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A Comparison of Various Teaching Methods for Patients with Chronic Obstructive Pulmonary Diseases

B. Carol Altizer

Nancy S. Bailey

LOMA LINDA UNIVERSITY

Graduate School

A COMPARISON OF VARIOUS TEACHING METHODS FOR PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASES

By

B. Carol Altizer and Nancy S. Bailey

A Thesis in Partial Fulfillment
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Each person whose signature appears below certifies that he has read this thesis and that in his opinion it is adequate, in scope and quality, as a thesis for the degree Master of Science.

Lucile Lewis, Chairman
Lucile Lewis, M.S., Associate Professor of Nursing

Gordon W. Thompson M.D.
Gordon W. Thompson, M.D., Assistant Clinical Professor of Medicine

Jane A. Mundin
Jane A. Mundin, M.S., Respiratory Clinical Specialist

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Nancy Bailey
Carol Altizer

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INTRODUCTION

This research project was designed to evaluate two methods for teaching patients with chronic obstructive pulmonary disease (C.O.P.D.) about the disease and what he can do to maintain or improve present pulmonary function. The initial impetus for this study was the researchers' belief in Henderson's definition of nursing:

> The unique function of the nurse is to assist the individual, sick or well, in the performance of those activities contributing to health or its recovery (or to a peaceful death) that he would perform unaided if he had the necessary strength, will or knowledge. And to do this in such a way as to help him gain independence as rapidly as possible (13:15).

In the application of this statement, nursing should be involved in and responsible for a major part of the teaching program on a hospital unit. In order to help the patient gain independence as rapidly as possible, the patient should have an opportunity to learn about the illness and the treatment that he can do himself. Patient teaching is one way to help the patient gain independence. Many hospital units have a specific teaching protocol that is followed with most patients, while some units have no teaching programs. Still others rely on haphazard methods whereby the patient "gets taught" if someone has some extra time or if the patient asks specific questions about his care. There is a great variability in the amount of teaching a patient receives. Many times no one assesses how much instruction a patient needs or has received, or if the instruction given has met the individual's needs.

Because of this unorganized approach many patients are sent home

with the assumption that they will carry out an appropriate health program. Patients are often confused about the basic facts, and may ignore the procedures that have been outlined for them. By comparing two patient teaching methods in this study, we hoped to obtain data indicating the method of choice for teaching the patient with C.O.P.D.

The immediate purpose of this study was to find out which method is more effective in teaching the patient the facts he needs to know about his illness. The long-term purpose was to promote consistent and effective home-care teaching programs for the C.O.P.D. patient.

CHAPTER ONE

THE PROBLEM

A. THE NEED FOR THE STUDY

The need for knowing if one method of teaching C.O.P.D. patients is better than another method becomes apparent when the incidence of these conditions is considered. The fact that the success of the therapeutic program is largely dependent on the patient's cooperation on a daily basis makes this need even more apparent.

Whether the patient carries out the program is determined in part by the teaching which has been done by the health team, and the learning by the patient. The chronic hypoxic-acidotic state of many of these patients, the drugs they receive and other factors may influence the patient's ability to learn. The literature was reviewed for the purposes of understanding these aspects of teaching C.O.P.D. patients.

Incidence of C.O.P.D.

Pulmonary emphysema and chronic bronchitis are now said to be the fastest rising cause of death in the United States (40:353). The reported death rate in California due to C.O.P.D. has increased 600 per cent since 1958, and the Department of Health, Education and Welfare reports an annual increase in the number of reported deaths of 20 per cent (40:353). One author states that there were 23,432 deaths from it in 1965-- a rise of 700 per cent from data compiled since 1950 (114:4).

First visits to private physicians for treatment of the disease rose from 151,000 in 1962 to 414,000 in 1966--more than 174 per cent. Emphysema may affect 50 per cent of the male population over 40 years of age. As many as 2,000,000 people in this country have symptoms and positive diagnostic findings which confirm the presence of emphysema and bronchitis. Many of these people have become, or will soon be disabled as it is estimated that 30,000 patients surrender their jobs each year because of the incapacitating effects of chronic lung disease (109:117). Other reports stated that there were more than 10 million patients in the United States (in 1964) and that more than 1 million workers were at that time collecting social security benefits because of total disability due to emphysema (123:115-9). "Chronic chest disease is the second leading cause of social security-compensated disability and causes more invalidism than stroke, cancer, tuberculosis or mental disorders" (64:438). Annual disability payments in 1968 were $800,000,000 (43:41).

Role of Education in Rehabilitation

There is no cure for emphysema and chronic bronchitis. However, the physical state of the individual can be maintained or improved by his following a plan of regular and progressive activity, breathing exercises, and other specific treatments (108:4). Therefore the education of the patient is a major aspect of his care. Once such a person leaves the hospital, his state of wellness may depend on the responsibility he takes for his care. Because he cannot see immediate and lasting effects from some of the necessary procedures, the success of a teaching program depends on his basic acceptance of the disease and the knowledge of the effects of the treatments that he has been instructed

to do.

The fact that many patients need health teaching is relatively undisputed among health professions today. If there is an absence of a systematic approach to patient teaching, patients may go home with misconceptions about the illness, fail to carry out the necessary treatments and have more frequent complications and/or prolonged hospitalizations (109:117, and 100:349).

A review of recent literature emphasized the critical need for effective teaching. William R. Jones, because he is one of the victims of this crippling disease, summarized this need for patient education in a most persuasive manner. He spoke for many when he said the burdens of the patient can be greatly reduced, relaxed and lightened if the patient and his family are taught to live with breathlessness (79:54).

Thomas Petty and William Miller have been two of the foremost writers on the need for patient education in C.O.P.D. Others have recognized the need for patient education in general. Many of these studies have findings relevant to this problem. In a study done by Allen D. Spiegal, Medical Foundations, Inc. in Boston, it was found in interviewing 108 patients that those patients wanted the opportunity to communicate about their illness, to have simple answers to their questions, to have more explanation about what is being done to them, and more information about discharge. Sixty-five per cent of the patients said they were not given specific instructions regarding post hospital care. Sixty-four and one tenth per cent said they were not given time for instruction (75:225).

Alt, in his study at Beverly Massachusetts Hospital, found that patients were dissatisfied because they were uninformed about their

illness and they do want to know more about their disease (32:76).

The literature clearly provided support for the fact that patient education is basic to the rehabilitation of the patient.

Ultimate Effects of Teaching in Terms of Prognosis

Helping the patient to learn about his disease requires extra time, resources, and energy. Is it worth it in terms of its ultimate effect?

The prognosis for C.O.P.D. patients is at best unfavorable. Studies of mortality indicate that the death rate is four to five times that to be expected in a general population of comparable age. Reid and Fairbairn have reported a mortality of 33 per cent after seven years, while Medvie and Oswald found a mortality of 31.5 per cent five years after the development of signs of airway obstruction (115:363-371). It is well to keep in mind that the prognosis of C.O.P.D. represents something other than that seen by statistics. Unlike most other diseases in which the patient progressively reaches a peak of illness at which point death occurs, the C.O.P.D. patient may be critically ill three to five times during which he undergoes all of the intensive life-maintaining measures which draw him back from the edge of death only to anticipate "the next time." In some parts of the country the onset of the disease has been reported to occur as early as 30 years of age (144:3). This is the prime of life and the prospect of this disability is devastating to both the patient and his family.

We did not discover any literature regarding the difference in actual life expectancy between patients who followed a therapeutic home

care program and maintained adequate health suprevision, and those who do not. However, several authors (82:2535-2538; 108:3-6; 73:413-22; 39:726-30) do suggest that while the difference in the quantity of life years is unknown, the quality of those years is greatly enhanced by vigorous home care, rehabilitation and continued health supervision programs. Barach calls it "adding life to years as well as years to life" (39:730).

B. THE TEACHING-LEARNING ASPECT OF THE PROBLEM

While Henderson's definition of nursing supports the belief that nurses do have a responsibility for promoting patient education, it does not suggest any theories on how this learning occurs or how it can be facilitated. It is outside the scope and purpose of this project to carry out a comprehensive review of the physiological and psychological basis for learning. Yet, because the purpose was to compare existing teaching methods we felt it essential to examine some general learning conditions and considerations as part of the theoretical background for the research design.

