients who understand everything that is said to them get well faster or more certainly than those who do not.

> Perhaps, if the goal of medicine is the diagnosis and treatment of disease, the quality of communication between practitioner and patient makes little difference so long as an adequate medical history can be obtained and the necessary cooperation of the patient

> in doing or refraining from doing certain things can be assured. But if the goal is more broadly interpreted, if the concern is with the person who is sick and the purpose is to relieve, reassure, and restore him--as would seem to be increasingly the case--the quality of communication assumes instrumental importance, and anything that interferes with it needs to be noted and, if possible, removed. (25)

Related Studies

Arthur W. Seligmann, M. D., and associates reported a study, "Level of Medical Information Among Clinic Patients" in The Journal of Chronic Diseases, November, 1957. (26) The study was the first of a three-part longitudinal analysis by Pratt, which queried clinic patients about etiology, symptoms, and treatment of diseases. Part II of Pratt's research utilized the same questions and was administered to physicians in determining how much information these doctors thought laymen should know and how much they believed patients in the clinic did know. Part III consisted of an intensive review of 50 patient-physician relationships to provide data on the manner in which the patient's illness was discussed and to reveal what patients had been told. (22)

Dr. Seligmann administered 36 multiple choice questions, as Part I of the longitudinal analysis, to clinic patients in the Cornell Medical Center, New York, N. Y., for the purpose of measuring medical information about ten common disorders. The subject

matter tested etiology, symptoms, and treatment. Questionnaires were administered to 214 medical outpatients during January, April, and May of 1955. An affixed interview guide obtained information about age, sex, highest school grade completed, country of birth, and length of residence in the United States. Forms were unsigned to encourage the cooperation of respondents who might be embarrassed at their lack of information. To test stability of the clinic population another sample obtained months later was quite comparable with regard to sex, nativity, age and education characteristics. Results showed:

1. The lower the age, the higher the test score. The difference among the groups was not statistically significant, indicating that age alone was not a factor in the level of information.
2. No significant difference was apparent in knowledge of medical information of males versus females.
3. No significant differences were demonstrated between the information level of native and foreign born persons.
4. Significant differences were found between an individual's information about disease and the education level attained. The differences between the percentage of all questions answered correctly by the high school graduates and by those with fewer than eight years of schooling was

significant at the P. 01 level thus indicating that education was a positive factor in the study.

5. There was no relationship between the number of diseases an individual had and his knowledge about all diseases. Persons who had none of the diseases gave as many correct answers as those who had four or more; furthermore, the more diseases the respondent's associates had, the more correct replies he gave.

Differences reported as significant were at the P. 01, P. 05, and P. 10 levels. Seligmann's discussion revealed persons in the study group were poorly and irregularly informed about disease. The variables--age, sex, and nativity had little effect on the difference in scores but the higher levels of education were associated with a superior knowledge of disease.

Frederick C. Redlich's study "The Patients Language" reported in The Yale Journal of Biology and Medicine, January, 1945, investigated neuropsychiatric patients' responses to medical terms. Redlich stated that any physician who listened to stories of patients and explained the nature of their illness to them must be aware of frequent misunderstandings between patient and physician, yet no adequate clinical or experimental study of patients' responses to medical terms had been done. (24) Redlich's investigation at Yale University involved 25 patients in a neuropsychiatric hospital to

whom 60 medical terms were presented and who were asked to define these terms. An attempt to score the patients' definitions of all words that could be objectively defined were compared with definitions given by the physicians. The scoring was done by two physicians and in case of contradiction or doubt, comparisons were made with definitions in the American Medical Dictionary.

The words chosen were those which occurred frequently in discourse between physicians and neuropsychiatric patients, or in conversations between physicians at the bedside. The terms were divided into four groups: (1) those used by physicians and patients (2) terms which were highly technical (3) medical jargon used only by physicians and medical personnel (4) terms used most frequently by patients. The participant was asked to define the words in a simple manner, to speak freely and express whatever occurred to him when he heard such a word.

The test scores of 25 patients on medical terms were expressed on a 0-100 scale. The correlation between knowledge of medical terms and I. Q. was +0. 3. In addition to general intelligence and general vocabulary of the patient, other factors determined the test scores. Interest in the disease, degree of anxiety, curiosity, and age of the patient influenced the test scores. The impression gained was that patients received most of their medical knowledge on the ward from observation of other patients and discussions among

themselves. Twelve of the 25 patients thought they obtained some information from their physicians. Thirteen thought their information about their own disease and medical matters in general was not adequate. Amount of education seemed to contribute very little; however, cultural ecological background, anxiety, and curiosity were important motivations for patients to acquire medical information.

In summary, Redlich noted the majority of patients were not adequately informed, had striking misconceptions leading to a maladjustment and to a poor patient-physician relationship. Hardly any term was generally known. Many commonly used medical terms received an emotive rather than cognitive interpretation by patients, and physicians were not sufficiently aware of this. To gain a more thorough understanding of the patient and to be able to help him, Redlich suggested asking the patient for his "theory" of illness, its causes and implications; to get his interpretations of some of the important terms that he or the physician uses, to correct some "misunderstandings". Such procedures were regarded as "semiotic psychotherapy", therapy used with conscious material. Since most types of psychotherapy operate by means of words, it would be helpful for members of the medical team to know about their most important tool--language. It is a part of one's unique personality and, in one way or another, differs from that of anyone else. "No wonder psychologists have analyzed language as a key to personality." (9)

Dodge's study at Cornell University in 1963 pursued the question, "What determined a nurse's or physician's belief about the importance of communication with the patient?" (8) The subjects were 126 registered nurses, licensed practical nurses, and nurse aides. A questionnaire was designed to measure some attitudes of each nurse toward herself, her patients, and toward patient care by responses to four questions. The subjects' responses to four items were taken as measures of feelings of psychological strength or adequacy. In analyzing the data, two factors were examined in addition to psychological strength. Did the job category of the participant have an effect on the importance of communication? Was any difference seen in the importance of communication for doctors versus nurses? In making the comparisons an analysis of variance technique was used.

Interpretation of the findings revealed that the nurse who felt relatively weak psychologically was less likely to endorse communication than the stronger nurse. In relation to job category and profession the licensed practical nurse group saw communication as less important for nurses than did either the registered nurse or aide. It was possible that the licensed practical nurse felt least qualified for the job she had to do whereas registered nurses and aides seemed to have a clear-cut concept of their responsibilities. The licensed practical nurse saw communication as important for

the doctor, but declined to see it as an important function for nurses. Aides saw no difference in communication's importance for doctors or nurses.

Data of the study provided support for the premise that willingness to keep patients medically informed was related to certain aspects of the self-picture, in particular to a feeling of personal adequacy or psychological strength. Dodge concluded:

> Whether this is related really to behavior in communication is not yet known: but the hypothesis that it is so related is at present being explored. If consistent differences in behavior are found, we may have the beginnings of a solution to one of the most prevalent complaints of patients. We would then be armed with the knowledge that a key to fuller communication between nurses and patients is for the nurses to have a stronger conception of their own personal adequacy. (8)

A study by Mohammed at University Hospitals, Cleveland, Ohio, was conducted on 300 randomly selected patients attending a Diabetes Clinic. (20) The purpose of the testing was to provide information about patients' ability to understand printed health information. The subject matter of all tests was general health information incorporated into a series of five 100-word paragraphs with vocabulary of known grade levels. Comparisons were made between the mean scores on the tests and descriptive variables: age, sex, race, place and amount of schooling, length of Cleveland residence and occupations. Differences were reported significant at the P. 05

level. Results revealed these comparisons, with exceptions of amount of schooling and age, had little strong predictive value regarding a person's ability to comprehend health information.

A 1966 study by Weigand produced findings that paralleled those of Mohammed's concerning health information incorporated into a test with known reading levels. (32) Weigand chose 104 dermatology clinic patients and information was obtained from a selected health information test similar to that of Mohammed's. Weigand found the descriptive variables: age, sex, race, place of schooling, and occupation had little significant relationship toward comprehension of written health material, but years of schooling did have some effect. Approximately one-fourth of the population responded correctly to all questions on the test. Conclusions drawn were:

1. Comprehension of written material did not appear to be affected by predetermined factors selected for the study as much as by other possible factors not included.
2. In constructing written material, the characteristics of the population to whom the material is intended must be carefully evaluated.
3. The reading level of the written material was not a factor in the patients' comprehension of the health information.
4. The health information test did not contain items related to the personal needs of participants in a dermatology clinic.

Summary of the Literature

A review of the literature and related studies revealed that much research and study has been done in the areas of communication, but relatively few studies have been done regarding patients' level of medical information about disease. More scientific documentation of this deficiency in patients' knowledge was provided by the studies of Redlich who worked with psychiatric patients, Collins who dealt with obstetrical patients, and Seligmann's research with medical outpatients in a general medicine clinic.

The literature reports the recipient of any message is guided in his interpretation of that message and in his resulting actions by his view of the relative roles and status between himself and the sender.

