

KNOWLEDGE, EXERCISE OF SELF-CARE AGENCY, AND RECIDIVISM
LEVELS AFTER COMPLETING A PULMONARY EDUCATION PROGRAM

by
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STATEMENT BY AUTHOR

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DEDICATION

I dedicate this thesis to my husband, Scott, who has endured many frantic late nights, frazzled nerves, and periods of uncertainty. Through it all, he has been my source of strength and inspiration. I also dedicate this work to our future child, with whom we look forward to sharing our lives and love.

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ABSTRACT

A descriptive design was used to evaluate individuals' knowledge of chronic pulmonary disease and level of self-care agency following an in-patient pulmonary education program. The convenience sample (n = 19) consisted of subjects in the treatment group (n = 11) who completed the program, and those in the comparison group (n = 8) who were not enrolled. Scores from the Knowledge Questionnaire and Exercise of Self-Care Agency (ESCA) Scale were evaluated, in addition to recidivism and length of stay (LOS) at 6 and 12 months. Findings indicated no significant correlations between the four variables. Although the treatment group scored higher on the Knowledge Questionnaire, statistical significance was not reached ($p = .0609$). The comparison group scored significantly higher on the ESCA Scale ($p = .0474$). The pulmonary education program had neither beneficial nor detrimental effects on knowledge, ESCA or recidivism levels.

CHAPTER 1

INTRODUCTION

Continuing advances in medical care have resulted in individuals living longer, with a subsequent increase in the prevalence of chronic disease. Chronic Obstructive Airways Disease (COAD), characterized by an increased resistance to airflow, is a chronic illness commonly found in older adults. Chronic Obstructive Airways Disease, which includes asthma, bronchitis and emphysema, has been identified as second only to heart disease as a major cause of disability (Levin & Levin, 1989). The development of a progressive and potentially debilitating illness such as COAD forces the individual to face many life changes.

The prevalence of shortened lengths of hospital stays, necessitating a greater emphasis on self-care, compounds the problem of having to cope with a chronic illness. As described by Orem (1980), self-care involves "the practice of activities that individuals initiate and perform on their own behalf in maintaining life, health and well-being" (p. 35). Each individual possesses a certain amount of ability to meet changes in self-care needs. Such changes may develop in the presence of a chronic illness such as COAD. Orem (1980) describes this inherent or learned ability as self-care agency (SCA). The ability to engage in self-care

develops through learning and is aided by instruction and supervision by others (Orem, 1980). One important component of the nurse's role, therefore, is patient teaching. When an individual is unable to care for himself, such as in the presence of chronic illness, assistance in meeting the demands of self-care may be provided by nurses.

STATEMENT OF THE PROBLEM

Education of the individual with chronic illness is vital in facilitating an increase in control of the disease and improving quality of life. In order to eventually assume the full responsibility of self-care, the individual must receive instruction about the disease process with an emphasis on prevention of complications and coping with life changes. A comprehensive inpatient program provided by an interdisciplinary team is one way of approaching this goal. Unfortunately evaluation of such programs, in terms of identifying their impact on self-care agency and knowledge levels, has been limited.

PURPOSE OF THE STUDY

The purpose of this study was to compare knowledge and self-care agency (SCA) levels of patients with COAD who were in one of two groups: those who had completed a pulmonary rehabilitation program (treatment group), and those who had

not participated in the program (comparison group). The knowledge level of each group was compared to its SCA level in an attempt to determine any correlation between the two. Relationships of knowledge level and SCA to recidivism and length of hospital stay were also examined.

RESEARCH QUESTIONS

1. Do subjects participating in the pulmonary rehabilitation education program have significantly higher scores on the Knowledge Questionnaire than the comparison group?
2. Do subjects participating in the pulmonary rehabilitation education program have significantly higher scores on the Exercise of Self-Care Agency Scale (ESCA) than the comparison group?

The remaining research questions relate to each subgroup and the total sample:

3. Is there a significant correlation between the scores on the Knowledge Questionnaire and the Exercise of Self-Care Agency Scale?
4. Is there a significant correlation between the rate of recidivism and the scores on the Knowledge Questionnaire?

5. Is there a significant correlation between the rate of recidivism and the scores on the ESCA Scale?
6. Is there a significant correlation between length of stay and the scores on the Knowledge Questionnaire?
7. Is there a significant correlation between length of stay and the scores on the ESCA Scale?

SIGNIFICANCE TO NURSING

Patient teaching is a vital part of nursing. Nursing's role in assisting individuals to manage changes in self-care needs brought about by chronic illnesses such as COAD is paramount. By providing individuals with information that can improve their capacity for self-care, nursing can enhance their ability to maintain optimal health. The importance of such interventions is underscored by the inclusion of mandates regarding the provision of patient education in nurse practice acts (Rankin & Stallings, 1990).