General Learning Theory

Learning is used to designate the acquisition of changes in behavior during a certain time or up to a certain level (18:6). Gagné defines learning as "a change in human disposition or capability, which can be retained, and which is not simply ascribable to the process of growth" (11:5).

Retention is used to mean any measure of persistence of these

changes after practice ceases. Learning and retention may be measured by making a direct test of the learned response (18:20).

It is important to recall the psychological conditions of learning. Readiness is the "sum total of those characteristics within the person that facilitates or retards learning" (28:151). This includes the maturation level of the individual, their experiential background, and their motivational level. Maturation and background primarily constitute assumptions of growth and development. The level of motivation, however, has a direct effect on the rate of learning.

In a discussion of learning theory one must consider the primary neural mechanism involved with learning. This consists of the brain stem, the cerebral cortex, and the nerve tracts that connect the brain stem to the different areas of the cortex. Chester Lawson postulated a code to explain this relationship in the learning process. He states that the brain stem receives patterns of impulses from the sensory areas of the cortex. From here the impulses are sent to an integrating cortex area where messages are also being received from proprioceptors. The pattern in the integrating area consists of three parts. These are the actual perception, the expected perception, and proprioceptive input. According to this theory, the integrating cortex area transmits impulses back to the brain stem. This in turn fires the motor cortex area and produces behavior. Any change in the pattern in the integrating area results in a change in the pattern in the motor cortex area. This causes a change in behavior (17:92). The mechanisms in the brain that serve learning and those that serve retention are separately involved. Lesions of the brain cortex which cause a marked disturbance in electrical activity can impede learning, but leave retention intact. Conversely, removal of the cortical tissue has little effect on learning

new material, but recall is severely restricted (24:87).

Methods of Teaching Patients

Again referring to Henderson's framework for patient care, the patient education emphasis becomes an important aspect of the care rendered by medical and paramedical personnel. No longer is it acceptable to simply do something to patients. Patients are expected to participate in their own care. This commits nurses to the task of setting patient education as a high priority in the care given. For many years patient education programs have included books, films, lectures, pamphlets, news media and a combination of these. In spite of the advantages of visual aids, the most effective method has been the one-to-one tutorial method. Even this method has disadvantages. One is the inability to assure that each patient gets the same basic information and that he comprehends it. Another problem is that professionals have less time to spend in direct patient education with the increasing numbers of people who are seeking medical services (126:961). There is a need to meet the growing demand for this education obligation. This does not imply the need to take teaching out of the hands of professional people: it does mean that there should be a more efficient and economical approach to patient education.

At present the patient teaching methods most commonly employed utilizing strictly visual techniques are the programmed-learning text and patient teaching booklets. Auditory methods include taped recordings, records, radio programs and person-to-person verbal teaching. Combinations of the above techniques providing audio-visual teaching might include closed circuit television, teaching-learning machines, and slides

or movies accompanied by sound.

Numerous experiements in the use of audio-visual materials show that they are highly effective because they help to make learning more meaningful and permanent by providing a concrete basis for conceptual thinking and they have a high degree of interest for the student (7: 65-70). However, we have found that person-to-person verbal techniques and programmed-learning texts or teaching booklets are the methods most frequently used for the teaching of the C.O.P.D. patient.

The method of programmed instruction seems to be one way of decreasing the number of personnel required to carry out patient teaching. This method seemed to fit best into the framework accepted for this research project by making the patient more responsible for his care by making him more responsible for his learning. The results of a study by Whimby "affirm the belief that in the education of unmotivated students or students who lack learning skills, a great emphasis should be placed on requiring differential response to the material" (135:79).

A Harvard professor, B. F. Skinner, developed the operant conditioning technique of teaching in which sets of acts are reinforced (strengthened) so as to increase the probability of their recurrence in the future (3:114). This rationale, which he felt was necessary to every form of human learning, is basic to the development of the programmed learning technique. The advantages of such a technique are given by Skinner as follows: (1) there is constant interchange between programs and students, thus inducing sustained activity, (2) a student must understand a point before moving on to a new point of emphasis, (3) the material is presented in progressive steps when the student is ready, and (4) positive reinforcement occurs when cues are presented

that help the student come up with the right answer. Immediate feedback is important in the effective development of operant conditioning (3: 142).

Other educators have studied programmed instruction as a scientific means of teaching. Seidel felt that this means of instruction provides for ready inclusion of psychological principles applicable to teaching. He believed that the advantages outweigh the disadvantages (120:307). Schramm reviewed 36 studies which compared programmed instruction with conventional teaching. Eighteen of those studies reported no difference in learning, 17 favored programmed instruction and one favored conventional teaching (145:1-114). Pearman and Suleiman tested a programmed instruction method on a small group and found that learning by programmed instruction gave better post-test results as well as increased retention (106:258-262). Another study done with pharmacy students showed superior test performance by programmed instruction and better retention (112:618).

Having reviewed the pros and cons of programmed instruction, the researchers believed that programmed instruction should be a part of patient education. Thus we chose to compare an auditory programmed learning technique with a visual one to discover which is the more effective for teaching C.O.P.D. patients basic facts about the illness and the care of this illness.

C. HYPOTHESES

The question of which method is more effective led us to state the hypothesis:

> Patients with chronic obstructive pulmonary disease instructed with auditory teaching techniques learn more than similar patients taught with visual teaching techniques.

The hypothesis is based on preliminary data from a study being conducted at the University of Nebraska. The data on 100 C.O.P.D. patients suggested "impairment of functions related to organization, integrating, storage and recall of visual input information" (146). The researchers were not only interested in the learning that occurred, but were also concerned about whether the patients retained the information given about the illness. Thus, we hypothesized that:

> Patients with C.O.P.D. instructed with auditory teaching techniques are better able to retain learning than similar patients taught with visual teaching techniques.

and

> Patients with C.O.P.D. instructed with specific teaching techniques (either visual or auditory) learn more and have better retention than patients who received no specific teaching.

D. EXPLANATION OF TERMS

Several terms to which reference was made seem to warrant explanation:

1. State of Wellness: the extent to which an individual is capable of functioning within his environment. This may vary from the amount of independence that he shows in caring for his own personal needs, to the type of work he can do to support himself or his family.

2. Effective: this term was used to ascribe the worth of the method of teaching the patients. It will be measured by the correlation between the pre- and post-tests.

3. Learning: Measured in this study by the difference in the scores from the pre-test to post-test I. It has been pointed out in

the literature that a change in behavior can be measured by a change in response to a question (18:6).

4. Retention: Measured by difference in the scores from post-test I to post-test II.

5. Motivation: Measured by correlation of certain personality and sociological characteristics (low socioeconomic level, position in family, occupation, formal education, etc.) of test scores.

CHAPTER TWO

THE RESEARCH DESIGN

A. POPULATION AND SAMPLE

The population for this study was all patients within the emphysema-bronchitis complex. This term emphasizes the concept that "we are not dealing with a single disease, but a spectrum, patients with pure chronic bronchitis being found at one end and those with alveolar-septal departitioning (emphysema) at the other end" (25:3).

The sample consisted of 30 experimental patients, divided into three groups. Group "A" received teaching by a programmed-learning test. Group "B" was taught by a taped recording of the same material given in the text used for group "A". We used a machine in order to eliminate the teacher-student relationship which group "A" did not have and which could have provided a significantly unfair variable. Group "C" received no specific teaching.

The following criteria was used in the selection of the patients:

1. Patients admitted to two large hospitals of the Southern California area between November 20, 1970, and March 17, 1971 with a primary diagnosis of "emphysema," "bronchitis," or "chronic obstructive pulmonary disease" established by the attending physician, were considered. One hospital was a private one with primarily middle class patients. The second hospital was a county hospital with patients from a lower socioeconomic group.

2. Each patient used in the study had had a minimum of sixth grade education in English-speaking schools. This was to help eliminate the patient who was unable to read and/or basically understand what he read or heard.