Factors such as vocabulary deficiency, education, cultural background, psychological aspects, lack of recognition by nurses and doctors toward patients' needs/fears, may impair the transmission and reception of information between patient and medical personnel. An awareness of these factors cannot be overemphasized. Determining the level of patients' knowledge about medical information is an attempt to shed some light on the adequacy of patient care in the medical clinic and on the effectiveness of the doctor-patient-nurse relationship.

CHAPTER III

REPORT OF THE STUDY

Procedure

The purpose of this study was to determine the degree of medical information about five common diseases expressed by 100 patients in a general medicine clinic in response to a test. (Appendix C) It was further proposed to assess the influence(s), if any, of four predetermined variables on the level of medical knowledge among the patients on the health information test. The variables were:

1. Age
2. Sex
3. Birth (native or foreign born)
4. Education (highest grade completed in school)

A review of the literature and related studies was made to discover what factors influenced patients' degree of medical information about diseases.

The test for the collection of data was taken from the study "Level of Medical Information Among Clinic Patients" by Arthur W. Seligmann, Neva McGrath, and Lois Pratt reported in the Journal of Chronic Diseases, November, 1957. The self-administered test

consisted of multiple choice items devised to measure knowledge about the common disorders: Tuberculosis, Cerebral vascular accident, Stomach ulcer, Syphilis, Diabetes, Coronary Thrombosis, Arthritis, Asthma, Menopause, and Leukemia. In each condition three or four questions were asked, one each about etiology, symptoms, and treatment. The test was modified for this study by confining the items to five of the diseases from the original research, namely: Tuberculosis, Stroke, Diabetes mellitus, Coronary Thrombosis, and Leukemia.

Data from the Vital Statistics of the United States 1964, reveal justification for use of the five diseases in this study. (22) The number of deaths within the United States for 1964 ranked in the following order: (1) Arteriosclerotic Heart Disease, including coronary disease 545, 499 (2) vascular lesions, affecting the central nervous system 198, 209 (3) Diabetes mellitus 32, 279 (4) Leukemia 13, 453 (5) Tuberculosis 8, 303. In comparison, the State of Oregon had deaths listed as follows: (1) Arteriosclerotic Heart Disease, including coronary disease 5, 667 (2) Vascular lesions 2, 358 (3) Diabetes mellitus 275 (4) Leukemia 132 (5) Tuberculosis 53.

The variables selected for this study were similar to the Seligmann study and a comparison of the findings of the two studies was made. (26) Information regarding age, sex, place of birth (native or foreign born), and years of schooling was obtained

previous to the participant's responding to the test items.

The test as modified consisted of five items designed to obtain personal data followed by 19 multiple-choice items, each with four options. Each condition included items about etiology, symptoms, and treatment. Items 25-34 were designed for the purpose of making comparisons of responses of persons who had had the diseases and those persons who had acquaintances who had had the diseases. (Appendix B)

The study was carried out according to the plan outlined in Chapter I.

A pilot study was carried out on ten patients in an outpatient general medicine clinic in a private hospital. The purpose of the study and the questionnaire were explained. The investigator noted the time each respondent used to complete the test, and found that most respondents completed in 15 minutes. Each participant was then asked if he/she had any difficulty in answering any items and if the items were clear. No difficulty was mentioned. Accordingly, no revisions were deemed necessary. The findings of the pilot study were such that they could be categorized and lead to the formulation of conclusions. No data obtained in the pilot study were included in the final study.

Permission to use the University of Oregon Outpatient Clinic was obtained from Miss Gwynn Brice, Assistant Director, of the

Outpatient Clinic. The General Medicine Clinic was selected because it met the predetermined criteria as outlined in Chapter I. The data were collected over a period of two scheduled clinic days. One hundred and three patients came to the clinic; three did not take the test. Reasons given by the three for not participating in the study were: "I don't want to fool with it", "I can't finish it", and one patient stated he could not read or write. The patients were approached in the waiting area designated for the General Medicine Clinic. Each received an individual explanation of the reasons the study was being done and was asked if he/she would cooperate by answering some questions. The patients were given a pencil and a stable writing area. After each patient finished the test, the investigator noted if the data had been obtained for the desired variables.

All responses were tabulated on a master sheet. (Appendix C) The correct responses were determined by consulting Brunner's Textbook of Medical-Surgical Nursing and by a panel of registered nurses at the University of Oregon School of Nursing. (4)

Findings

There were four variables, the first two of which were age and sex. The 100 participants in this study ranged in age between 14 and 85 years. Twenty-nine persons were in the 14-35 group; 30 were between 36 and 55; 31 between 56 and 75; and 9 in the group of

76 to 85 years. There were 32 men and 68 women.

Table 1 shows the distribution of 99 patients according to age and sex.

Table 1. Distribution of 99 Patients at an Outpatient General Medicine Clinic by Age Group and Sex.

Age Group* in years (1)	Male N (2)	Female* N (3)	Total (4)
14-35	9	20	29
36-55	10	20	30
56-75	9	22	31
76-85	4	5	9
Total	32	67	99

* no response = 1

The third variable in this study was place of birth. This study, like Seligmann's, had twice as many female participants as males. The small number of foreign born patients, two in this study, made it impossible to generalize to the population. No further tabulations were made according to variable three. Seligmann's research population had a 21 percent foreign born representation. This most likely was not due to chance but to the geographical location in which the study was performed.

Three women did not complete the request of information for all variables on the questionnaire. Two did not state the amount of education and one did not respond to age. These factors account for

the variation in number of persons tabulated throughout the context.

Table 2 shows the distribution of the 100 patients in this study by sex and place of birth.

Table 2. Distribution of 100 Patients at an Outpatient General Medicine Clinic by Place of Birth and Sex.

Place of Birth (1)	Male N (2)	Female N (3)	Total N (4)
Native Born	32	66	98
Foreign Born	0	2	2
Total	32	68	100

Variable four was related to the respondent's highest grade completed in school. Four groups were devised: (1) high school graduate or above; (2) one to three years of high school which included grades 9, 10, and 11; (3) an eighth grade education; and (4) those persons with seven years or less of schooling. Twenty-nine respondents had a high school education or above. One person had a Bachelor of Science Degree, six had attended College, seven had attended Business School beyond high school and 15 were high school graduates only. The greatest number of persons, 38, attended high school for one to three years. Twenty-one respondents, slightly less than one-fourth of the participants had an eighth grade education and ten persons received seven years or less of schooling. The women had had more schooling than the men.

Table 3 shows the distribution of 98 patients according to their level of education and sex.

Table 3. Distribution of 98 Patients at an Outpatient General Medicine Clinic by Level of Education and Sex.

Level of Education* (1)	Male N (2)	Female* N (3)	Total (4)
High School or above	5	24	29
1-3 years High School	12	26	38
8 years	9	12	21
7 years or less	6	4	10
Total	32	66	98

*No response = 2

Comparisons were made of the age range and the level of education of 97 patients in this study. Of the 29 respondents in the youngest group, almost one-half of them were high school graduates, a fact that seems logical at this time when education is strongly encouraged. Twenty-eight persons between the ages of 36 and 55 were divided equally into two levels of education; nine were high school graduates, nine attended one to three years of high school and five each were in the categories eight years and seven years or less of schooling. The respondents above 56 years of age had the least amount of education. A small percentage were between 76 and 85

years, one of whom had a high school education.

Seligmann's study showed more persons with a high school education than did this study. Further comparisons were not possible since Seligmann did not report a detailed breakdown of the respondents according to highest grade completed in school and age groups as shown in this study.

Table 4. Distribution of 97 Patients at an Outpatient General Medicine Clinic by Age Group and Level of Education.

	Level of Education**				
Age Group in years* (1)	H. S. or above N (2)	1-3 years H. S. N (3)	8 years N (4)	7 years or less N (5)	Totals (6)
14-35	13	12	3	1	29
36-55	9	9	5	5	28
56-75	6	14	10	1	31
76-85	1	4	1	3	9
Totals	29	39	19	10	97

* No response = 1
** No response = 2

Tables 5 and 6 respectively show distributions of males and females by age group and level of education. It will be noted that more women than men had completed high school or above. The tables are self-explanatory and comparisons were not made to Seligmann's study since data were not available.

Table 5. Distribution of 32 Males at an Outpatient General Medicine Clinic by Age Group and Level of Education.

	Level of Education				
Age Group in years (1)	H. S. or above N (2)	1-3 years H. S. N (3)	8 years N (4)	7 years or less N (5)	Totals (6)
14-35	2	5	1	1	9
36-55	2	3	2	3	10
56-75	0	3	5	1	9
76-85	1	2	0	1	4
Totals	5	13	8	6	32

Table 6. Distribution of 65 Females at an Outpatient General Medicine Clinic by Age Group and Level of Education.

	Level of Education**				
Age Group in years* (1)	H. S. or above N (2)	1-3 years H. S. N (3)	8 years N (4)	7 years or less N (5)	Totals (6)
14-35	11	7	2	0	20
36-55	7	6	3	2	18
56-75	6	11	5	0	22
76-85	0	2	1	2	5
Totals	24	26	11	4	65

* No response = 1
** No response = 2

In analyzing the data, the next step in the study was the report of test items. The correct answers of each disease: Tuberculosis, Stroke, Diabetes, Coronary Thrombosis, and Leukemia, have been tabulated separately according to (1) age groups and sex, (2) level of education and sex. The test and correct answers to each item are shown in Appendix B. The responses are shown in Appendix C. There are four items about Tuberculosis, three about Stroke, five about Diabetes, four about Coronary Thrombosis, and three in reference to Leukemia. Each will be considered separately.