As changes in the health-care industry force shorter lengths of stays, the importance of early, comprehensive patient education becomes apparent (Rankin & Stallings, 1990). In-hospital rehabilitation programs have helped to meet that need. With the increasing number of pulmonary rehabilitation programs being developed, it is important to

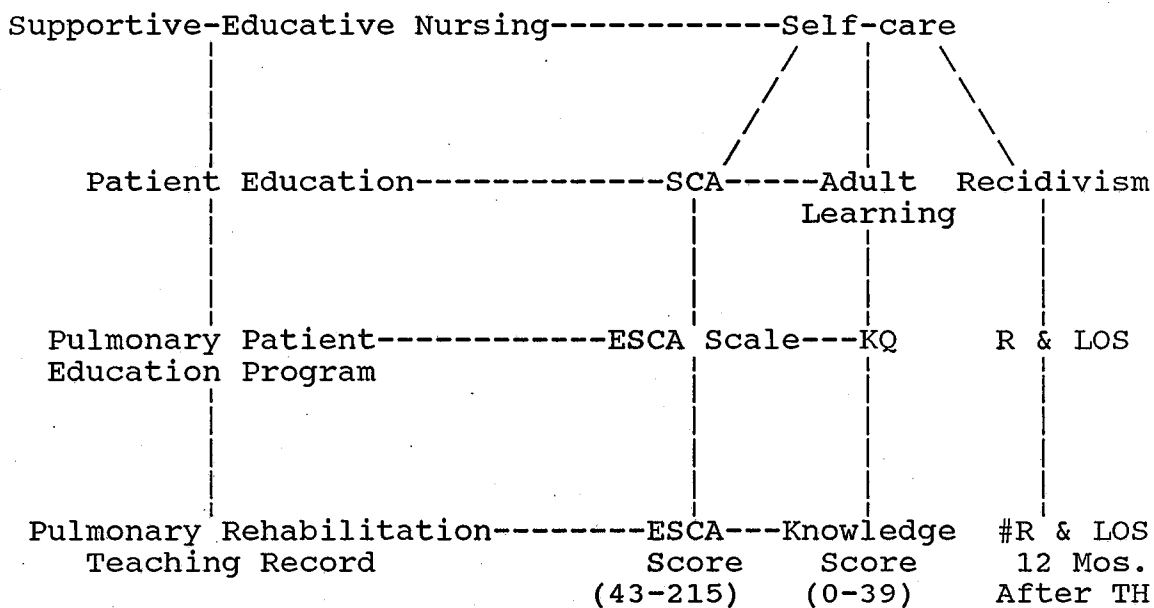
determine their effectiveness in areas such as knowledge and SCA to verify their success in promoting self-care practices. An additional advantage of this evaluation is the acquisition of information substantiating the need for such programs and feedback regarding ways to improve them (Stockdale-Woolley, 1984). Such a validation process can help nurses and other health professionals develop the most effective pulmonary education program.

CONCEPTUAL FRAMEWORK

The conceptual framework for this study is based on several key themes. The three primary concepts investigated in terms of the effects of a pulmonary education program are: 1) Self-Care Agency and the individual's exercise or use of this capacity; 2) adult learning principles as related to the acquisition of knowledge about COAD; and 3) various factors influencing recidivism (Figure 1).

Self-Care Agency

The concept of self care is widely recognized in the health-care field today. There is a growing trend toward individuals assuming a greater amount of responsibility in the health care process by increasing their participation. Self-care, especially for individuals with chronic illnesses, involves learning how to manage the disease and



SCA = Self-Care Agency
 ESCA=Exercise of Self-Care Agency
 KQ=Knowledge Questionnaire
 LOS=Length of Stay
 R=Rehospitalizations
 TH=Targeted Hospitalization

Figure 1: Conceptual Framework Relating Self-Care Agency, Adult Learning and Recidivism.

the life changes it brings in an effort to improve the quality of life. As the need or desire of chronically ill persons to more actively control their lives becomes stronger, so does the need for adequate information. According to Orem (1980, p. 84), "new self-care requisites resulting from changes in internal or external conditions necessitate additional knowledge, adjustments in some types of developed skills, . . . and examination of one's willingness to pursue particular courses of self-care action." The capability to take such self-care action is termed self-care agency (Orem, 1980). Comprising all of the individual's resources and abilities, self-care agency is developed through the process of learning and is promoted by teaching and guidance from others (Miller, 1983).

The capability to engage in self-care actions is influenced by many factors. Maturity, cultural beliefs, values, life experiences, knowledge, and health status all affect an individual's self-care agency (Orem, 1980). Three major components, as proposed by Joseph (1980), include: knowledge; skills; and attitudes, beliefs, values and motivation. Kearney and Fleischer (1979) viewed self-care agency similarly, listing four components: knowledge, self-worth, motivation, and active response to situations. They further described exercise of self-care agency as "(a) an attitude of responsibility for self, (b) motivation to care

for self, (c) the application of knowledge to self-care, (d) the valuing of health priorities, and (e) high self-esteem" (Kearney & Fleischer, 1979, p. 27). This definition implies that an individual with a high level of exercise of self-care agency might respond more favorably to education and apply it to self-care practices, resulting in a decrease in recidivism.

The purpose of nursing, according to Orem (1980, p. 6), is to help individuals in the "provision and management of [self-care action] on a continuous basis in order to sustain life and health, recover from disease or injury, and cope with their effects." The role of the nurse, therefore, is to facilitate maintaining, restoring, or increasing the self-care agency of the individual through education (Joseph, 1980; Mullin, 1980). The primary goal of education is to maximize patient autonomy and increase self-care (Weis, 1988).

Nursing's role in assisting the client to learn new information and skills is the foundation of what Orem terms the supportive-educative nursing system. The collaborative relationship between nurse and client is present when the individual is able to perform or needs to learn to perform self-care activities, but cannot do so without assistance (Orem, 1980).