3. The patient consented to participation in this study (see Appendix D).

B. THE METHOD

Patients in this study were interviewed for specific information about them, given a pre-test, a teaching device, and post-tests. The method of collecting data is discussed below.

The patient was assessed by the researcher to determine whether the patient was in a teachable phase of his hospitalization. The criteria for determining this time was when the patient (a) was off all intravenous feedings, (b) had stable blood gases for 24 hours, (c) was alert and oriented, and (d) was not receiving continuous assistance by a mechanical respirator.

The group to which each patient was assigned (Group "A", "B", or "C") was determined by a double-blind technique. Each researcher independently selected a random order for the teaching method to be used. The other researcher did not know this order until after the data had been collected. One researcher (CA) used the order of auditory, visual, and control. The other researcher (NB) used the order of control, visual, and auditory.

At the first interview with the patient who met the criteria for the study, one researcher recorded the personal data using the interview guide (see Appendix A). This was followed by a pre-test

administered orally by the same researcher. The pre-test was adapted from the standard test that accompanied the programmed instruction booklet. The patient was then given either a programmed booklet or tape, or no teaching device. If the patient had been given a booklet or tape, the researcher who gave it to him collected it 48 hours later. The patient was aware of the time limit.

After the teaching device had been collected, the alternate researcher gave post-test I. This test consisted of the same oral questions as the pre-test (see Appendix B). Post-test I was given to ascertain how much the patient had learned regarding the basic information about the disease and the care since he was first tested.

Post-test II was administered by the same researcher who gave post-test I and was accomplished by home visit (within a 10 mile radius of the hospital), telephone interview (within a 100 mile radius and to those who had access to a telephone), or when the patient returned for his first outpatient appointment with his physician. Because of the above limitations not all of the patients used in this study were given the second post-test. This post-test was administered within a two to three week period after the teaching, and consisted of the same questions previously used. This test attempted to show how much information had been retained since post-test I.

The processing of the data included:

1. Comparison of group variables:

   a. According to the patient, how long since he was first diagnosed as having the disease (0-5 years, 6-10 years, and 11-25 years).

   b. Age (20-39 years, 40-59 years, 60-79 years).

c. Severity of his disease according to the following dyspnea-producing criteria (according to the patient):

Class I . . . .Unrestricted activity

Class II. . . .Can do moderate activity

Class III . . .Can do light work, not involving hurrying, climbing, heavy lifting

Class IV. . . .Dyspnea present on level walking of 100 yards, or after a few minutes

Class V . . . .Dyspnea present on slight exertion, dressing, talking, even at rest (131: 356).

d. Educational level (elementary or less, freshman-high school, junior-high school, senior-high school, some college, college graduate, post-college).

e. Type of nursing unit during hospital stay (respiratory unit, general unit).

f. Patient's previous number of hospitalizations for C.O.P.D. (this is the first time, 1-2 other times, 3-5 other times, 5 or more times).

g. Whether or not the patient considers that he has had previous teaching regarding his disease (yes, a little, attended Bird Clinic, none).

h. Admitted visual changes since the onset of C.O.P.D. (yes, no).

i. Hearing test (pass, fail). (8:481)

2. Comparison of the pre-test and post-test I for all three groups for scores indicating the amount of learning.

3. Comparison of post-test I and II for scores indicating the amount of retention.

C. ASSUMPTIONS OF THE STUDY

For each hospital the difference between the groups was not due to Home Care and Public Health Nursing services since the patients in each individual hospital were randomly put in the groups. Therefore, each patient had an equal opportunity to use these services.

We are aware that the patient's learning may not have been limited to either our visual or auditory teaching programs. However, we believe that all patients had equal chance in the respective hospitals for additional learning from incidental teaching and learning experiences. We tried to reduce this factor of incidental learning by tagging the patient's door with a code that reminded other personnel not to do any formal teaching.

We recognize that high correlation between the pre- and post-tests did not necessarily indicate whether or not the patient was actually carrying out the things he had learned from the instruction.

Certain drugs commonly used in the management of C.O.P.D. (for example, bronchodilators and sedatives) could affect the patient's mental functioning and therefore his learning. Because the patients were randomly placed in the groups however, the test results for each group should be similarly affected by drug therapy.

D. LIMITATIONS OF THE STUDY

The recognized limitations of this study include the following:

1. This study used a non-probability convenience sample, because of the limited amount of time, resources and facilities available. Therefore the results cannot be considered conclusive, but merely

suggestive.

2. We chose to accept the patient's verbal evidence for his placement in the group variables listed above.

3. The pre- and post-tests used in this study were identical, which could have limited the validity of the test score results.

4. Even though the tests given were adapted from the standard test that accompanied the programmed instruction, we had no information regarding the validity or reliability of the test. On an item analysis that the researchers did on the pre-test, it was found that 41 per cent of the questions had a difficulty level of 40-65 which is considered average. Thirty-six per cent had a difficulty level of 70-80; 13 per cent had a difficulty level of 85-90 indicating that these questions were easier. Ten per cent of the questions had a difficulty level of 20-35, indicating that these questions were more difficult. No negative values were computed in finding the difficulty index. This gives some indication that the questions were valid.

CHAPTER THREE

PRESENTATION AND DISCUSSION OF DATA

Two statistical tests were used to treat the data collected on 30 patients with C.O.P.D. These included a one-way analysis of variance and a general linear hypothesis model with an F test. The findings relevant to the hypotheses for this study were not statistically significant, possible because of the small sample size. There were some trends that are interesting clinically, and also two questions related to the patient's motivation which were statistically significant. These are presented and discussed in this chapter.

A. COMPARISON OF THE LEARNING IN THE THREE GROUPS

A one-way analysis of variance test was done to compare the group of patients who had the auditory teaching, the visual teaching, and the control group. A control group was used based on the findings by Whimby et al., which indicated that the intention to learn is not necessary for learning to occur (135:77). The researchers felt it was relevant to the study to know if these patients learned merely from being on a hospital unit regardless of whether they had had the programmed instruction.

The findings showed that the auditory group had a mean improvement of 1.8 points from the pre-test to the first post-test. The visual group had a mean improvement of 1.0 point from the pre-test to the first post-test and the control group had a 0.7 point increase in the same

test score comparison (see Table I).

The hypothesis for this study was that patients with chronic obstructive pulmonary disease instructed with auditory teaching techniques learn more than similar patients taught with visual teaching techniques. The data indicated a trend toward support of this hypothesis, although not to a level that was statistically significant.

The researchers also questioned whether one group of patients retained more information than another group. The differences in the scores between post-test I and II were computed to measure this. These score differences showed that the mean improvement in the control group was 2.2 points, in the visual group 1 point, and in the auditory group 0.8 points. The learning and retention of the auditory and visual groups, when seen on a line graph (see Figure 1) appear to follow Ebbinghaus' standard curve (18:355). Therefore we believe we did measure learning and retention for those two groups.

A first glance at the line graph (Figure 1) seems to indicate that the control group retained the most information. However, on close inspection the scores for the control group are seen to improve only slightly between the pre-test and post-test I, whereas there is a much greater improvement in scores between post-test I and post-test II. For some unknown reason we believe that we measured only learning with the control group and not retention of learning. We can speculate as to why the control group seemed to learn more than either treatment group and accomplish this learning at a time when the treatment groups were declining in their test scores. Perhaps since the control group did not receive specific instruction the testing process may have been

TABLE I

COMPARISON OF TEST RESULTS FOR AUDITORY, VISUAL AND CONTROL GROUPS

Auditory

	sample size	range	$\bar{X}$	s
P	10	10-20	15.0	3.3
P_1	10	12-21	16.8	2.7
P_2	5	13-19	16.4	2.3
P_1-P	10	-1 to 6	1.8	2.2
P_2-P	5	-2 to 7	2.4	3.7
P_2-P_1	5	-1 to 4	0.8	1.9

Visual

	sample size	range	$\bar{X}$	s
P	10	6-19	14.5	4.2
P_1	10	8-21	15.5	5.1
P_2	4	10-20	15.0	5.2
P_1-P	10	-8 to 4	1.0	3.6
P_2-P	4	2-4	2.8	0.96
P_2-P_1	4	0-2	1.0	0.81