When tabulating the number and percentage of correct responses it was found that the younger age groups had the best showing in percentage of correct responses about Tuberculosis. This is somewhat unusual since Tuberculosis is an old disease and not publicized widely at this time. It might be conjectured that younger persons have received more health information than the older groups.

These findings coincide with those of Seligmann. The findings are shown in Table 7.

The data were next tabulated according to the participants' level of education. It was found that education was a positive factor in relation to the number of correct responses. The more extensive the education, the higher the number of correct responses. The data are shown in Table 8.

Table 7. Distribution of Correct Responses to Four Items about Tuberculosis according to Age Group of 32 Male and 67 Female Patients at an Outpatient General Medicine Clinic.

Age Group in years* (1)	Male N (2)	Responses Correct N (3)	Responses Correct % (4)	Female N* (5)	Responses Correct N (6)	Responses Correct % (7)
14-35	9	24	67	20	64	80
36-55	10	27	68	19	59	78
56-75	9	16	44	23	56	64
76-85	4	8	50	5	12	60
Totals	32	75	59	67	191	71

* No response = 1

Table 8. Distribution of Correct Responses to Four Items about Tuberculosis according to Level of Education by 32 Male and 66 Female Patients at an Outpatient General Medicine Clinic.

Level of Education* (1)	Male N (2)	Responses Correct N (3)	Responses Correct % (4)	Female N* (5)	Responses Correct N (6)	Responses Correct % (7)
High School or above	5	16	80	24	82	85
1-3 years High School	13	29	56	26	69	66
8 years	8	18	56	12	28	58
7 years or less	6	12	50	4	8	50
Totals	32	75	59	66	187	70

* No response = 2

Table 9. Distribution of Correct Responses to Four Items about Tuberculosis by 97 Patients at an Outpatient General Medicine Clinic, According to Age, Sex and Level of Education.

Male								Female							
	Level of Education				Persons	Responses			Level of Education**				Persons	Responses	
Age Group in years	High School	1-3 years High School	8 years	7 years or less		Correct	Correct	Age Group in years*	High School	1-3 years	8 years	7 years or less		Correct	Correct
	N	N	N	N	N	N	N		N	N	N	N	N	N	N
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
14-35	2	5	1	1	9	24	67	14-35	11	7	2	0	20	64	80
36-55	2	3	2	3	10	27	68	36-55	7	6	3	2	18	56	82
56-75	0	3	5	1	9	16	44	56-75	6	11	5	0	22	52	64
76-85	1	2	0	1	4	8	50	76-85	0	2	1	2	5	12	60
Totals	5	13	8	6	32	75	59		24	26	11	4	65	184	70

* age - no response = 1

** education - no response = 2

Table 9 shows a composite distribution of correct responses to four items about Tuberculosis by 97 patients according to the variables age, sex, and education.

Test items 10, 11, and 12 concern the cardiovascular disease, Stroke. Males had a total of 35 correct responses or 36 percent from a possible 96 correct responses. Females gave 106 correct responses (52 percent) from a possible 201 correct answers.

Males in the study did poorly in regard to this disease. The highest number of correct answers was found in the 36-55 year group. The younger women achieved the highest percentage of correct answers.

This information is shown in Table 10.

Table 10. Distribution of Correct Responses to Three Items about Stroke according to Age Group by 32 Male and 67 Female Patients at an Outpatient General Medicine Clinic.

Age Group in years* (1)	Male N (2)	Responses Correct N (3)	Responses Correct % (4)	Female N* (5)	Responses Correct N (6)	Responses Correct % (7)
14-35	9	9	33	20	37	62
36-55	10	14	47	19	33	58
56-75	9	8	30	23	32	46
76-85	4	4	33	5	4	27
Totals	32	35	36	67	106	52

*No response = 1

The amount of education was a positive factor as shown in Table 11. The males in the high school graduation group had 60 percent of the responses correct and the women in the same grouping had 78 percent of the right answers. The participants with less education were consistently lower in the number of correct responses.

Table 11. Distribution of Correct Responses to Three Items about Stroke according to Level of Education by 32 Male and 66 Female Patients at an Outpatient General Medicine Clinic.

Level of Education* (1)	Male N (2)	Responses Correct N (3)	Responses Correct % (4)	Female N* (5)	Responses Correct N (6)	Responses Correct % (7)
High School or above	5	8	60	24	56	78
1-3 years High School	13	13	33	26	31	40
8 years	8	9	38	12	12	33
7 years or less	6	5	28	4	2	17
Totals	32	35	36	66	101	52

* No response = 2

Composite data derived from the responses about Stroke are shown in Table 12.

The next series of tables depicts the findings about Diabetes mellitus. Five items were included in the test about this disease entity. The respondents seemed to have more knowledge about

Table 12. Distribution of Correct Responses to Three Items about Stroke, by 97 Patients at an Outpatient General Medicine Clinic, According to Age, Sex and Level of Education.

Male								Female							
	Level of Education				Persons	Responses			Level of Education**				Persons	Responses	
Age Group in years	High School	1-3 years High School	8 years	7 years or less		Correct	Correct	Age Group in years*	High School	1-3 years	8 years	7 years or less		Correct	Correct
	N	N	N	N	N	N	N		N	N	N	N	N	N	N
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
14-35	2	5	1	1	9	9	33	14-35	11	7	2	0	20	37	62
36-55	2	3	2	3	10	14	47	36-55	7	6	3	2	18	33	61
56-75	0	3	5	1	9	8	30	56-75	6	11	5	0	22	27	42
76-85	1	2	0	1	4	4	33	76-85	0	2	1	2	5	4	27
Totals	5	13	8	6	32	35	36		24	26	11	4	65	101	52

*age - no response = 1

**education - no response = 2

Diabetes than about Stroke. This could possibly be due to the fact that it is a well publicized disease and affects the young as well as the old. These findings substantiate those of Seligmann's. Males gave 90 correct responses of a possible total of 160, or 56 percent. Females gave 214 correct answers of a possible total of 335 or 63 percent.

The men in the second age group and the women in the first group gave more correct responses than those in the other age groups. The data are shown in Table 13.

Table 13. Distribution of Correct Responses to Five Items about Diabetes according to Age Group by 32 Male and 67 Female Patients in an Outpatient General Medicine Clinic.

Age Group in years* (1)	Male N (2)	Responses Correct N (3)	Correct % (4)	Female N* (5)	Responses Correct N (6)	Correct % (7)
14-35	9	21	47	20	78	78
36-55	10	38	76	19	57	60
56-75	9	22	49	23	72	63
76-85	4	9	45	5	7	28
Totals	32	90	56	67	214	64

*No response = 1

The findings consistently show that the women, particularly those in the younger age group, gave a greater number of correct responses than did the men. A comparison of the participant's

responses according to level of education and sex is shown in Table 14.

Table 14. Distribution of Correct Responses to Five Items about Diabetes according to Level of Education by 32 Male and 66 Female Patients at an Outpatient General Medicine Clinic.

Level of Education* (1)	Male N (2)	Responses Correct N (3)	Responses Correct % (4)	Female N* (5)	Responses Correct N (6)	Responses Correct % (7)
High School or above	5	17	68	24	93	78
1-3 years High School	13	40	62	26	79	61
8 years	8	23	58	12	33	55
7 years or less	6	10	33	4	5	25
Totals	32	90	56	66	210	64

*No response = 2

Table 15 shows a composite of the responses from 97 patients to items about Diabetes according to age, sex, and level of education.

Test items 18-21 refer to Coronary Thrombosis. None of the persons in any age group did well on these items. Of a possible 128 correct responses from men, 24 were given or 19 percent. Women gave 110 correct responses (41 percent) of a possible total of 268 correct answers.

Table 15. Distribution of Correct Responses to Five Items about Diabetes, by 97 Patients at an Outpatient General Medicine Clinic, According to Age, Sex and Level of Education.

Male								Female							
	Level of Education				Persons	Responses			Level of Education**				Persons	Responses	
Age Group in years	High School	1-3 years High School	8 years	7 years or less		Correct	Correct	Age Group in years*	High School	1-3 years	8 years	7 years or less		Correct	Correct
(1)	N (2)	N (3)	N (4)	N (5)	N (6)	N (7)	N (8)	(9)	N (10)	N (11)	N (12)	N (13)	N (14)	N (15)	N (16)
14-35	2	5	1	1	9	21	47	14-35	11	7	2	0	20	78	78
36-55	2	3	2	3	10	38	76	36-55	7	6	3	2	18	54	60
56-75	0	3	5	1	9	22	49	56-75	6	11	5	0	22	67	61
76-85	1	2	0	1	4	9	45	76-85	0	2	1	2	5	7	28
Totals	5	13	8	6	32	90	56		24	26	11	4	65	206	63

*age - no response = 1

**education - no response = 2

The findings do not seem to indicate any great difference according to age. The low scores are of concern since Coronary Thrombosis ranks number one on the mortality list. (22) The public is generally thought to be knowledgeable regarding this disease. Seligmann's study population correctly answered 38 percent of the items about this disease.