Teaching is viewed by Orem as one of five methods of

giving assistance to others. The emphasis on client education to augment the individual's self-care agency is prominent in Orem's work: "Education in self-care, not just training in self-care practices, is necessary for the development of knowledge, skills, and positive attitudes related to self-care and health" (Orem, 1980, p. 120). In promoting the self-care concept in the acute-care setting, Mullin (1980) emphasized the need to change the focus of nursing from the traditional "sick care" system to one which fosters patient independence and responsibility through patient education.

Adult Learning

The underlying assumptions forming the basis of Orem's theory of self-care, that of the individual being a motivated, responsible person directing his own care, coincides with the basic principles of adult learning. In differentiating between child and adult learners, Knowles (1984) identified several characteristics unique to adults. As an individual matures, 1) a change in self-concept occurs; 2) past experience becomes a resource for learning; 3) readiness to learn increasingly becomes more focused on social roles; and 4) a problem-centered orientation to learning is developed.

As an individual matures into an adult, his self-

concept also matures. There is a transition from total dependency to self-directedness (Knowles, 1984). The individual feels a need to be independent and responsible for his own actions.

Personal past experience assumes an influential role in adult learning. The individual's experience shapes future experiences and should be used as a resource for learning. Knowles (1984) noted that, based on experience, adults tend to form a heterogeneous group "in terms of background, learning style, motivation, needs, interests, and goals" (Knowles, 1984, p. 57). The result necessitates a different focus of teaching in the adult population.

Adult readiness to learn increasingly becomes more focused on social roles (Knowles, 1984). Adults identify the need to learn based on what they need to know in order to meet changes in life-style or role. The individual with a chronic illness, for example, would be concerned with learning ways to deal with limitations brought about by the illness. Tough (1971) noted that before adults commit to learning something, considerable effort is made to identify the potential benefits to be gained from the learning process.

According to Knowles (1984), adults develop a problem-centered orientation to learning. As adults experience inadequacies in coping with current life problems, they tend

to seek out educational activities to compensate for their lack of skill or knowledge. The applicability of the information to their life situation is emphasized. Adults "learn new knowledge, understandings, skills, values, and attitudes most effectively when they are presented in the context of real-life situations" (Knowles, 1984, p. 59). The importance of applicability of information is also held by Redman (1976, 1988). Adults are more likely to incorporate information into their lives when they recognize the advantages of doing so.

Overall, Knowles (1978, p. 54) theorized that as an individual matures, "his need and capacity to be self-directing, to utilize his experience in learning, to identify his own readiness to learn, and to organize his learning around life problems increases." Orem's (1980) valuing of the individual who is responsible for self-care, is motivated to take action, and who identifies his readiness and willingness to learn new information or skills necessary to perform self-care echoes these adult learning principles.

Recidivism

It is suggested that with an increased SCA, promoted by patient education, individuals will apply the knowledge and capabilities to help limit additional exacerbations of their

disease. Health promotion through the implementation of self-care activities is proposed as a means of reducing the number of rehospitalizations and length of stay by augmenting individuals' capacity to care for themselves and/or identify problems before they become unmanageable. As pointed out by numerous authors (Hodgkin, et al., 1981; Make, 1986; Shenkman, 1985), one benefit of a pulmonary rehabilitation program is the reduction in frequency and duration of hospitalizations.

Mullin (1980) stated that patients often lack the ability to care for themselves because they are not assisted in learning how to do so; the result may be an increase in recidivism. The patients are often discharged in an improved physical state without a subsequent change in their health care behavior. Readmissions with the same or related diagnosis and health problem soon follow. In promoting self-help in pulmonary patients, Halcomb (1984) reinforced this view by stating that education can reduce the frequency of hospitalizations by teaching patients to care for themselves.

Beyond the need for information and knowledge, application of self-care practices as an element in reducing recidivism is influenced by several innate traits. An individual's belief in the amount of control he has over his life may determine the extent he follows health care advice

(Hills, et al., 1984). Internal motivation may also play a part. The attitude of the individual toward himself and his illness may influence his beliefs about the prognosis or expected outcomes of a rehabilitation program. The more positive the attitude, the increased likelihood of applying health care advice (Anderson & Kirk, 1982). All of these factors, perceived control, motivation, and positive attitude, are related to an enhanced self-care agency. As an individual's ability to care for himself and the tendency toward using newfound knowledge increase, the possibility of recidivism should diminish.

The intention is not to imply that if patients simply apply the entire regimen that they will have fewer hospitalizations. There are many variables influencing recidivism. The progression of a debilitating disease such as COAD, in addition to factors such as severity of the disease and the presence of additional health complications can affect recidivism (Hills, et al., 1984). It is proposed, however, that if individuals apply the components of the patient education program, resulting in an increased SCA and their ability to care for themselves, then the possibility of recidivism is reduced. The frequency of rehospitalizations for exacerbations of COAD may be minimized through preventive health care (Shenkman, 1985).

SUMMARY

As the emphasis on individuals assuming self-care practices increases, nursing must change its focus to that of educating individuals to help them learn to manage their disease and cope with resulting life changes, thus increasing their self-care agency. For individuals with chronic diseases such as COAD, the potential impact of such an intervention is magnified. It is proposed that with an increased level of self-care agency, augmented by patient education, individuals might be more likely to apply the knowledge to self-care practices, resulting in a decrease in recidivism. The education process must be evaluated in terms of its actual effect on increasing individuals' knowledge and subsequently improving their SCA and limiting rehospitalizations.