Control

	sample size	range	$\bar{X}$	s
P	10	11-21	14.8	2.9
P_1	10	11-20	15.5	2.9
P_2	6	15-21	17.7	2.1
P_1-P	10	-1 to 3	0.7	1.4
P_2-P	6	0 to 6	2.5	2.3
P_2-P_1	6	0 to 7	2.2	2.5

Legend: P = pretest
P_1= post-test I
P_2= post-test II

TEST SCORES SHOWING LEARNING AND RETENTION BETWEEN GROUPS

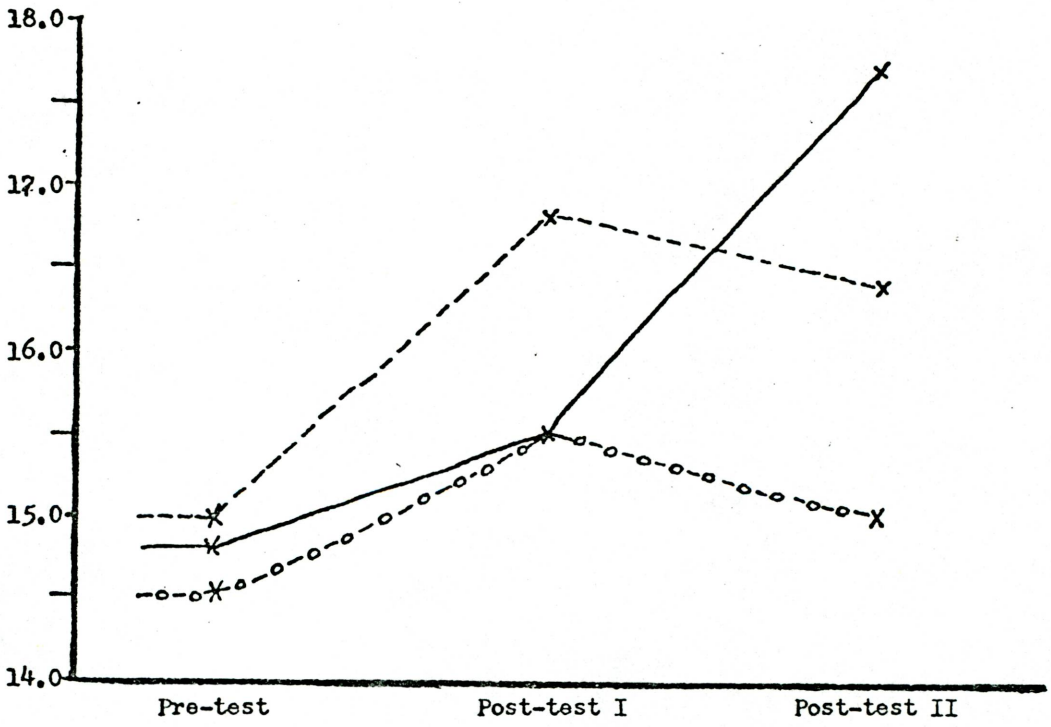

Figure 1

Legend: Auditory ------
Visual -o-o-
Control ——

enough to motivate them to seek information. They could have been motivated more than the others because information was not readily available. If this were true however, it would seem that their scores from the pre-test to post test I would have showed greater improvement since they were in the hospital where information was available. Most of the patients in the sample were discharged from the hospital shortly after post-test I. It may have been that the controls' stay in the hospital was longer than the other groups, but we did not obtain information as to the length of time of hospitalization in relation to when testing was done. Another possible reason for this phenomenon was that the sample size for the testing of retention in the control group was very small (six patients).

Two patients in the control group indicated that they remembered specific questions and had sought the answers before being retested. These two patients were the only ones in the entire study who admitted seeking answers to the test questions. This could have influenced the results.

We realize that other factors could have affected all of the test scores. Since the same test was given each time, there is the possibility that the patients remembered the questions and learned from the repetition of the questions. As mentioned in the preceeding paragraph, two patients indicated that they had obtained specific information to questions they remembered. However, several others in the sample made statements to the effect that they believed they had never been exposed to the questions before. The variance in the sample sizes among groups given specific tests would ordinarily seem to make a

difference in the results. An attempt was made by the statistician to overcome this problem by manipulation of the data for differences in the mean to compensate for differences in sample size. This explains why P_2-P_1 and P_2-P figures are greater than the actual difference in the mean (see Table I).

We had hypothesized that patients with C.O.P.D. instructed with auditory teaching techniques are better able to retain learning than similar patients taught with visual teaching techniques. This was not supported by data, because these test results showed that next to the control group, the visual group retained more. However none of these results were significant statistically.

B. COMPARISON OF COMBINED TREATMENT GROUPS WITH CONTROL GROUP

The two treatment groups (auditory and visual) were combined and then compared to the control group to see if the increase in sample size would make any difference in the outcome of the results. This did not make any change in the trend of the results. Again, the conclusions were not significant, indicating a need for a larger sample in order to study the differences. It was hypothesized that patients with C.O.P.D. instructed with specific teaching techniques (either visual or auditory) learn more and have better retention than patients who received no specific teaching. The first part of this hypothesis--that the patients who receive specific teaching learn more--was not supported by statistically significant data. However, the data do show a trend in the direction of support of the hypothesis. The second part of the hypothesis which suggests better retention with specific teaching was not supported by data from this study.

C. FACTORS THAT MAY HAVE AFFECTED LEARNING

Chronic obstructive pulmonary diseases are a group of pathological respiratory conditions which include emphysema, chronic bronchitis and bronchial asthma. They are all characterized by their obstructive nature. This results from chronic infection, bronchospasm and other pathophysiological changes to the parenchyma, particularly to the alveoli, terminal bronchioles, and mucus-secreting glands. One of the results of these changes is chronic hypoxia as demonstrated by arterial blood gas analysis.

We would like to emphasize the use of the term "C.O.P.D." in discussing these conditions. The term does not refer to a single disease, but to a complex of disorders, which more accurately describes the patient's condition.

The Relationship between Hypoxia and Learning

Learning in C.O.P.D. patients could conceivably be affected by (1) chronic hypoxia and (2) their motivation for learning.

The relationship between hypoxia and learning has not been demonstrated in the literature. It is known that when the hypoxia is long-standing, the symptoms consist of fatigue, apathy, inattentiveness, drowsiness and delayed reaction time (12:72). Harrison stated that as hypoxia becomes more severe the centers of the brain stem (one of the areas that influences learning) are affected. However, Harrison also said that "measurement of cerebral blood flow indicates that with reduction of arterial oxygen tension, cerebral vascular resistance decreases and cerebral blood flow increases. This finding tends to

minimize cerebral hypoxia" (12:72). Kass's current study in Nebraska has been discussed in the preceeding chapter. His findings of the effects on integration, storage and recall of visual input information in patients with C.O.P.D. seem to suggest some central nervous system changes (80:14-16). However this Nebraska study does not suggest any correlation of this visual problem with hypoxia.

Since the exact effects of hypoxia on learning have not been established, let it suffice to say that it needs to be considered as a potential factor in learning, if only on the basis of what the symptoms suggest.

In this study we asked the following questions of the patients included in the sample, in order to see if there was any correlation between vision and/or shortness of breath with their test scores.

A. Does the patient wear glasses (1) yes (2) worn occasionally or no?

B. Does the patient admit to having changes in his vision since the onset of C.O.P.D. (1) yes (2) no?

C. Are there admitted changes in reading habits over the past three to five years (1) yes (2) no?

D. Has the patient begun to wear glasses since the onset of C.O.P.D. (1) yes (2) no?

E. How long since the patient was first diagnosed as having C.O.P.D. (1) 0-1 year (2) 1-5 years (3) 6-10 years (4) 11-25 years?

F. What is the severity of his disease, according to dyspnea producing criteria (list of 1-5 categories listed on page 17)?

These questions were submitted to a one-way analysis of variance

test. None was significant statistically, but question C showed an interesting trend. Those patients who admitted a change in reading habits consistently scored lower in all groups (P value of this was less than 0.10).