Data for this study are shown in Table 16.

Table 16. Distribution of Correct Responses for Four Items about Coronary Thrombosis according to Age Group by 32 Male and 67 Female Patients at an Outpatient General Medicine Clinic.

Age Group in years* (1)	Male N (2)	Responses Correct N (3)	Responses Correct % (4)	Female N* (5)	Responses Correct N (6)	Responses Correct % (7)
14-35	9	3	8	20	37	46
36-55	10	9	23	19	35	46
56-75	9	10	28	23	31	34
76-85	4	2	13	5	7	35
Totals	32	24	19	67	110	41

*No response = 1

Amount of education remained an important factor in relation to patients' knowledge of disease. Men who had one to three years of high school education achieved better results than did the high school graduates. Among the women those who were high school graduates did better than the others.

Twenty-four correct responses (19 percent) of a total possible 128 were given by men. The women's correct responses were 109 (41 percent) of a total possible 264.

Test scores about Coronary Thrombosis were low as compared to Tuberculosis, Stroke, and Diabetes. These findings coincide with those of Seligmann.

Table 17 compares the responses according to the participants' level of education and sex.

Table 17. Distribution of Correct Responses to Four Items about Coronary Thrombosis according to Level of Education by 32 Male and 66 Female Patients at an Outpatient General Medicine Clinic.

		Responses			Responses	
Level of Education* (1)	Male N (2)	Correct N (3)	Correct % (4)	Female N* (5)	Correct N (6)	Correct % (7)
High School or above	5	3	15	24	58	56
1-3 years High School	13	12	23	26	32	31
8 years	8	6	19	12	15	31
7 years or less	6	3	13	4	4	25
Totals	32	24	19	66	109	41

*No response = 2

As for the other diseases a composite of the responses has been depicted in a table (Table 18) with distribution shown according to

Table 18. Distribution of Correct Responses to Four Items About Coronary Thrombosis by 97 Patients at an Outpatient General Medicine Clinic, According to Age, Sex and Level of Education.

Male								Female							
	Level of Education				Persons	Responses			Level of Education**				Persons	Responses	
Age Group in years	High School	1-3 years High School	8 years	7 years or less		Correct	Correct	Age Group in years*	High School	1-3 years	8 years	7 years or less		Correct	Correct
	N	N	N	N	N	N	N		N	N	N	N	N	N	N
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
14-35	2	5	1	1	9	3	8	14-35	11	7	2	0	20	37	46
36-55	2	3	2	3	10	9	33	36-55	7	6	3	2	18	34	47
56-75	0	3	5	1	9	10	28	56-75	6	11	5	0	22	31	35
76-85	1	2	0	1	4	2	13	76-85	0	2	1	2	5	7	35
Totals	5	13	8	6	32	24	19		24	26	11	4	65	109	42

* age - no response = 1

** education - no response = 2

age groups, level of education, number and percentage of correct responses as given by 32 men and 65 women.

The last three items referred to Leukemia. Men gave 24 correct responses (25 percent) of a total possible 96. The women's correct responses totaled 78 (39 percent) of a total possible 201.

The number and percentage of correct responses was low for all groups of participants. The distribution of findings by age groups and sex is shown in Table 19.

Table 19. Distribution of Correct Responses to Three Items about Leukemia according to Age Group by 32 Male and 67 Female Patients at an Outpatient General Medicine Clinic.

Age Group in years* (1)	Male N (2)	Responses Correct N (3)	Responses Correct % (4)	Female N* (5)	Responses Correct N (6)	Responses Correct % (7)
14-35	9	6	22	20	27	45
36-55	10	10	33	19	22	39
56-75	9	6	22	23	27	39
76-85	4	2	17	5	2	13
Totals	32	24	25	67	78	39

*No response = 1

When the responses were compared according to the participants' amount of education, it was found that those with the most education gave the largest number of correct responses. This pattern seemed to exist throughout the study. Findings concurring with

this statement are depicted in Table 20.

Table 20. Distribution of Correct Responses to Three Items about Leukemia according to Level of Education by 32 Male and 66 Female Patients at an Outpatient General Medicine Clinic.

Level of Education* (1)	Male N (2)	Responses Correct N (3)	Responses Correct % (4)	Female N* (5)	Responses Correct N (6)	Responses Correct % (7)
High School or above	5	4	27	24	38	46
1-3 years High School	13	14	33	26	27	35
8 years	8	3	13	12	12	33
7 years or less	6	3	17	4	1	8
Totals	32	24	25	66	78	39

*No response = 2

Achievement by respondents about this disease was lowest of the entire test. This is consistent with the findings in the original study of Seligmann. Intensive education programs have been carried on with respect to cancer; however, the public may be better informed about cancer of the lung or cancer of the breast than they are of a malignancy that attacks the blood-forming processes. Women gave 39 percent of the correct answers about Leukemia but men responded correctly only 25 percent of the possible total.

A composite table (Table 21) follows as for the other diseases.

Table 21. Distribution of Correct Responses to Three Items about Leukemia, by 97 Patients at an Outpatient General Medicine Clinic, According to Age, Sex and Level of Education.

Male								Female							
	Level of Education				Persons	Responses			Level of Education**				Persons	Responses	
Age Group in years	High School	1-3 High School	8 years	7 years or less		Correct	Correct	Age Group in years*	High School	1-3 years	8 years	7 years or less		Correct	Correct
(1)	N (2)	N (3)	N (4)	N (5)	N (6)	N (7)	N (8)	(9)	N (10)	N (11)	N (12)	N (13)	N (14)	N (15)	N (16)
14-35	2	5	1	1	9	6	22	14-35	11	7	2	0	20	27	45
36-55	2	3	2	3	10	10	33	36-55	7	6	3	2	18	21	39
56-75	0	3	5	1	9	6	22	56-75	6	11	5	0	22	27	41
76-85	1	2	0	1	4	2	17	76-85	0	2	1	2	5	2	13
Totals	5	13	8	6	32	24	25		24	26	11	4	65	77	39

* age - no response = 1

** education - no response = 2

Information obtained in the study has been represented in tables with data regarding each variable. The mean age of the male and female respondents was 48 and 49 respectively; the median age was 51 years for both sexes. Fifty-one years was the modal age for the men; the women showed a bimodal representation of 28 and 59 years. No definite pattern was established when comparing older persons and the younger persons in the giving of correct responses to items about the five common diseases. It would appear that age alone was not a factor in the amount of correct medical information revealed by the participants.

The women consistently had a greater number of correct responses to each disease and therefore a higher percentage of correct responses than the men. It must be noted however that the persons with more education were women, implying that sex alone was not a determinant factor in achievement on test items. Table 22 depicts a distribution of this information.

Table 22. Distribution of Correct Responses about Five Diseases by 97 Patients at an Outpatient General Medicine Clinic according to Sex.

	Correct Responses in Percentages				
Sex (1)	Tuberculosis (2)	Stroke (3)	Diabetes (4)	Coronary Thrombosis (5)	Leukemia (6)
Male	59	36	56	19	25
Female	70	52	63	42	39

It appears that an individual's information about disease is related to educational level. High school graduates gave 385 (70 percent) correct responses from a total possible number of 546 to each disease, thereby answering over two-thirds of the items correctly. An appreciable rise was noted in correct answers from the eighth grade graduate to the high school graduate and above for each specific disease, except Coronary Thrombosis. Poor response was found in the percentage of correct answers regarding Leukemia. Correct information was almost as extensive for persons with little schooling as for those who were high school graduates and above. The participants achieved only 31 percent of the possible correct scores.

It may be noted that this study substantiated Seligmann's in finding that education was an important factor in level of knowledge about disease.

As a basis for comparing achievement in the items for the five conditions being studied the total possible responses were compared to the total correct responses. These figures were obtained by multiplying the number of the participants (100) by the number of correct responses to the items for each disease. There were four items about Tuberculosis; therefore, the total possible score would be 400. The same computation was done for each of the disease entities. The number of correct responses was then obtained and the comparison converted to percentage. The information is shown in Table 23.

Table 23. Distribution of Correct Responses by 100 Patients about Five Diseases at an Outpatient General Medicine Clinic.

Disease (1)	Total Possible Correct Responses (2)	Correct Responses N (3)	Percent (4)
Tuberculosis	400	269	67
Stroke	300	141	47
Diabetes	500	308	62
Coronary Thombosis	400	134	34
Leukemia	300	103	31
Total	1900	955	50

For ease of discrimination of the patient's ability to choose the correct option, each person's achievement was categorized in the following manner: low amount of knowledge, showing a low degree of success; medium amount of knowledge, showing some success; and high amount of knowledge, showing success to the greatest degree for this test.