CHAPTER 2

LITERATURE REVIEW

The review of the literature focused on studies identifying the outcomes of pulmonary rehabilitation programs, concentrating on the patient education component. Studies identifying advantages and disadvantages of inpatient vs. outpatient programs were also included. Finally, additional studies examining factors that influence recidivism and self-care agency were reviewed.

PULMONARY REHABILITATION PROGRAMS

Background

Pulmonary rehabilitation has evolved over the past three decades to emerge as an accepted treatment modality for patients with COAD. The focus of such programs has changed from one of primarily exercise training to a more comprehensive approach involving breathing training, exercise, and education (Petty, 1975). The education component provides information about the normal lung, the disease process and subsequent symptomatology, effective treatment of symptoms, the prevention of exacerbations of symptoms, and techniques to help the patients maximize their self-care abilities (Lertzman & Cherniak, 1976; Petty, 1969).

The aim of the rehabilitation therapy is to increase the patients' ability to function more normally while lessening their symptoms (Lertzman & Cherniak, 1976). As defined by the American College of Chest Physicians' Committee on Pulmonary Rehabilitation in 1974, pulmonary rehabilitation is:

an art of medical practice wherein an individually tailored, multidisciplinary program is formulated which through accurate diagnosis, therapy, emotional support, and education, stabilizes or reverses both the physio- and psychopathology of pulmonary diseases and attempts to return the patient to the highest possible functional capacity allowed by his pulmonary handicap and overall situation (Petty, 1975, p. 159).

Accomplishment of this goal involves increasing exercise tolerance while educating patients to understand and assist in the management of their disease. Ultimately, emphasis is placed on achieving maximal self-reliance while limiting dependence on the patient's family and health care providers (Lertzman & Cherniak, 1976).

Inpatient vs. Outpatient

Pulmonary rehabilitation programs have most recently tended to be in the outpatient or community setting, allowing for a long-term comprehensive program. The

increased emphasis on patient teaching within the hospital, however, has given rise to numerous comprehensive inpatient programs. The literature lists advantages and disadvantages for both approaches.

In their discussion of results of an inpatient program with an outpatient follow-up, Kimbel, et al. (1971) acknowledged certain disadvantages associated with the rehabilitation of hospitalized COAD patients. He noted that admission to the hospital could lead patients to an increased awareness of their illness, possibly resulting in a psychological regression to a more dependent state. The rehabilitation process generally had to be deferred until the patients were physiologically stable. Kimbel, et al. (1971) were also aware of the artificial environment produced by the hospital setting. The effect of a supportive and enthusiastic staff was usually in contrast to the home environment. The additional factor of interruption of family responsibility for the patient's care fostered a lack of continuity of care once the patient returned home. The subsequent loss of momentum in the patient's recovery could result in a return to their previous health state. Kimbel, et al. (1971) suggested that attendance at an outpatient program may avoid this regression as the patients remained in their home environment.

The advantages of inpatient management of pulmonary

rehabilitation were also considered by Kimbel, et al. (1971). Inpatient programs provided early initiation of the teaching-learning process, and allowed daily evaluation of progress and reinforcement of self-care regimens. The high attrition rate in outpatient programs, as noted by Shenkman (1985), indicated that patients with access to an outpatient program alone might never have entered a program. Those patients who were severely incapacitated were unable to travel to an outpatient program and thus could only be treated in a hospital. Daily observation of the patients uncovered problems such as adverse effects of treatments or misconceptions about treatment regimens which may have been missed with intermittent outpatient visits. The frequent repetition of instructions during the hospital stay allowed reinforcement and clarification of information (Shenkman, 1985).

Kimbel et al. (1971) and others (Agle, et al., 1973; Perry, 1981) did advocate outpatient follow-up as adjunctive therapy to an inpatient program to reinforce information gained in the hospital setting. As pointed out by Steele and Ruzicki (1987), based on the results of their study of the effectiveness of cardiac teaching during hospitalization, inpatient teaching programs can be effective for short-term outcomes, but are insufficient in producing long-term change.

Similar results were reported by Scalzi, Burke, and Greenland (1980). Their evaluation of learning and compliance in post myocardial infarction patients involved an in-hospital education program with outpatient reinforcement over a two-year period. When compared to the control group, patients receiving the structured education did not show a significant increase in their knowledge scores immediately following discharge. These results led the authors to suggest that retention of information is limited during the acute phase of an illness, regardless of the teaching format. Results of the testing during the two-year follow-up period suggested that continued instruction and reinforcement following discharge tended to improve knowledge and compliance levels.

Neish and Hopp (1988) also evaluated knowledge levels of patients following an in-patient pulmonary rehabilitation program. The authors compared three groups of patients who differed in health status and form of education received. The first group received a 2-week program of individualized education based in the acute-care hospital setting. The second group involved patients who were not acutely ill, but were hospitalized specifically for the pulmonary rehabilitation program. In addition to the individualized instruction, these patients also attended group sessions and formal classes. The third and final group received the same

treatment as the second group, with the additional factor of having the educational component tailored to each individual's locus of control. The authors reported that scores for all three groups were significantly higher on knowledge post-tests immediately following the educational program, but dropped during the subsequent 6 months. An additional observation made by Neish and Hopp (1988), that sicker patients (based on a symptom-severity index) generally did not improve their knowledge scores, led the authors to conclude that these patients may have taken longer to internalize information due to having more severe limitations.