The data obtained from the six questions given above, plus the eight questions discussed in the rest of this chapter were also treated with a test of the general linear hypothesis model, using seven co-variables in the model and an analysis of variance type of model. This test was done in order to assure that the observed differences in scores between groups were not due to these co-variables or variables. The advantage in using this test in addition to the one-way analysis of variance was that the general linear hypothesis model took all of the variables into account as it examined each one. We chose not to use the specific values given by the test because of its sophistication in relation to the small sample size.

The Relationship between Motivation and Learning

The second factor which could seriously impair learning in the patient with C.O.P.D. is motivation. Sawrey stated that "the will to learn is the beginning of all true learning" (28:155).

In order to consider motivation of the C.O.P.D. patient it is necessary to describe some of their personality and sociological characteristics as discussed in the literature. Whether these qualities were manifest before the onset of the disease is not known.

DeCencio reported a study in which the M.M.P.I. test was used to obtain personality traits common to C.O.P.D. patients. The people studied showed significantly greater tendencies towards neurotic

behavior and feminine interests than the general population. The neurotic behavior was less with C.O.P.D. patients when compared to three other groups of people with chronic diseases, however. The patient with C.O.P.D. shows more depression, pessimism, insecurity and self-depreciation than other groups (the age of the patient and the chronicity of his disease had no correlative effect) (53:471-475). Other authors describe the C.O.P.D. patient as having a profound sense of hopelessness (108:3), frustration, fear, depression, uncertainty (82:2530), perpetual apprehension, physical tension, fright, personal inadequacy, conscious and unconscious irritability and irrationability (79:54). These personality characteristics are relevant when one considers that self concept is one of the most important factors influencing motivation (28:296). The relevance of the incentives to learn as well as the meaningfulness of the learning material are motivators (28:156). The patient with C.O.P.D. is generally hopeless about his disease, believing that nothing will alter its course; hence he often perceives that the information is meaningless and irrelevant. In this study we asked a multiple-choice question related to why it is important to follow the doctor's orders. Nearly half of the patients responded to the answer "because doctors won't treat you unless you follow their orders," rather than answers which indicated that proper treatment could help him to feel better and slow down the progress of the disease.

The role of class socialization patterns as discussed in the literature bears some significance to this study. Thorndike stated that learning in adults is related to practice (18:541). The amount of

formal schooling, the interest in continuing education and the type of work may influence the ability of an older person to learn. Carey remarked that attainment of education is influenced a great deal by expectations in the home. In lower socioeconomic groups there is less motivation for education. Thus those patients who have not been encouraged to practice learning earlier in life may not learn so well as an adult (45:349). The patterns of socialization shared by each major socio-economic group influences their ability to learn (45:350). The middle class puts an emphasis on education. One might then expect a person with more formal education to learn better about his illness than a person from a lower social class whose main emphasis in life has been survival. A person from lower social class characteristically chooses short-range goals necessary for survival rather than long-term rehabilitation goals. The incidence of C.O.P.D. is higher among unskilled workers and under conditions of poverty (134:478).

Conversely to those who insist that motivation is basic to learning, McGeoch said that even when there doesn't appear to be a motive, people still learn. Learning under such a condition is termed "incidental learning" (18:210). Whimby supported this belief that the intention to learn is not necessary for learning to occur (135:77).

Data related to motivation were obtained from all patients in the sample by the questions given below. This information was treated by the general linear hypothesis model in addition to a simple one-way analysis of variance test. For the same reasons discussed above, we chose to accept the findings of the analysis of variance.

A. In which hospital was each patient (1) Hospital "A", (2) Hospital "B"? One of these hospitals was a county hospital where

patients were generally from low-socioeconomic groups. These patients were scattered throughout the hospital. The other hospital was a private one and all patients there were located on a specific respiratory unit. The researchers postulated that a difference in learning between hospitals might either be related to socioeconomic levels, or that between control groups the incidental learning would be greater with those patients located on a respiratory unit. However, there was no appreciable difference in the test scores of patients in the different hospitals.

B. What is the patient's position in his family (1) breadwinner, (2) former breadwinner, retired due to disease, (3) retired breadwinner due to other, (4) homemaker, (5) dependent, (6) other? We wondered if responsibility for others might increase motivation and thus learning. There was no correlation between this question and test scores, however.

C. With respect to the patient's present occupation, or occupation prior to retirement did he have (1) a specific career, (2) various careers or jobs, or (3) was he never employed? The test showed no relationship between the patient's answer to this question and his test scores.

D. How long has the patient lived at his present home address (1) 0-1 year, (2) 1-5 years, (3) 6-10 years (4) 11 years or more? We speculated that perhaps mobility would decrease learning on the basis that many C.O.P.D. patients seem to move around frequently, seeking the "right climate" that will solve their respiratory discomfort. However, the simple analysis of variance test supported a finding that is statistically significant: the longer a patient lived at the same

address, the less he learned. This was true for both the control and the visual groups at a significance of five per cent. The auditory group was slightly less. One would wonder if mobility indicates the patient is seeking something to help him, whereas the residentially stable person is more hopeless.

E. How much formal education has the patient completed (1) elementary or less, (2) freshman-high school, (3) sophomore-high school, (4) junior-high school, (5) senior-high school, (6) some college, (7) college graduate, (8) post-college? Sixty per cent of the patients in the sample had at least completed high school. The analysis of variance showed that with each increment of increase in the amount of formal education, there was also an increase in the patient's test scores of 0.5 points. This was consistent for both auditory and visual groups. We question whether this indicates better learning or better ability to take tests.

F. How many previous hospitalizations has the patient had for C.O.P.D. (1) this is the first time, (2) 1-2 other times, (3) 3-5 other times, (4) 5 or more times? This question was asked to test whether chronicity and severity of the disease decreased test scores by affecting motivation. There was no correlation between test scores and this question.

G. To his knowledge, has the patient received any previous teaching about his disease (1) yes, (2) "a little," (3) attended the Bird Clinic, (4) none, (5) other? We wanted to know if patients learned more if this was their first exposure to information about their disease, than if they had "heard it all before." Analysis of data

showed no difference in either learning or retention relative to this question.

The factor of age was discussed throughout the literature and it was a variable considered important to this study. Some authors agreed that mental ability decreases with age (74:254; 33:41), especially starting in the third and fourth decades of life (74:255). This then falls rapidly in the sixties and seventies (18:536). Birren said conversely that there is no gradual decline with age in general mental ability. The only aspect of mental performance that seems to change is slowing in response (33:16-19). There are physical changes that occur with age which cause this slowing process, including changes in visual and auditory acuity (33:41; 74:255). The researchers wanted to see if the older person learned less, so we tested this factor by determining the patient's age (1) 20-29 years, (2) 30-39 years, (3) 40-49 years, (4) 50-59 years, (5) 60-69 years, (6) 70 years or above. Twenty-seven of the patients tested were in the age range of 50-75 years. Data analysis showed no correlation between test scores and age.

D. IMPLICATIONS FOR NURSING

As a result of doing this study we see certain implications for nurses involved in the rehabilitation of chronic obstructive disease patients.

1. Prior to the initiation of a teaching program, the nurse should have information regarding the patient's background, residential mobility, hearing and visual ability, knowledge of his illness and his reaction to it. Based on this information a method of teaching should be tailored to the patient's needs.

2. Evaluation of the teaching programs for C.O.P.D. patients should be objectively carried out to see how effective the programs are. Evaluation could include pencil and paper tests, objective observations of self-care in the hospital and/or home and other similar methods. Since nurses are responsible for a major part of patient education they must be able to measure whether learning has occurred and modify their teaching methods according to the patient's response.

CHAPTER FOUR

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

A. SUMMARY

This study was done to compare two of the existing teaching methods used to teach patients with chronic obstructive pulmonary disease basic facts about their illness and care. Thirty patients were given a pre-test, then randomly divided into three groups. Group "A" received teaching by a programmed-learning tape (auditory method). Group "B" was given the same material as group A, in book form (visual method). Group "C" was the control group who received no specific teaching. The patients were permitted to complete the programs at their own rate of speed, within a two day limit. At this time each patient was given a post-test in order to measure learning. A second post-test was given to half of the patients two weeks after the first post-test. This was done to measure retention of learning.