Forty-four patients scored zero to nine on the test, achieving a low degree of success; 15 scored 10 on the test, and 41 patients correctly answered 11 to 18 items. These data are shown in Table 24. It should be noted that the extremes were almost equal.

Items 25 through 29 asked patients if they had had any of the diseases named in the test. Questions 30 through 34 asked the patients if they knew anyone who had the diseases. It was found that

Table 24. Distribution of 100 Patients according to Low, Medium and High Degrees of Medical Knowledge about Five Diseases on a Health Information Test at an Outpatient General Medicine Clinic.

Category of Success (1)	Range of Correct Responses (2)	Patients Responding N (3)
Low	(0 - 9)	44
Medium	(10)	15
High	(11-18)	41
Total		100

persons in the study group having one or more diseases did not substantially respond better than those who had not had the diseases.

Twenty respondents had one or more of the five diseases in this study. Two participants had Tuberculosis; six had suffered a Stroke; eleven had Diabetes; six had suffered a Coronary; and one person had Leukemia. Some participants had more than one disease. With the exception of Tuberculosis, the persons who had had the condition were not well informed. The information is shown in Table 25.

Sixty-four respondents knew someone who had had one or more of the diseases in the study. Thirty-two knew someone who had Tuberculosis; 39 persons knew someone who had had a Stroke; 54 knew someone who had had Diabetes; 16 knew acquaintances who had had a Coronary; and 18 participants knew someone who had had

Table 25. Distribution of Correct Responses about Tuberculosis, Stroke, Diabetes, Coronary Thrombosis, and Leukemia by Those Persons Who Had Had the Disease.

Disease (1)	Had the Disease N (2)	Responses Correct N (3)	Responses Correct % (4)
Tuberculosis	2	8	100
Stroke	6	7	39
Diabetes	11	40	73
Coronary Thrombosis	6	11	42
Leukemia	1	0	0

Leukemia. Some participants knew persons who had one or more of the diseases. Those who knew someone who had had one or more of the diseases were as well informed as those who had had the disease. Table 26 shows this information. These findings coincide with those of Seligmann. (26)

Table 26. Distribution of Correct Responses about Tuberculosis, Stroke, Diabetes, Coronary Thrombosis, and Leukemia by Those Persons Who Knew Someone Who Had Had the Disease.

Disease (1)	Knew Someone Who Had Had the Disease N (2)	Responses Correct N (3)	Responses Correct % (4)
Tuberculosis	32	108	84
Stroke	39	72	62
Diabetes	54	209	77
Coronary Thrombosis	16	44	69
Leukemia	18	23	43

Summary

The level of medical information possessed by a group of selected clinic patients about five common diseases was explored. It was found that women gave a higher number of correct responses than men did. It was also found that those with the greater amount of education gave the largest number of correct responses. Since women in the study had more education than the men it could be concluded that sex was not a factor related to the highest achievement.

Respondents were best informed about Tuberculosis and Diabetes. Knowledge about Coronary Thrombosis was particularly meager despite its high incidence and the health programs in this

country slanted toward cardiac manifestations. Information tended to improve with level of education.

Men who had had a disease were better informed about all the diseases except Stroke, than the men who only knew someone who had had a disease. These findings differ from those of Seligmann's study. In contrast, women who had had a disease were no better informed about the disease than were the women who had known someone who had had a disease. These findings concur with those of Seligmann's study.

This report gives rise to questions that could merit further study such as:

1. Did the patients understand the terminology?
2. Have these patients been exposed to the vast amount of health information disseminated through communications media?
3. Have the patients been given explanations regarding their own illnesses which they really did not understand?
4. Do the patients really want more health information?

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study was undertaken to determine the level of patients' medical information about five common diseases: Tuberculosis, Stroke, Diabetes, Coronary Thrombosis, and Leukemia and to assess the influence, if any, of four predetermined variables.

A multiple-choice test was modified from an original study to obtain desired information. The test was administered in person to ten patients in an outpatient general medicine clinic. It was found that the questionnaire would serve the purpose of the study and no revisions were made. The pilot study was conducted in order to seek further validation of the original instrument and to give the investigator experience in administering the test.

Description of Population

The test was given to 100 patients between April 13, 1967, and April 17, 1967.

The respondents were between 14 and 85 years of age. Thirty-two men and 68 women comprised the study population. The mean age of the male and female respondents was 48 and 49 respectively.

Ninety-eight of the 100 respondents were native born; two were foreign born.

The range of education was between a baccalaureate degree and two years of schooling.

None of the participants was in acute physical distress and accordingly all were able to participate in the study.

Findings

The information obtained from the test plus a review of the literature and related studies provided the basis for the findings summarized as follows:

1. Higher scores were concentrated in those persons with more education and in the younger population, indicating education might be a factor in patients' medical knowledge of five common diseases. These findings substantiate those of Seligmann.
2. Women consistently showed more accuracy in their answers than did the men.
3. Knowledge expressed by the respondents about the five diseases resulted in their highest achievement being noted in Tuberculosis, followed by Diabetes, Stroke, Coronary Thrombosis, and Leukemia.
4. Twenty persons had had one or more of the diseases in this

study. Their answers were not remarkable regarding accuracy. Sixty-four persons knew someone who had had one or more of the diseases. Results showed these persons were as well informed as those who had had a disease. These results concur with those of Seligmann.

Conclusions

Although the findings of this study can be generalized only as applicable to the time, place and persons involved, some conclusions can be drawn.

1. Gross inspection of data obtained in this study would infer that the level of medical information about the five common diseases in this study was not affected by the respondent's age, sex, or place of birth. However, the methodology employed could well be questioned. There is no statistical proof that any of the findings have validity.
2. It would appear that the level of health information was low particularly in the prevalent conditions of Stroke and Coronary Thrombosis.
3. Even the persons who had had some of the conditions did not give evidence of being well informed. Although the data infer that those with more education were the best informed, there is no actual proof that the level of education

was the factor responsible. Numerous other factors, not identified in this study, could have contributed.

4. The findings of this study substantiate those of the previous researchers. However, neither the past nor the present study investigated the reasons why the level of health information was low.

Recommendations for Further Study

1. A replication of the study in the same or a similar setting. To date the studies using the Seligmann instrument have concentrated on the number of correct responses. A replication should investigate the participants' reading level and the extent of comprehension of terminology used in the test.
2. A study be made of the communications between patient and physician or between patient and nurse in response to request for health information. Such a study could lead to identification of communication blocks, to the nature of information disseminated and to the reaction of the patient to the receipt of information.

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APPENDICES

APPENDIX A

CORRESPONDENCE

March 8, 1967

Cornell Medical Center
New York, New York

Dear Sirs:

At the present time I am engaged in gathering information for a thesis in partial fulfillment of a master's degree from the University of Oregon School of Nursing, Portland.

Could you provide me with information about the research article entitled, "Level of Medical Information Among Clinic Patients" that appeared in the November 1957 issue of the Journal of Chronic Diseases?

I would like permission from the authors Arthur Seligmann, Neva McGrath, and Lois Pratt, to use the tool that was published in the Journal previously named.

Any information you can send me will be gratefully appreciated.

Thank you,

Gwen M. Mercier
3106 S. W. 10th Ave.
Portland, Oregon 97201

C O P Y

ARTHUR W. SELIGMANN, M. D.
435 East 57th Street
New York, N. Y. 10022

March 27, 1967

Miss Gwen M. Mercier
3106 S. W. 10th Avenue
Portland, Oregon 97201

Dear Miss Mercier:

Your letter of March 8th was forwarded to me. I have no other information than that which appears in the publication. You may certainly use the questionnaire as published, as far as I'm concerned. I don't imagine the other authors would object although I have not specifically asked them.

Sincerely,

/s/ Arthur W. Seligmann

Arthur W. Seligmann, M. D.

AWS:em

APPENDIX B

MEDICAL INFORMATION TEST

Correct Responses Indicated

1. Age_____

2. Male_____

3. Female_____

4. In what country were you born?

_____

If born outside the United States, how many years have you lived in the United States? _____

5. Highest grade completed in school (circle one number)
1 2 3 4 5 6 7 8 9 10 11 12 more___

DIRECTIONS: Each condition listed below is followed by three statements. There is only one best answer for each condition. Place an X beside the statement which best describes the condition. If you know nothing about the condition, place an X beside Don't know.