Outcomes/Benefits

Pulmonary rehabilitation programs which included patient education as an integral part have reported a wide range of benefits. Included are increased knowledge and skills, improved quality of life, and reduced number of hospitalizations. A few studies also noted improved physiologic function, such as diminished symptoms and increased exercise tolerance. The reported outcomes were similar for both inpatient and outpatient formats.

Early studies focused on evaluating physical parameters such as those represented by pulmonary function tests and arterial blood gases. Generally, due to the progressive

deterioration of COAD, the rehabilitation programs had little or no effect on improving pulmonary function (Haas & Cardon, 1969). As pointed out by Burrows and Petty (1971), although initial success may be gained by in-hospital rehabilitation programs, the inherent progression of the disease and accompanying mortality persist.

Exercise tolerance was also investigated. Although the pulmonary function was generally unchanged, patients enhanced their tolerance for exercise by learning to control symptoms such as dyspnea and anxiety. Petty (1975) reported the results of a study which documented an improved symptom complex and exercise tolerance, in addition to a decreased need for hospitalization. The effect of these variables, however, did not equate with a significantly increased survival rate.

Moser, et al. (1980) also reported on exercise tolerance and symptom reduction in response to a pulmonary rehabilitation program. Using a dyspnea profile scale, Activities of Daily Living questionnaire, and pulmonary function testing, the authors measured patients' reactions to treadmill exercise. The two-week in-patient rehabilitation program was followed by four weeks of independent exercise. Exercise tolerance, in terms of decreased oxygen consumption, minute volume, heart rate and respiratory rate, was significantly improved following the

program. Improvement in dyspnea class was reported in 16 of 29 patients, while 11 of the 29 also showed improvement in activities of daily living.

An additional factor in improving exercise tolerance and compliance with a prescribed regimen was the use of behavior modification, as reported by Kaplan, Reis, and Atkins (1985). Using a variety of methods, including goal setting, relaxation training, and positive self-talk about exercise, the authors formed three treatment groups, behavior modification, cognitive modification, and cognitive-behavior modification to enhance compliance with an exercise program. A control group received only instructions about the exercise regimen. The effect of the three treatment approaches on the panic-dyspnea cycle in patients with COAD was investigated. Outcome measures included a quality of life index, pulmonary function studies, exercise tolerance tests, and measures of self-efficacy. Although there were no significant changes in physiologic parameters, subjects in the treatment groups demonstrated a greater tolerance for exercise and scored higher on the quality of life index. Based on these results, the authors suggested that information alone may have little impact on patients with COAD experiencing exercise-induced dyspnea. Behavioral and cognitive modification aimed at providing the patient with mastery of such experiences may

enhance expectations for success in the future in similar situations (Kaplan, Reis, & Atkins, 1985).

Aside from evaluating physiologic benefits of pulmonary rehabilitation programs, researchers also investigated psychologic parameters. The vague claim of improved "quality of life" was made when patients demonstrated increased abilities to cope with their disease and minimize exacerbations and symptoms. In the evaluation of long-term outcomes after pulmonary rehabilitation, Guyatt, et al. (1987) used a questionnaire on quality of life designed specifically for COAD patients. Two dimensions were included in the tool: physical function (including shortness of breath and fatigue), and emotional function (including depression, anxiety, frustration, and perceived control over the disease). Twenty-eight patients completed an inpatient rehabilitation program, which lasted four to six weeks. The quality of life on both the physical and emotional functions showed improvement in 77% of the subjects two weeks after discharge. Half of those subjects showing initial improvement, however, indicated deterioration over the following six months. Although the quality of life improved initially, sustained improvement was not documented.

Perry (1981) reported on similar factors of quality of life. Evaluation of the effectiveness of the education component of a pulmonary rehabilitation program included the

assessment of patients' self-report of symptoms and personal treatment modalities to alleviate symptoms. A significant decrease in symptoms and continued use of breathing and relaxation exercises was reported by the patients. The author suggested that these results indicated that a pulmonary rehabilitation program encouraging patient learning fostered the patients' ability to make decisions and take actions that allowed them to better cope with their illness.

A commonly cited benefit of pulmonary education programs is the gain in knowledge and self-care skills. Ashikaga, et al. (1980) evaluated a community-based group education program in terms of knowledge and self-help activities. The main objectives of the program were to help the patients develop preventive and restorative health care behaviors through education and motivating factors. The experimental group attended six weeks of group classes, while the control group received only an informational booklet available to the general public. Pre- and post-tests were conducted on both groups, a total of 48 patients. The treatment group showed an increase in perceived understanding, knowledge of COAD, readiness to take action and compliance with self-help activities. The authors suggested that these results indicated a greater likelihood of the patients applying the new knowledge and skills in the

home environment (Ashikaga, et al., 1980).

An additional study by Howland, et al. (1986) also examined the effect of a purely educational outpatient program designed for individuals with COAD. Although no improvement in disease status, functional health, mental health or life quality was found following the education program, health perception and locus of control were affected. The authors suggested that these results indicated that education can change the knowledge and attitudes of COAD patients, resulting in an increased sense of control over their disease.

RECIDIVISM

One important benefit of pulmonary rehabilitation programs is a reduction in the frequency and duration of hospitalizations. As patients gain knowledge about their disease and learn to minimize its complications, the anticipated outcome of lessened recidivism may result.