The sample size was too small to provide statistically significant data related to the main hypothesis. This hypothesis stated that patients with C.O.P.D. instructed with auditory teaching techniques learn more than similar patients taught with visual teaching techniques. Analysis of data showed that the auditory group had a mean improvement of 1.8 points from the pre-test to the first post-test. The visual group increased 1.0 points from the pre-test to the first post-test and

the control group improved a mean of 0.7 points in the same comparison. The trend of these results indicated some support of the hypothesis, although not at a statistically significant level.

A second hypothesis was that patients with C.O.P.D. instructed with auditory teaching techniques are better able to retain learning than similar patients taught with visual teaching techniques. This hypothesis was not supported by data because the mean improvement in the control group was 2.2 points, in the visual group 1 point and in the auditory group 0.8 points.

The third hypothesis was that C.O.P.D. patients instructed with specific teaching techniques (auditory or visual) learn more and have better retention than patients who received no specific teaching. The first part of this hypothesis related to learning was supported, although not to any level of significance. The second, related to retention was not supported.

Two factors which could affect learning, namely chronic hypoxia and motivation, were tested and discussed in relation to the learning test scores. None of the specific questions used were significant, with the exception of two: one correlated residential mobility of the patients with a higher test score, and the other correlated higher levels of education with increased test scores.

B. CONCLUSIONS

Since the results of this study do not show statistically significant data, we cannot conclude that one method of teaching is more effective than another.

C. RECOMMENDATIONS

The problem of this study apparently needs more investigation. In virtually no other field of medicine can the patient's own contribution be so meaningful in the overall management of his illness. Education is the springboard for effective management and it is relevant to know how patients with C.O.P.D. learn best. The following suggestions might be considered by those conducting studies on this problem:

1. A standard test for vision (Benton or Hooper) would provide a more objective screening device to correlate with the learning score. If there was a positive correlation between the visual screening test and the learning that occurred, this test could be used as an indicator of the kind of teaching that would best benefit the patient.

2. A larger sample size (100 patients or more) would provide resources for more valid statistics.

3. The post-test would be more valid if it contained questions that were different from those in the pre-test. The pre-test should have questions related to general concepts while the post-test should have questions related to more specific information.

4. The validity and reliability of the tool used for testing learning and retention should be established before using such a tool.

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APPENDIX A

PATIENT INFORMATION GUIDE

PATIENT INFORMATION GUIDE

Patient's Name_____ Date_____ Time_____

Patient's Hospital Number_____

Patient's Room Number _____

Date of Admission _____

1. Patient's Study Number_____ (Altizer 1-15) (Bailey 16-30)

4. Patient's Teaching Code Number (1. Auditory) (2. Visual) (3. Control)

5. Researcher: (1. Altizer (2. Bailey)

6. Hospital: (1. San Bernardino County) (2. Loma Linda University)

7. Physician: (1. Burton) (2. Thompson) (3. Elder) (4. Schwandt) (5. Drinkard) (6. Gold)

9. Pre-Test Score_____(Date patient received pre-test_____)

12. Post-Test I Score_____(Date patient received post-test_____)

15. Post-Test II Score_____(Date patient received post-test_____)

18. Does patient wear glasses? (1. Yes) (2. Worn Occasionally or No)

19. Has he begun to wear glasses since onset of C.O.P.D.? (1. Yes) (2. No)

20. Admitted visual changes since onset of C.O.P.D.: (1. Yes) (2. No)

21. Admitted change in reading habits over past 3-5 years: (1. Yes) (2. No)

22. Does the patient now wear a hearing prosthesis? (1. Yes) (2. Yes-worn prior to diagnosis of C.O.P.D.) (3. No)

23. Admitted hearing changes in hearing since onset of C.O.P.D.: (1. Yes) (2. No) (3. Uncertain)

24. Hearing test: (1. Pass) (2. Fail)

25. Type of hospital unit patient is located: (1. Respiratory) (2. Other)

26. Patient's position in his family: (1. Breadwinner) (2. Retired breadwinner due to disease) (3. Retired breadwinner due to other) (4. Homemaker) (5. Dependent) (6. Other_____)

27. Patient's present occupation, or occupation prior to retirement:
(1. Specific career) (2. Various careers or jobs)
(3. Never employed) (4. Other_____)

28. How long at present home address: (1. 0-1 year) (2. 1-5 years)
(3. 5-10 years) (4. 10 years or more)

29. Amount of formal education: (1. Elementary or less) (2. Freshman-High school) (3. Sophomore-high school) (4. Junior-high school)
(5. Senior-high school) (6. Some college) (7. College graduate)
(8. post-college)

30. How long since patient was first diagnosed as having C.O.P.D.?
(1. 0-1 year) (2. 1-5 years) (3. 6-10 years) (4. 11-25 years)

31. Patient's previous number of hospitalizations for C.O.P.D.:
(1. This is first time) (2. 1-2 other times) (3. 3-5 other times) (4. 5 or more times.)

32. Patient's age: (1. 20-29 years) (2. 30-39 years) (3. 40-49 years)
(4. 50-59 years) (5. 60-69 years) (6. 70 years or above)

33. To his knowledge, has the patient received any previous teaching about his disease? (1. Yes) (2. "A little") (3. Byrd Clinic)
(4. None) (5. Other_____)

34. Severity of his disease according to dyspnea-producing criteria:
(1. Class I--unrestricted activity)
(2. Class II--can do moderate activity)
(3. Class III--can do light work, not involving hurrying, climbing, heavy lifting)
(4. Class IV--dyspnea present on level walking of 100 yards, or after a few minutes)
(5. Class V--present on slight exertion, dressing, talking, even at rest)

35. Did patient complete the program? (1. yes) (2. no)

APPENDIX B

TOOL FOR MEASURING LEARNING AND RETENTION

TEST QUESTIONS

_____ Pre-test

_____ Post-test I

_____ Post-test II

1. The part of the body that is affected by chronic bronchitis and emphysema is the
   A. Nose and mouth
   B. Windpipe
   C. Lung
   D. Other

2. The air we breathe passes in through the nose or mouth, down the windpipe, through the main airways and finally into the
   A. Bronchus
   B. Air sacs
   C. Trachea
   D. Other

3. Which of the following do the lungs most look like?
   A. Large bags
   B. Sponges
   C. Balloons
   D. Other

4. The gas which passes through the thin walls of the air sacs into the bloodstream to give the body energy for life is
   A. Oxygen
   B. Hydrogen
   C. Carbon dioxide
   D. Other

5. The muscle just below the lungs which moves up and down to help you breathe is called the
   A. Bellows
   B. Abdominal muscles
   C. Diaphragm
   D. Other

Tell which of the following statements about chronic bronchitis and emphysema are true and which are false.

6. In the patient with emphysema, air flow is obstructed because of frequent coughing.
   A. True
   B. False

7. Of all people who get bronchitis and emphysema by far the greatest majority are smokers:
   A. True
   B. False

8. Chronic bronchitis and emphysema are also known as obstructive airways disease:
   A. True
   B. False

9. Chronic bronchitis and emphysema rarely occur together in the same patient:
   A. True
   B. False

10. If the smoker with emphysema or chronic bronchitis quits smoking, he will be able to breathe more easily.
   A. True
   B. False

11. The most important reason why colds are so dangerous for patients with chronic bronchitis and emphysema is:
   A. Colds cause coughing
   B. Every cold can lead to further lung damage
   C. Each cold causes an increase in phlegm
   D. Other

12. When you use oxygen
   A. Don't let anyone in the room smoke
   B. Sit by an open window
   C. Lie down
   D. Other

13. Phlegm results from
   A. Obstructed air flow
   B. Too little oxygen in the blood
   C. Frequent infection
   D. Other

14. The job of the cilia is to
   A. Relax the airways
   B. Reduce the production of phlegm
   C. Sweep the airways clean
   D. Other

15. The Intermittent Positive Pressure machine is usually used to
   A. Help clear stale air out of the lungs
   B. Speed up breathing
   C. Relax the airways
   D. Other

16. Which of the following is a doctor most likely to tell a chronic bronchitis or emphysema patient to do?
    A. Stop smoking
    B. Move to a warm climate
    C. Stick to a special diet
    D. Other

17. Doctors often prescribe the following medicines for patients with chronic bronchitis and emphysema. The actions of these medicines have been labeled (A), (B), and (C). Tell the action of the drug by giving the letter of the correct answer.