6. Tuberculosis of the lungs is due to:

A. prolonged exposure to the cold	a. ____
B. infection with a germ	b. X
C. anemia and vitamin deficiency	c. ____
D. don't know	d. ____

7. The most common symptoms of TB of the lungs are:

A. pain in the chest after exercise	a. ____
B. chronic cough and sputum	b. X
C. wheezing sounds on deep breathing	c. ____
D. don't know	d. ____

8. Many patients with TB of the lungs are now successfully treated by:

A.	vitamin injections and special diets	a. ____
B.	prolonged exposure to the sun and special exercises	b. ____
C.	antibiotics and bed rest	c. X
D.	don't know	d. ____

9. TB of the lungs is best diagnosed by:

A.	chest x-ray	a. X
B.	observing temperature and weight	b. ____
C.	stethoscope examination of the chest	c. ____
D.	don't know	d. ____

10. A stroke is:

A.	a blood clot to the heart	a. ____
B.	blood clot in the arms or legs causing paralysis	b. ____
C.	hemorrhage or blood clot in the brain	c. X
D.	don't know	d. ____

11. Most common symptoms of a stroke are:

A.	severe chest pain spreading to the arm	a. ____
B.	paralysis and unconsciousness	b. X
C.	rapid and irregular heartbeat	c. ____
D.	don't know	d. ____

12. After a stroke a patient:

A.	is usually helped by antibiotics	a. ____
B.	often improves with time	b. X
C.	rarely regains the power of speech	c. ____
D.	don't know	d. ____

13. In treating diabetes the patient usually has to limit in his diet:

A.	salt	a. ____
B.	sugar	b. X
C.	coffee	c. ____
D.	don't know	d. ____

14. Diabetes is usually diagnosed by examining the:

A.	urine	a. X
B.	blood pressure	b. ____
C.	bowel movement	c. ____
D.	don't know	d. ____

15. Diabetes is a disease in which the following medicine is often prescribed:

A.	penicillin	a. ____
B.	digitalis	b. ____
C.	insulin	c. X
D.	don't know	d. ____

16. The chief disturbance in diabetes is:

A.	the inability of the body to make good use of certain foods	a. X
B.	failure of the body to manufacture enough blood cells	b. ____
C.	failure of the intestines to retain certain foods	c. ____
D.	don't know	d. ____

17. The diabetic person in many cases:

A.	has pain in his chest	a. ____
B.	has swollen joints	b. ____
C.	gets infections easily	c. X
D.	don't know	d. ____

18. The most common symptom of coronary thrombosis is:

A.	sharp shooting pain in the chest	a. ____
B.	paralysis	b. ____
C.	steady pressing pain in the chest	c. X
D.	don't know	d. ____

19. Coronary thrombosis is:

A.	an attack of rapid irregular heartbeat	a. ____
B.	the same as a stroke	b. ____
C.	a blood clot in a heart artery	c. X
D.	don't know	d. ____

20. Usual treatment for coronary thrombosis is:

A.	several weeks bed rest	a. X
B.	surgery	b.
C.	penicillin or aureomycin injections	c.
D.	don't know	d.

21. Coronary thrombosis:

A.	is almost always fatal	a.
B.	is often followed by recovery	b. X
C.	is not serious for those over 50	c.
D.	don't know	d.

22. Leukemia is:

A.	a cancerlike condition	a. X
B.	a severe infection	b.
C.	a condition resulting from iron deficiency	c.
D.	don't know	d.

23. In leukemia, the chief disturbance is that:

A.	the white cells become very numerous	a. X
B.	the white cells destroy the red cells	b.
C.	the bones become very brittle	c.
D.	don't know	d.

24. Treatment of leukemia:

A.	may cure it	a.
B.	may slow it up	b. X
C.	has no effect	c.
D.	don't know	d.

Have you ever had any of the following conditions yourself?

DIRECTIONS: Place an X under YES or NO.

	YES	NO
25. Tuberculosis	____	____
26. Stroke	____	____
27. Diabetes	____	____
28. Coronary Thrombosis	____	____
29. Leukemia	____	____

Have you ever known anyone who has had any of the following conditions? (Indicate whether the person was your wife, brother, friend, work associate, etc.) Place an X under YES or NO.

	YES	NO	WHO?
30. Tuberculosis	____	____	_____
31. Stroke	____	____	_____
32. Diabetes	____	____	_____
33. Coronary Thrombosis	____	____	_____
34. Leukemia	____	____	_____

APPENDIX C

MASTER TABULATION

Responses to Medical Information Test

1. Age_____

2. Male_____

3. Female _____

4. In what country were you born?

_____

If born outside the United States, how many years have you lived in the United States?_____

5. Highest grade completed in school (circle one number)
1 2 3 4 5 6 7 8 9 10 11 12 more___

DIRECTIONS: Each condition listed below is followed by three statements. There is only one best answer for each condition. Place an X beside the statement which best describes the condition. If you know nothing about the condition, place an X beside Don't know.

6. Tuberculosis of the lungs is due to:

A.	prolonged exposure to the cold	a. 4
B.	infection with a germ	b. 64
C.	anemia and vitamin deficiency	c. 3
D.	don't know	d. 24
	No answer	3
	More than one answer	2

7. The most common symptoms of TB of the lungs are:

A.	pain in the chest after exercise	a. 1
B.	chronic cough and sputum	b. 69
C.	wheezing sounds on deep breathing	c. 7
D.	don't know	d. 20
	No answer	2
	More than one answer	1

8. Many patients with TB of the lungs are now successfully treated by:

A.	vitamin injections and special diets	a. 4
B.	prolonged exposure to the sun and special exercises	b. 4
C.	antibiotics and bed rest	c. 58
D.	don't know	d. 27
	No answer	4
	More than one answer	3

9. TB of the lungs is best diagnosed by:

A.	chest x-ray	a. 78
B.	observing temperature and weight	b. 1
C.	stethoscope examination of the chest	c. 2
D.	don't know	d. 11
	No answer	3
	More than one answer	5

10. A stroke is:

A.	a blood clot to the heart	a. 18
B.	blood clot in the arms or legs causing paralysis	b. 7
C.	hemorrhage or blood clot in the brain	c. 44
D.	don't know	d. 24
	No answer	5
	More than one answer	2

11. Most common symptoms of a stroke are:

A.	severe chest pain spreading to the arm	a. 15
B.	paralysis and unconsciousness	b. 50
C.	rapid and irregular heartbeat	c. 4
D.	don't know	d. 25
	No answer	2
	More than one answer	4

12. After a stroke a patient:

A.	is usually helped by antibiotics	a. 12
B.	often improves with time	b. 47
C.	rarely regains the power of speech	c. 6
D.	don't know	d. 26
	No answer	9
	More than one answer	0

13. In treating diabetes the patient usually has to limit in his diet:

A. salt	a. 3
B. sugar	b. 70
C. coffee	c. 1
D. don't know	d. 12
No answer	6
More than one answer	8

14. Diabetes is usually diagnosed by examining the:

A. urine	a. 68
B. blood pressure	b. 2
C. bowel movement	c. 1
D. don't know	d. 13
No answer	7
More than one answer	9

15. Diabetes is a disease in which the following medicine is often prescribed:

A. penicillin	a. 1
B. digitalis	b. 0
C. insulin	c. 76
D. don't know	d. 14
No answer	7
More than one answer	2

16. The chief disturbance in diabetes is:

A. the inability of the body to make good use of certain foods	a. 48
B. failure of the body to manufacture enough blood cells	b. 13
C. failure of the intestines to retain certain foods	c. 1
D. don't know	d. 28
No answer	8
More than one answer	2

17. The diabetic person in many cases:

A.	has pain in his chest	a. 3
B.	has swollen joints	b. 17
C.	gets infections easily	c. 46
D.	don't know	d. 26
	No answer	6
	More than one answer	2

18. The most common symptom of coronary thrombosis is:

A.	sharp shooting pain in the chest	a. 36
B.	paralysis	b. 1
C.	steady pressing pain in the chest	c. 19
D.	don't know	d. 34
	No answer	7
	More than one answer	3

19. Coronary thrombosis is:

A.	an attack of rapid irregular heartbeat	a. 7
B.	the same as a stroke	b. 2
C.	a blood clot in a heart artery	c. 44
D.	don't know	d. 33
	No answer	10
	More than one answer	4

20. Usual treatment for coronary thrombosis is:

A.	several weeks bed rest	a. 41
B.	surgery	b. 5
C.	penicillin or aureomycin injections	c. 1
D.	don't know	d. 42
	No answer	10
	More than one answer	1

21. Coronary thrombosis:

A.	is almost always fatal	a. 17
B.	is often followed by recovery	b. 30
C.	is not serious for those over 50	c. 1
D.	don't know	d. 45
	No answer	7
	More than one answer	0

22. Leukemia is:

A.	a cancerlike condition	a. 53
B.	a severe infection	b. 3
C.	a condition resulting from iron deficiency	c. 7
D.	don't know	d. 29
	No answer	8
	More than one answer	0

23. In leukemia, the chief disturbance is that:

A.	the white cells become very numerous	a. 7
B.	the white cells destroy the red cells	b. 52
C.	the bones become very brittle	c. 1
D.	don't know	d. 32
	No answer	8
	More than one answer	0

24. Treatment of leukemia:

A.	may cure it	a. 2
B.	may slow it up	b. 43
C.	has no effect	c. 9
D.	don't know	d. 40
	No answer	6
	More than one answer	0

Have you ever had any of the following conditions yourself?

DIRECTIONS: Places an X under YES or NO.

		YES	NO
25.	Tuberculosis	2	
26.	Stroke	6	
27.	Diabetes	11	
28.	Coronary Thrombosis	6	
29.	Leukemia	1	

Have you ever known anyone who has had any of the following conditions? (Indicate whether the person was your wife, brother, friend, work associate, etc.) Place an X under YES or NO.