In their study of the effectiveness of a structured pulmonary education program, Howard, et al. (1986) hypothesized that patients participating in the program would demonstrate more effective health management of their chronic condition as measured by longer stays out of the hospital, and shorter and fewer admissions. The design involved comparing patients in the hospital 13 months before

the program was started to those admitted during the 13 months after the introduction of the program. The clients who received teaching required fewer readmissions and stayed in the community longer. Length of hospital stay, however, was unchanged. Factors cited as most influential in determining hospital and community lengths of stay were knowledge of the respiratory system and use of medications, in addition to control of the environment. Howard, et al. (1986) suggested that these results indicated that the education program enabled the patients to manage their disease process more effectively. The reduction in recidivism might not be solely attributable to the education program, however. Kimbel, et al. (1971) suggested that the decrease in hospitalizations was due to good comprehensive care rather than the structured rehabilitation program.

Attempts have been made to identify characteristics associated with patients who require shorter and fewer hospitalizations. Traver (1988) studied 30 patients with COAD to identify the relationship of symptoms and life quality to the prevalence of use of health care resources. High emergent users were those who had two or more hospitalizations and emergency room visits for pulmonary exacerbations in the past year and/or excessive calls to the care provider. Such patients who over-utilized health care resources tended to have a greater amount of symptoms and a

higher impairment of psychosocial measures of life quality than those who used the resources more appropriately.

Shenkman (1985) reported similar results in a description of factors related to attrition rates in a pulmonary rehabilitation program. Analysis of psychosocial factors of those who did not complete the program revealed greater feelings of anxiety, irritability, helplessness-hopelessness, and alienation than those who did finish the program. Those who failed to complete the program tended to rate themselves as being the most incapacitated by their disease.

In a study by Rosenberg (1971), reduction of hospitalizations following an education program were also found. A sample of 50 patients with congestive heart disease who completed an organized patient education program showed an increase in knowledge about their disease, medication, and diet as well as adherence to a specified regimen. When compared to their past experiences as well as to a control group, these patients showed a significant reduction in readmissions and length of stay. Similar findings were demonstrated by Hodgkin, et al. (1975) and Sahn, Nett and Petty (1980), who reported that a comprehensive patient education program can decrease both the frequency and duration of hospital readmissions over an extended period of time.

A final example of the positive effect of patient education on recidivism is the study by Agle, et al. (1973). Although the purpose of the study focused primarily on expected physical and psychological changes in patients following their involvement in a four week in-patient pulmonary rehabilitation program, a decrease in recidivism was also noted. In the year preceding the training, a total of 30 hospitalizations for pulmonary exacerbations were attributed to the 21 patients involved. In contrast, there were only five hospitalizations for pulmonary reasons in the year following the program. The patients who responded most favorably to the rehabilitation program showed an improvement in such psychological symptoms as depression and anxiety, in addition to a lessened fear of dyspnea and a greater autonomy in control of symptoms. In their discussion of these results, Agle, et al. (1973) proposed that the patients' increased confidence in their ability to control their symptoms could be partially responsible for their decrease in the number of hospital admissions following the training.

SELF-CARE AGENCY

Since the emergence of Orem's Theory of Self-Care (Orem, 1980), nursing researchers have explored the applicability of the theory and its concepts in practice.

Numerous studies have analyzed the outcomes of implementing the entire theory of self-care into hospital programs, or simply incorporating self-care concepts into daily nursing care. A focus on ways of measuring an individual's self-care agency or readiness for self-care and the influence of variables such as education programs has also emerged in nursing research.

Publications describing the effectiveness of using Orem's framework in practice include Orem's discussion relating the concept of self-care to the rehabilitation client (Orem, 1985). The nurse's role in determining individuals' current level of self-care agency and their potential for further development was supported by Orem (1985).

The successful application of Orem's self-care theory in the acute-care setting has also been reported. Weis (1988) described an in-patient program focusing on cooperative care, emphasizing patient and family participation in the health care process. As the individuals assumed responsibility for their own care, the nurse's role primarily became that of educator.

Mullin (1980) also advocated patient participation in self-care. As the focus of nursing changed from performing tasks to identifying individuals' needs, nurses used education to assist individuals in maintaining or increasing

their ability to care for themselves.

The incorporation of self-care concepts in nursing practice has been prominent in relation to chronic diseases. Ho (1989) conducted an exploratory study of self-care practices of patients with rheumatoid arthritis. Focusing on Orem's (1980) six categories of health-deviation self-care requisites, Ho (1989) identified learning to live with the effects of the disease and changes in life-style as the requisite which contributed most to self-care activities and quality of life. The presence of factors such as psychological support, significant others, and higher education level was also influential.

Assessment of an individual's self-care potential or self-care readiness often depended on subjective interpretation of the concept of self-care. As suggested by Norman and Snyder (1982), individuals' readiness for self-care was based on their perceived wellness and their health locus of control. The authors hypothesized that, within the rehabilitation setting, a difference between perceived level of wellness and health locus of control beliefs would be present. The acceptance of this hypothesis led the authors to conclude that patients in the rehabilitation setting might have considered themselves healthy, but not in complete control of their health due to the potential irreversibility of their condition.

According to Joseph (1980), the potential for self-care of an individual depended on the person's ability to practice health maintenance behaviors and cope with illness and injury. Joseph (1980) suggested that teaching be used by nurses to increase self-care behavior and self-care agency of the patient, and that the assessment of changes in an individual's self-care agency could be used as an evaluation of nursing interventions.