    Bronchodilator . . . . . A. Removes phlegm
    B. Opens airways
    C. Fights infection

18. Antibiotic . . . . . A. Removes phlegm
    B. Opens airways
    C. Fights infection

19. Expectorant. . . . . A. Removes phlegm
    B. Opens airways
    C. Fights infection

20. Frequent hard coughing may mean that
    A. Cilia are moving too fast
    B. Cilia need help in clearing phlegm out of the lungs
    C. Cilia are producing too much phlegm
    D. Other

21. Postural drainage exercises help you to
    A. Strengthen your breathing muscles
    B. Get rid of phlegm
    C. Relax the airways
    D. Other

22. It is important that people with emphysema and chronic bronchitis follow their doctor's orders very carefully because
    A. Proper treatment can cure the disease
    B. Proper treatment can slow down the progress of the condition and help you feel better
    C. Doctors won't treat you unless you follow their orders
    D. Other

APPENDIX C

LINEAR CORRELATION OF VARIABLES

TABLE II

LINEAR CORRELATION OF VARIABLES

Variable	Correlation Coefficient			Level of Significance		
	Auditory	Visual	Control	Auditory	Visual	Control
1	-0.6432	0.0594	0.2731	0.0448	0.8704	0.44
2	0.0319	-0.6550	0.1820	0.9302	0.0398	0.61
3	-0.0957	-0.2911	0.3081	0.7923	0.4144	0.38
4	-0.0195	-0.4159	-0.0743	0.9572	0.2318	0.83
5	0.0000	0.0000	0.0000	1.0000	1.0000	1.00
6	0.0627	0.0970	0.0743	0.8633	0.7897	0.83
7	0.2873	-0.0970	0.0000	0.4208	0.7897	1.00
8	-0.0478	0.5082	-0.3081	0.8954	0.1336	0.38
9	0.3241	0.1762	-0.2929	0.3607	0.6262	0.41
10	-0.1480	0.6757	-0.4121	0.6831	0.0319	0.23
11	-0.0535	0.6082	0.5106	0.8832	0.0620	0.13
12	-0.0216	-0.5975	-0.0334	0.9560	0.0681	0.92
13	-0.4670	0.4281	0.0743	0.1735	0.0681	0.92
14	-0.2667	0.6535	-0.0874	0.4561	0.2170	0.83
15	0.1421	-0.3425	0.0460	0.6952	0.0404	0.81
16	0.3221	-0.0568	-0.2159	0.3639	0.8761	0.54
17	0.0226	0.2039	0.1449	0.9504	0.5719	0.68

Legend

Variable	Variable
#1: glasses	#10: occupation
#2: glasses since onset	#11: residence
#3: change in vision	#12: formal education
#4: reading changes	#13: first diagnosed
#5: hearing aid	#14: previous hospitalizations
#6: changes in hearing	#15: age
#7: hearing test	#16: previous teaching
#8: which hospital	#17: activity producing dyspnea
#9: position in family	

TABLE III

LINEAR CORRELATION OF VARIABLES COMPARING AUDITORY AND VISUAL GROUPS TOGETHER AGAINST CONTROLS

Variable	Correlation Coefficient		Level of Significance	
	Auditory-Visual	Control	Auditory-Visual	Control
1	-0.2191	0.2731	0.3532	0.4451
2	-0.4487	0.1820	0.0471	0.6146
3	-0.2090	0.3081	0.3764	0.3863
4	-0.2559	-0.0743	0.2759	0.8382
5	0.0000	0.0000	1.0000	1.0000
6	0.1045	0.0743	0.6610	0.8382
7	0.0464	0.0000	0.8458	1.0000
8	0.3218	-0.3081	0.1664	0.3863
9	0.2463	-0.2929	0.2951	0.4114
10	0.3680	-0.4121	0.1103	0.2365
11	0.3917	0.5106	0.0875	0.1314
12	-0.3745	-0.0334	0.1140	0.9270
13	0.0652	0.0743	0.7844	0.8382
14	0.2361	-0.0874	0.3161	0.8101
15	-0.1924	0.0460	0.4162	0.8993
16	0.1011	-0.2159	0.6713	0.5490
17	0.1196	0.1449	0.6152	0.6894

Legend

Variable		Variable	
#1:	glasses	#10:	occupation
#2:	glasses since onset	#11:	residence
#3:	change in vision	#12:	formal education
#4:	reading changes	#13:	first diagnosed
#5:	hearing aid	#14:	previous hospitalizations
#6:	changes in hearing	#15:	age
#7:	hearing test	#16:	previous teaching
#8:	which hospital	#17:	activity producing dyspnea
#9:	position in family		

APPENDIX D

LETTERS

25356 Cole Street, #5
Loma Linda, California 92354
October, 1970

Dear Dr.

As graduate students in nursing involved in a research project, we are doing a study to compare the effectiveness of various teaching methods for patients with Chronic Obstructive Pulmonary Disease.

We are aiming for a sample size of forty-two patients, half of which will be at Loma Linda University Medical Center and the other half at San Bernardino County General Hospital. There will be three groups of patients, fourteen in each group. Group "A" will receive teaching by a programmed learning text published by Media Medica Inc. Group "B" will receive teaching by a taped recording of the same material given in this text. Group "C" will receive teaching by whatever method is currently used on that particular unit and will serve as a control group.

Each patient will be given an oral pre-test. The programmed-text or recording will then be left with the patient. After forty-eight hours this teaching device will be collected from the patient and an oral post-test will be given. A second post-test will then be given when the patient returns for his first out-patient appointment with his physician.

May we have your permission to include those patients admitted to your service in this research project? We will be looking forward to hearing from you regarding this. If you have any questions about the project we would be happy to talk with you about it.

Thank you for your time and consideration in this matter. A self-addressed stamped card is enclosed for your replying convenience.

Sincerely,

C. Altizer

N. Bailey

Dear (Name of patient)

We are trying to find ways to improve the teaching of patients with diseases similiar to yours. In a study we are conducting, we will be using several different methods of teaching which are commonly used in hospitals today.

Your signature below gives us permission to include you in this study. We appreciate your help.

Sincerely,

Miss Altizer
Mrs. Bailey

Signature _____

Date _____ Witness _____

25356 Cole Street, Apt 5
Loma Linda, California 92354
September 10, 1970

Miss Gertrude Haussler
Director, Nursing Service
Loma Linda University Hospital
Loma Linda, California 92354

Dear Miss Haussler:

Medical and nursing personnel are becoming more aware of the need for a systematic approach to patient education as a means of improving nursing care. Mrs. Nancy Bailey and I wish to conduct a study to compare the effectiveness of teaching methods commonly used in the teaching of patients with chronic obstructive pulmonary disease. This study is to meet part of the requirements for a Master's degree in nursing at Loma Linda University.

With your permission, patients throughout your hospital will be used on the basis of an admitting diagnosis of emphysema, bronchitis, or chronic obstructive pulmonary disease. Patients who consent to participate will be given an oral interview on their knowledge about their disease. Then they will be divided into three groups: one group will be given a programmed-learning text, one group will be given a taped recording of the same material, and the third group will just receive any routine teaching he may be exposed to during his hospital stay. The teaching devices for the first two groups will be left at the bedside for forty-eight hours and should not require any assistance from your nursing personnel. After the teaching has been completed we will give another oral interview to determine the learning that has occurred. A third test will be given the patients when they return for their outpatient appointments; this will help to determine the amount of learning which has been retained. The total amount of time we plan to spend with each patient should not exceed two hours. We do not believe this will interfere with the normal nursing activities on the unit. It is estimated that it will take about two months to get a sample of about twenty patients for this study.