	YES	NO
30. Tuberculosis	32	
31. Stroke	39	
32. Diabetes	54	
33. Coronary Thrombosis	16	
34. Leukemia	18	

APPENDIX D

RAW DATA

Tuberculosis

Participant	Item Response	6 A	6 B	6 C	6 D	7 A	7 B	7 C	7 D	8 A	8 B	8 C	8 D	9 A	9 B	9 C	9 D
1			X			X						X		X			
2					X				X				X				X
3					X				X				X	X			
4					X		X							X			
5			X				X					X		X			
6			X					X				X				X	
7					X				X				X	X			
8								X						X			
9			X				X				X			X			
10			X					X				X		X			
11					X		X					X		X			
12			X					X		X				X			
13			X				X					X		X			
14					X	X			X				X				
15		X	X	X			X					X		X		X	
16				X					X			X		X			
17		X	X				X					X		X			
18			X				X					X		X			
19			X				X					X		X			
20			X				X					X		X			
21			X				X					X		X			
22			X						X				X	X			
23			X				X					X		X			
24			X						X			X		X			
25			X				X					X		X			
26			X				X					X		X			
27					X				X				X				X
28			X				X					X		X			
29			X				X					X		X			
30			X				X			X		X		X			
31			X				X					X		X			
32			X				X					X		X			
33			X				X					X		X			
34			X				X					X		X			
35		X												X			

Tuberculosis (continued)

Participant	Item / Response	6 A	6 B	6 C	6 D	7 A	7 B	7 C	7 D	8 A	8 B	8 C	8 D	9 A	9 B	9 C	9 D
36					X		X						X	X			
37			X				X					X		X			
38			X						X				X	X			
39			X				X					X		X			
40					X		X					X		X			
41			X				X					X		X			
42			X				X					X		X			
43			X					X				X		X			
44			X				X						X	X			
45			X				X					X		X			
46			X				X						X	X			
47					X				X				X				X
48			X				X				X			X			
49				X			X					X		X			
50			X				X					X		X			
51			X				X				X			X			
52							X					X				X	
53			X				X					X		X			
54			X				X					X		X			
55					X				X				X				X
56					X		X					X		X			
57			X				X					X		X			
58			X				X						X	X			
59			X				X					X		X			
60			X				X					X		X			
61			X				X					X		X			
62					X				X				X				X
63					X		X						X	X			
64			X				X					X		X			
65			X				X					X		X			
66					X			X				X					X
67					X				X				X	X			
68			X				X						X	X			
69			X				X					X		X			
70							X				X	X		X		X	
71			X				X					X		X			
72			X				X					X		X			
73					X				X	X	X	X		X	X	X	
74			X				X					X		X			
75			X				X					X		X			

Tuberculosis (continued)

Partici-	Item	6				7				8				9			
pant	Response	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
76					X				X			X					X
77			X				X					X		X			
78			X				X						X				X
79			X				X						X	X			
80					X				X				X				X
81			X						X				X	X			
82			X				X					X		X			
83			X				X			X				X			
84			X					X			X			X			
85		X															
86					X				X				X				X
87			X				X						X		X		
88		X					X			X		X		X	X		
89					X				X				X				X
90			X				X					X		X			
91			X				X					X		X			
92				X			X			X				X			
93		X					X					X		X			
94					X				X				X				X
95			X				X						X	X			
96			X				X					X					
97					X		X				X			X			
98			X				X					X		X			
99			X				X						X	X			
100			X				X				X	X		X	X	X	

Stroke

Participant	Item Response	10 A	10 B	10 C	10 D	11 A	11 B	11 C	11 D	12 A	12 B	12 C	12 D
1			X			X				X			
2					X				X				X
3			X				X				X		
4				X			X					X	
5				X			X				X		
6		X					X				X		
7					X				X				X
8													X
9					X	X							X
10		X				X					X		
11		X					X			X			
12		X					X			X			
13				X		X					X		
14					X	X							X
15						X	X						
16				X		X					X		
17					X		X						X
18				X			X					X	
19				X			X				X		
20				X		X					X		
21				X			X				X		
22					X	X					X		
23				X			X				X		
24				X			X				X		
25				X			X				X		
26				X			X				X		
27					X				X				X
28					X				X				X
29				X			X				X		
30				X			X				X		
31		X				X					X		
32				X			X						
33		X				X					X		
34				X			X				X		
35							X						
36					X				X	X			
37				X			X				X		
38					X		X				X		
39				X			X			X			
40				X					X	X			

Stroke (continued)

Participant	Item Response	10 A	10 B	10 C	10 D	11 A	11 B	11 C	11 D	12 A	12 B	12 C	12 D
41		X					X			X			
42				X			X				X		
43		X					X				X		
44					X		X				X		
45		X					X			X			
46			X			X				X			
47					X				X				
48					X				X				X
49				X			X				X		
50				X			X						X
51				X			X					X	
52				X		X							
53		X					X			X			
54				X			X				X		
55		X						X				X	
56				X			X						X
57				X			X				X		
58				X			X				X		
59		X		X		X	X			X			
60				X					X		X		
61				X			X				X		
62					X				X				X
63		X							X				X
64				X			X				X		
65				X			X						
66					X			X					X
67					X				X				X
68				X			X				X		
69			X				X						
70				X					X				X
71				X		X					X		
72				X			X					X	
73					X	X	X	X					X
74			X				X				X		
75				X					X				X
76		X						X				X	
77				X			X				X		
78				X			X			X			
79					X				X				X
80					X				X				

Stroke (continued)

Participant	Item Response	10 A	10 B	10 C	10 D	11 A	11 B	11 C	11 D	12 A	12 B	12 C	12 D
81					X				X		X		
82				X			X				X		
83		X	X			X	X	X			X		
84			X				X				X		
85													
86					X				X				X
87		X				X					X		
88									X				X
89					X				X				X
90				X			X				X		
91					X				X		X		
92		X					X				X		
93				X			X				X		
94					X				X				X
95				X			X				X		
96		X							X				X
97		X							X				X
98				X			X				X		
99		X							X				X
100			X					X			X		

Diabetes

Item	13				14				15				16				17			
Response	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Participant																				
1		X			X						X		X						X	
2	X	X	X		X	X	X				X		X	X	X		X	X	X	
3		X			X						X					X				X
4		X			X						X					X		X		
5		X			X						X		X						X	
6		X			X						X		X						X	
7	X	X			X	X					X		X					X		
8				X				X				X				X				X
9		X			X						X		X						X	
10				X	X						X		X						X	
11	X	X	X		X						X			X				X		
12		X			X						X			X				X		
13		X			X						X		X						X	
14			X					X				X	X							X
15	X	X			X	X	X													
16		X			X						X					X			X	
17		X			X						X								X	
18	X	X			X	X					X			X					X	
19		X			X						X		X						X	
20		X			X						X		X						X	
21		X							X				X							X
22		X			X						X		X						X	
23		X			X						X				X				X	
24		X			X						X			X					X	
25		X			X						X		X					X		
26		X			X						X		X						X	
27				X	X							X				X		X		
28		X			X						X					X			X	
29		X			X						X			X					X	
30		X			X						X			X					X	
31		X			X						X			X					X	
32																				
33		X			X						X				X				X	
34		X			X						X			X					X	
35																	X			
36		X			X						X					X			X	
37		X			X						X		X						X	
38		X			X						X		X						X	

Diabetes (continued)

Item	13				14				15				16				17			
Response	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Participant																				
39		X			X						X		X						X	
40				X				X				X				X				X
41		X			X						X			X					X	
42		X			X						X		X					X	X	
43		X			X						X					X				X
44		X			X						X			X					X	
45		X				X					X					X				X
46		X			X						X			X				X		
47				X				X				X								X
48		X					X				X		X						X	
49		X			X						X			X						X
50		X			X						X		X						X	
51		X			X						X		X							X
52																				
53		X			X						X			X					X	
54		X			X						X					X				X
55		X			X						X		X						X	
56		X			X						X		X						X	
57		X			X						X		X						X	
58		X			X						X		X						X	
59		X			X						X		X					X		
60		X			X						X					X				X
61		X			X						X		X				X			
62				X				X				X				X				X
63		X			X						X					X				X
64		X			X						X		X							X
65																				
66	X				X				X	X			X							X
67				X				X				X				X				X
68		X			X						X					X			X	
69																				
70		X			X						X					X			X	
71		X			X						X		X						X	
72		X			X						X		X						X	
73	X	X	X		X	X	X					X				X				X
74		X			X						X			X				X		
75		X			X						X		X						X	
76		X			X						X		X						X	

Diabetes (continued)

Item	13				14				15				16				17			
Response	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Participant																				
77		X			X						X		X						X	
78		X			X						X		X							X
79		X						X			X					X				X
80			X		X	X					X		X							X
81		X						X				X				X		X		
82	X				X						X		X						X	
83		X			X	X					X			X	X			X	X	
84		X			X						X			X				X		
85																				
86				X				X				X				X				X
87				X				X			X				X				X	
88	X			X		X						X				X		X		
89		X						X			X					X				X
90		X			X						X		X					X		
91		X			X						X		X							X
92		X			X						X		X						X	
93		X			X						X					X		X		
94				X				X				X				X				X
95		X			X						X		X					X		
96				X				X				X				X	X			
97	X					X					X					X		X		
98		X			X						X		X						X	
99		X			X							X				X				X
100		X	X		X	X			X		X			X				X		