The need for an objective measure of self-care agency emerged as documentation of nursing's influence on increasing patients' abilities to care for themselves was emphasized. The development of an instrument by Kearney and Fleischer (1979) provided a valid and reliable measure of exercise of self-care agency, while focusing on the individuals' perception of their own self-care practices. Clarification of the term "exercise of self-care agency" and representative actions led the authors to identify four components of exercise of self-care agency: an active response to situations, and the presence of motivation, knowledge, and self-worth. More specific indicants of an individual's exercise of self-care agency formed the basis for items on the questionnaire: responsibility for self, motivation to care for self, application of knowledge to self-care, valuing of health priorities, and high self-esteem.

Validity of the instrument was established through the use of the Adjective Checklist and Rotter's Internal and External Locus of Control Scale (Kearney & Fleischer, 1979). Administration of the three scales to a total of 237 subjects (nursing and psychology students) provided results which supported the major hypotheses proposed by the authors. Positive correlations were found between exercise of self-care agency and self-confidence, achievement, and intraception, while a negative correlation existed between exercise of self-care agency and abasement. Locus of control, however, did not seem to affect exercise of self-care agency. Kearney and Fleischer (1979) concluded that individuals "who exercise a high degree of self-care agency describe themselves as self-controlled, dependable, assertive, intelligent, confident, responsible, helpful, and adaptable" (p. 33).

Additional studies exploring the evaluation of exercise of self-care agency substantiated the findings of Kearney and Fleischer (1979). In their descriptive study identifying the link between nursing practice and Orem's Theory of Self-Care, Dickson and Lee-Villasenor (1982) focused on the individual's expressed needs and available self-care assets. The authors identified four properties of self-care assets: action, motivation, knowledge and potential to develop a health priority for action. These properties closely

resembled the indicants of ESCA as outlined by Kearney and Fleischer (1979). A study by Lakin (1988) examined the relationships between locus of control, health value and ESCA. In congruence with Kearney and Fleischer's (1979) conclusions, Lakin (1988) found a positive relationship between ESCA and health value, health status and satisfaction with health among faculty women. Contrary to Kearney and Fleischer (1979), however, Lakin (1988) stated that ESCA was related to internal locus of control. The discrepancies in results may have been due to the use of different health locus of control scales, as observed by Lakin (1988).

Specific use of the ESCA scale in evaluating the effect of an education program on the self-care agency of individuals with COAD has been conducted by Stockdale-Woolley (1984). Construct validity and reliability of the scale was established for the COAD population. In addition to identifying the effect of out-patient classes on ESCA, Stockdale-Woolley (1984) also examined the impact of variables such as presence of significant other, severity of disease, social status, and type of lung disease. Using a pre-post test design with 25 subjects, the author determined that scores on the ESCA scale were significantly higher after the education program, and that a negative correlation existed between the diagnosis of bronchitis and/or emphysema

and ESCA. Stockdale-Woolley (1984) suggested that the latter results may have been due to the more irreversible condition of these two diseases as opposed to asthma. Although the positive effect of an education program was established, the author cautioned that the evaluation consisted primarily of short-term outcomes.

SUMMARY

The literature reviewed provides a basis for the proposal that patient education within a pulmonary rehabilitation program can effect knowledge, recidivism and self-care agency of an individual. Many authors explored relationships between patient education and knowledge level, patient education and recidivism, and even patient education and self-care agency level. Although each of the three concepts has been evaluated in conjunction with other variables, there is a lack of studies examining all three concepts collectively. The possibility of a relationship between knowledge, self-care agency, and recidivism as a result of a pulmonary education program was therefore investigated in the current study.

CHAPTER 3

METHODOLOGY

In this chapter, a discussion of the research design, population and sample, development and use of measurement tools and methods of data collection is presented.

RESEARCH DESIGN

A descriptive design was used in this study to evaluate individuals' knowledge regarding chronic pulmonary disease and their level of SCA following a structured pulmonary education program. The scores of subjects who had completed a pulmonary education program were compared to those of a comparison group, who had not participated in the program. Comparisons of recidivism and hospital lengths of stay for each group were also conducted to identify any differences. The present study was limited to the evaluation of the education component of the pulmonary rehabilitation program. Human subjects approval was obtained from both the institution where the study was carried out and the university (Appendix A).

POPULATION AND SAMPLE

The population from which the convenience sample for this study was gathered consisted of in-patients with COAD

who had been hospitalized on the respiratory medical-surgical unit at a Southwestern hospital during a 4-month period of time, February-May, 1989. The treatment group (Group I) included those patients who had been enrolled in the hospital's pulmonary rehabilitation education program and who consented to participate in the study. The subjects were not admitted specifically for this program. Inclusion in the rehabilitation program was based on the following criteria established by the program coordinator, which stated that the patient:

1. was an in-patient on the pulmonary medical-surgical unit.
2. had a primary or secondary diagnosis of COAD including asthma, emphysema, bronchitis, or any combination of the three.
3. was in stable medical condition - i.e., not in acute respiratory distress.
4. had intact mental status without cognitive impairment.
5. was able to read and speak English.
6. was more than 18 years of age.
7. had a hospitalization expected to last longer than four days.
8. had a written order for the program from the primary physician.

Additional criteria were defined for subjects to be entered into Group I of the present study. Group I included those patients who met the above criteria, were also enrolled in the program for four or more days, and who completed the education portion of the program. Exclusion from the study was based on the presence of the following conditions:

1. Previous admission to the rehabilitation program.
2. Diagnosis of psychosis.
3. Secondary debilitating chronic illness.
4. Home follow-up by Case Manager.
5. Death within 1 year following completion of the pulmonary rehabilitation education program.