We will be working closely with our advisors in nursing and medicine: Lucile Lewis, R.N., M.S., Gordon Thompson, M.D., and Jane Mundin, R.N., M.S. We have discussed this study with George Burton, M.D.,

and will continue to welcome his suggestions. Application for approval from the Committee on Human Experimentation has been made: enclosed please find a copy of that form. May we have your permission to conduct this study in your nursing service? We will be happy to make an appointment with you to talk with you further about the study if you so desire. A stamped card is enclosed for your convenience.

Thank you very much for your time and consideration. I shall anticipate hearing from you soon.

Sincerely yours,

Miss Carol Altizer, R.N.

Enclosures (2)

10771 Jasmine Street
Loma Linda, California 92354
September 10, 1970

Mrs. M. Bagnor
Director, Nursing Service
San Bernardino County General Hospital
San Bernardino, California

Dear Mrs. Bagnor:

Medical and nursing personnel are becoming more aware of the need for a systematic approach to patient education as a means of improving nursing care. Miss Carol Altizer and I wish to conduct a study to compare the effectiveness of teaching methods commonly used in the teaching of patients with chronic obstructive pulmonary disease. This study is to meet part of the requirements for a Master's degree in nursing at Loma Linda University.

With your permission, patients throughout your hospital will be used on the basis of an admitting diagnosis of emphysema, bronchitis, or chronic obstructive pulmonary disease. Patients who consent to participate will be given an oral interview on their knowledge about their disease. Then they will be divided into three groups: one group will be given a programmed-learning text, one group will be given a taped recording of the same material, and the third group will just receive any routine teaching he may be exposed to during his hospital stay. The teaching devices for the first two groups will be left at the bedside for forty-eight hours and should not require any assistance from your nursing personnel. After the teaching has been completed we will give another oral interview to determine the learning that has occurred. A third test will be given the patients when they return for their outpatient appointments; this will help to determine the amount of learning which has been retained. The total amount of time we plan to spend with each patient should not exceed two hours. We do not believe this will interfere with the normal nursing activities on the unit. It is estimated that it will take about two months to get a sample of about twenty patients for this study.

We will be working closely with our advisors in nursing and medicine: Lucile Lewis, R.N., M.S., Gordon Thompson, M.D., and Jane Mundin, R.N., M.S. We have discussed this study with Drs. Drinkard and Cook at your hospital and will continue to welcome their suggestions. Application for approval from the Committee on Human Experimentation

has been made and we will wait for their consent before collecting data. May we have your permission to conduct this study in your nursing service? We will be happy to make another appointment to talk with you further about the study if you so desire. A stamped card is enclosed for your convenience.

Thank you very much for your time and consideration. I shall anticipate hearing from you soon.

Sincerely yours,

Mrs. Nancy Bailey, R.N.

(Enclosure)

MA LINDA UNIVERSITY

SCHOOL OF MEDICINE

ASSOCIATE DEAN

LOMA LINDA CAMPUS
LOMA LINDA, CALIFORNIA 92354

September 24, 1970

iss Carol Altizer and
iss Nancy Bailey
chool of Nursing
oma Linda University
oma Linda, California

ear Misses Altizer and Bailey,

The Research Advisory Committee on Human Experimentation has oted to approve your research proposal "a comparison of the teaching ethods commonly used in the teaching of chronic obstructive pulmonary isease patients." This approval is given with the understanding that ou will acquaint the Committee promptly with any change in your plans r procedure that might effect the rights or welfare of your subjects.

With every wish for your success in these investigations, I am

Sincerely yours,

John E. Peterson, M.D.
for the Research Advisory Committee
on Human Experimentation

EP:rm

NEBRASKA PSYCHIATRIC INSTITUTE
THE UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE
602 SOUTH 44TH AVENUE
OMAHA, NEBRASKA 68105
536-4500

T. EATON, M. D.

DEPARTMENT OF INSTITUTIONS
STATE OF NEBRASKA
BOARD OF REGENTS
UNIVERSITY OF NEBRASKA

August 11, 1970

Miss Carol Altizer
25356 Cole Street #5
Loma Linda, California 92354

Dear Miss Altizer:

Thank you for your inquiry regarding our study of psychological aspects of chronic obstructive lung disease. At the present time, we have not yet completed our analysis of data derived from psychological testing of one hundred patients with this disorder but we have informally summarized preliminary analysis of the results of three psychological tests, the Wechsler Adult Intelligence Scale, Hooper Visual Integration Test, and the Benton Visual Retention Test. I should mention that these findings suggest impairment of functions related to organizing, integrating, storage and recall of visual input information. We have no data which would suggest changes in the visual acuity of these patients.

When we compared the results of the three instruments, using criteria conventionally used to assess the presence or absence of organic brain dysfunction, we find that 88.2% of our patients show evidence of such dysfunction on at least one of the tests, while over half of them (52.7%) show such evidence on two of the tests. The percentage of patients showing impairment similar to that shown by patients with organic brain dysfunction is 12.9%.

Thirty one of the project patients obtained scores on the visual integration test which were within normal limits. In comparison with normal subjects, we would expect this figure to have been 79.5%. Sixty six of the patients obtained scores within the ranges suggesting organic brain dysfunction of varying degrees. The expected frequency for normal subjects would be 17.5. The differences between frequencies of our patients and control subjects in each category is highly significant statistically ($p=.001$).

The patients with chronic obstructive lung disease tended to show either very strong indication of impairment of visual memory (21%) or their scores fell within normal limits (64%). When compared with normal subjects, a significantly lower number of project patients scored within normal limits on this test (Benton Visual Retention Test, Ten Second Recall). These patients also demonstrated impairment of perceptual motor coordination when compared with normal subjects ($p=< .001$).

August 11, 1970

When the patients scores were compared with a group of patients who had been given diagnoses of brain injury on the basis of neurological findings, we find that the patients with chronic obstructive lung disease tend to show less severe impairment, while still differing significantly from normal subjects.

I hope this information will be helpful to you. If I can be of further assistance to you in this regard, please contact me.

Sincerely,

Fred D. Strider, Ph. D.
Director, Psychology Division

eo

LOMA LINDA UNIVERSITY

Graduate School

A COMPARISON OF VARIOUS TEACHING METHODS FOR PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASES

By

B. Carol Altizer and Nancy S. Bailey

An Abstract of a Thesis

in Partial Fulfillment of the Requirements

for the Degree Master of Science

in the Field of Nursing

May 1971

ABSTRACT

The purpose of this study was to find out whether patients with chronic obstructive pulmonary disease (C.O.P.D.) learn more from auditory or from visual teaching. Of the 30 patients in the sample, 10 used a programmed instruction booklet, 10 used a taped recording of the same programmed material and 10 were in a control group which received no specific teaching.

A pre-test was given to each of the patients who met the criteria for the study. One researcher gave the pre-test through an oral interview with the patient. After the pre-test, the patient received the teaching device assigned to him by random selection. Forty-eight hours after he had had the teaching device a second researcher gave a post-test, also by interview. The difference in the score from the pre-test to the post-test was used to measure learning. A second post-test was given to fifteen of the patients two weeks after the first post-test. This score was measured against the previous scores to ascertain retention of learning.

The hypothesis accepted for the study was that patients with C.O.P.D. instructed with auditory teaching techniques learn more than similar patients taught with visual teaching techniques. Analysis of the data showed support of this hypothesis in that the auditory group improved a mean of 1.8 points, the visual group improved a mean 1.0 points and the control group a mean 0.7 points.

A similar sub-hypothesis related to retention of learning was

not supported by this study because the control group scored highest on mean improvement. The effect of chronic hypoxia and motivation of the patient's learning was discussed and tested. These results were for the main, statistically insignificant.

Included in the findings were the following: Patients who admitted changes in reading habits consistently scored less in all groups, ($P < .10$). Patients that lived at one address longer learned less in all groups ($P < .05$ in visual and auditory groups). The more formal education a person had the greater the increase in post-test scores.

The literature was reviewed in terms of C.O.P.D. and the role of education in the patient's management, teaching methods commonly used in patient education, and specific problems related to learning in the C.O.P.D. patient (hypoxia, motivation, and vision).