Coronary Thrombosis

Participant	Item Response	18 A	18 B	18 C	18 D	19 A	19 B	19 C	19 D	20 A	20 B	20 C	20 D	21 A	21 B	21 C	21 D
1		X						X					X		X		
2		X		X		X	X	X									X
3					X				X				X				X
4		X											X				X
5				X				X		X					X		
6					X				X				X				X
7					X				X				X				X
8					X				X				X				X
9		X						X				X			X		
10		X						X			X			X			
11		X						X		X				X			
12		X							X				X				X
13					X			X					X				X
14		X											X				X
15		X		X						X							X
16				X		X				X					X		
17					X				X				X				X
18		X						X		X				X			
19		X						X		X					X		
20				X				X		X					X		
21		X						X		X					X		
22					X				X	X					X		
23		X				X				X				X			
24		X				X						X		X			
25					X				X				X				X
26		X						X					X				X
27					X				X				X				X
28					X				X				X		X		
29				X				X		X					X		
30		X						X		X					X		
31		X						X		X					X		
32																	
33				X					X				X				X
34				X				X		X							X
35															X		
36					X				X				X				X
37		X						X		X					X		
38					X				X				X				X
39				X				X		X					X		
40					X				X				X				X

Coronary Thrombosis (continued)

Participant	Item Response	18 A	18 B	18 C	18 D	19 A	19 B	19 C	19 D	20 A	20 B	20 C	20 D	21 A	21 B	21 C	21 D
41				X				X		X				X			
42				X				X		X					X		
43		X						X					X				X
44					X			X					X	X			
45					X			X					X				X
46		X				X				X				X			
47					X				X				X				X
48					X				X				X				X
49					X			X					X				X
50					X				X				X				X
51		X						X			X			X			
52																	
53		X				X					X				X		
54		X						X		X					X		
55					X				X				X				X
56				X				X		X					X		
57		X							X	X					X		
58		X						X		X					X		
59		X					X	X									
60					X			X					X		X		
61				X				X		X					X		
62					X				X				X				X
63		X					X			X							X
64		X						X		X				X			
65										X					X		
66				X		X				X							X
67					X				X				X				X
68		X						X		X				X			
69																	
70				X					X								
71				X				X		X				X			
72		X					X			X					X		
73					X				X				X				X
74				X				X		X					X		
75					X			X		X							X
76				X				X		X				X			
77		X						X		X					X		
78				X					X				X	X			
79					X				X				X			X	
80					X	X							X				X

Coronary Thrombosis (continued)

Partici-pant	Item Response	18				19				20				21			
		A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
81		X							X								
82		X						X		X				X			
83		X		X		X	X	X		X		X			X		
84			X					X			X			X			
85																	
86					X				X				X				X
87					X				X				X				X
88					X				X				X				X
89					X				X				X				X
90		X						X		X					X		
91					X				X				X				X
92				X				X					X				X
93				X				X			X						X
94					X				X				X				X
95		X						X		X				X			
96		X				X											X
97													X				X
98		X						X		X					X		
99					X				X				X				X
100		X						X		X							X

Leukemia

Participant	Item Response	22				23				24			
		A	B	C	D	A	B	C	D	A	B	C	D
1		X					X				X		
2					X				X				X
3					X				X				X
4					X				X				X
5		X					X				X		
6		X					X						X
7					X				X				X
8					X				X				X
9		X					X						X
10		X					X				X		
11		X					X					X	
12			X				X						X
13		X					X				X		
14					X				X				X
15					X				X				X
16				X				X			X		
17		X					X				X		
18		X				X				X			
19		X				X					X		
20		X					X				X		
21		X					X				X		
22		X					X				X		
23		X					X				X		
24		X					X				X		
25		X					X						X
26		X					X				X		
27					X				X				X
28		X							X				X
29		X					X				X		
30		X					X				X		
31		X					X				X		
32													
33		X							X			X	
34		X					X				X		
35											X		
36				X			X						X
37		X					X			X			
38			X						X		X		
39		X					X				X		
40				X					X				X

Leukemia (continued)

Participant	Item Response	22 A	22 B	22 C	22 D	23 A	23 B	23 C	23 D	24 A	24 B	24 C	24 D
41		X					X				X		
42		X					X				X		
43		X					X					X	
44		X					X						X
45				X			X						X
46					X				X				X
47					X				X				X
48				X			X				X		
49		X							X			X	
50					X		X						X
51		X					X					X	
52													
53		X					X				X		
54		X					X				X		
55					X				X				X
56				X			X				X		
57		X					X				X		
58		X					X				X		
59													
60		X					X						X
61		X				X						X	
62					X				X				X
63					X				X				X
64		X					X				X		
65		X					X				X		
66					X				X				X
67					X				X				X
68		X					X				X		
69													
70													
71		X					X				X		
72		X					X				X		
73					X				X				X
74			X			X					X		
75		X					X				X		
76		X				X						X	
77		X					X				X		
78					X				X				X
79					X				X				X
80					X				X				X

Leukemia (continued)

Participant	Item Response	22 A	22 B	22 C	22 D	23 A	23 B	23 C	23 D	24 A	24 B	24 C	24 D
81					X				X				X
82		X					X				X		
83					X				X				X
84		X					X						X
85													
86					X				X				X
87				X		X					X		
88									X				X
89					X				X				X
90		X					X				X		
91		X						X			X		
92				X				X			X		
93		X						X				X	
94					X				X				X
95		X					X					X	
96					X								X
97					X				X				X
98		X					X				X		
99					X				X				X
100		X					X				X		

Typed by Barbara Glenn

AN ABSTRACT OF THE THESIS OF

GWEN MERCIER EPPLER

For the MASTER OF SCIENCE in NURSING EDUCATION

Date of receiving this degree: June 6, 1968

Title: A STUDY OF THE LEVEL OF MEDICAL INFORMATION AMONG ONE HUNDRED SELECTED CLINIC PATIENTS

Approved: [redacted]

(Associate Professor in Charge of Thesis)

ABSTRACT

The Problem

Adequate medical care requires considerable understanding and participation by the patient at various stages of his illness. The patient's ability and willingness to participate effectively in his care depend in part on his conception of his own condition and of medical care in general. The aims of this study were to determine the level of medical information about five common diseases in a group of selected clinic patients. It was further proposed to assess the influence(s) of four predetermined variables on the level of medical knowledge among patients. The variables are:

1. Age
2. Sex
3. Native or Foreign Born
4. Highest grade completed in school

Description of Procedures

The primary source of data was that obtained from the multiple-choice items devised to measure knowledge of clinic patients about five common diseases in the study and an interview guide

administered immediately before the test questions to obtain age, sex, native or foreign born, and the highest grade completed in school. This test was administered to 100 patients in the General Medicine Clinic at the University of Oregon Outpatient Clinic between April 13, 1967, and April 17, 1967. The secondary source of data was a review of the literature and related studies.

Findings

The information obtained from the test plus a review of the literature and related studies provided the basis for the findings summarized as follows:

1. Higher scores were concentrated in those persons with more education and the younger population indicating education might be a factor in patients' medical knowledge of five common diseases.
2. Women consistently showed more accuracy in their answers than did the men.
3. Knowledge expressed by the respondents about the five diseases resulted in their highest achievement being noted in Tuberculosis followed by Diabetes, Stroke, Coronary Thrombosis, and Leukemia.
4. Twenty persons had had one or more of the diseases in this study. Their answers were not remarkable regarding

accuracy. Sixty-four persons knew someone who had had one or more of the diseases. Results showed these persons were as well informed as those who had had a disease. These results concur with those of Seligmann.

Conclusions

Although the findings of this study can be generalized only as applicable to the time, place and persons involved, some conclusions can be drawn.

1. Gross inspection of data obtained in this study would infer that the level of medical information about the five common diseases in this study was not affected by the variables age, sex, or place of birth. However, the methodology employed could well be questioned. There is no statistical proof that any of the findings have validity.
2. It would appear that the level of health information was low particularly in the prevalent conditions of Stroke and Coronary Thrombosis.
3. Even the persons who had had some of the conditions did not give evidence of being well informed. Although the data infer that those with more education were the best informed, there is no actual proof that the level of education was the factor responsible. Numerous other factors, not identified

in this study, could have contributed.

4. The test had been previously used as a basis for data collection. The findings of this study substantiate those of the previous researchers. However, neither the past nor the present study investigated the reasons why the level of health information was low.

Recommendations

On the basis of the findings, recommendations are made for further investigation such as:

1. A replication of the study in the same or a similar setting. To date the studies using the Seligmann instrument have concentrated on the number of correct reponses. A replication should investigate the participants' reading level and the extent of comprehension of terminology used in the test.
2. A study be made of the communications between patient and physician or between patient and nurse in response to request for health information. Such a study could lead to identification of communication blocks, to the nature of information disseminated and to the reaction of the patient to the receipt of information.