The convenience sample was obtained from a review of medical records of all patients participating in the education program for the specified four-month period of time. Only those patients meeting the aforementioned criteria were included in the Group I sample. The hospitalization during which the subjects were enrolled in the education program was designated the "targeted hospitalization" for this group.

The comparison group (Group II) consisted of a sample who met the criteria for inclusion in the education program but were not enrolled. Lack of enrollment may have been due to the patient's refusal to participate in the program, or

the absence of physician's approval for the patient to be enrolled. The additional exclusion criteria outlined for Group I also applied to Group II. The "targeted hospitalization" for Group II was designated as the first hospitalization within the predetermined four-month period. All patients meeting the criteria for Group II were contacted for potential inclusion in the study.

Subjects meeting the criteria for either Group I or Group II were contacted via mail. An explanation of the purpose and methods of the study was provided, in addition to expectations of the subjects' participation. It was made known to the subjects that a decision not to participate in the study would in no way affect any future health care. No known risks to the subjects were identified. A consent form was used for subject consent (Appendix B). Confidentiality was maintained by using subject code numbers.

Participation in the study involved completing two assessment tools which were mailed with the consent form: the Knowledge Questionnaire and the Exercise of Self-Care Agency Scale. Directions for filling out each tool were included at the top of each form. A phone number was provided to allow the subjects to contact the principal investigator with any questions regarding the purpose of the study or the questionnaires themselves. A stamped, self-addressed envelope was included to promote optimal subject

response.

PROGRAM DESCRIPTION

The structured pulmonary education program attended by Group I subjects was an on-going program at the hospital. The investigator neither designed nor coordinated the program. The education program was conducted by an interdisciplinary team consisting of the coordinator who was a Registered Nurse, the medical director, staff nurses, respiratory therapists, nutritionists, pharmacists, social workers, and physical and occupational therapists. The coordinator conducted the intake assessments and interviews, monitored each patient's progress and recorded which educational materials were received by the patient. Video tapes and handouts were used to ensure that each patient received the same basic information about the disease process, common medications, nutrition, activity and avoiding complications. Supplemental instruction was conducted on an individualized basis. Completion of at least four days in the program was required for inclusion in the treatment group.

Upon receiving an order for the pulmonary rehabilitation program by the primary physician, the program coordinator assessed the patient in terms of the pre-established criteria for acceptance into the program.

Suitable patients were further assessed by the program coordinator using the data collection form and the intake form (Appendix C). Demographic data, number and length of hospital stays within the past 12 months, the patient's current health status, symptoms, history of illness, and specific needs for individualized teaching were included in this portion of the assessment. Upon completion of the intake assessment, the patient was provided with an overview of the structure and content of the program, including a description of the various components and staff involvement.

The education component of the pulmonary rehabilitation program included a basic overview of the anatomy and physiology of the respiratory system by the program coordinator, individualized toward the patient's specific diagnosis. Video tapes were used by the staff nurses to supplement the program coordinator's sessions. Instruction in breathing techniques, controlled coughing, use of the metered dose inhaler with aerochamber, upper arm exercises, and reinforcement of the anatomy and physiology was provided by the respiratory therapists.

Additional instruction was given by various specialty disciplines. A review of the patient's current medications including appropriate dosages and potential side effects was provided by the pharmacist. The dietician conducted a nutritional assessment, and reviewed the patient's diet,

focusing on guidelines specific for the respiratory patient. Pace breathing, energy conservation, and work simplification were presented by the occupational therapist. Relaxation and panic control techniques were provided by the mental health technician. Discharge planning and counseling were coordinated by the social worker.

An attempt to maintain consistency in the program was made. This involved relying on one program coordinator and three core respiratory therapists to present the majority of the material in the education program. All of the unit nurses were instructed about the goals and objectives of the program and reviewed the basic information to be given to the patients. Documentation of instruction and patient's understanding was recorded on the Pulmonary Rehabilitation Teaching Record (Appendix D).

All instruction was conducted on an individual basis; use of group classes was impractical in the hospital setting due to the varying lengths of stays of each patient. Follow-up in an out-patient pulmonary rehabilitation program was encouraged to provide reinforcement of the information presented in the in-patient program. The out-patient programs were available to all patients, regardless of their participation in the pulmonary rehabilitation program.

DATA COLLECTION INSTRUMENTS

Two instruments were used for data collection. The first was a knowledge questionnaire modified for this study and the second was the Exercise of Self-Care Agency Scale (Appendix E).

Knowledge Questionnaire

In reviewing the literature, several knowledge questionnaires were identified. Very few of these were specific to the population of patients with COAD. Due to the different focus of the research using these questionnaires, the majority of the instruments were inappropriate for this study. A measurement tool more specific to this study, therefore, was developed by adapting the Knowledge Test for patients with COAD designed by Longstaff (1981). Questions relating to specific information about bronchitis and emphysema were omitted to allow a more generalized questionnaire that could be used for all subjects. Minor changes in wording and content were also made to ensure that the instrument measured the general information provided in the pulmonary education program. Longstaff (1981) used the original questionnaire in a study of COAD patients.

The 15-item Knowledge Questionnaire consisted of two parts. Part A consisted of seven single-option multiple choice questions. Part B contained eight multiple-option

questions, with four options per question, each answered by a "yes" or "no".

Scoring of the questionnaire was based on giving credit only for correct answers. Correct responses received one point (+1), incorrect responses zero points (0), and omitted items received no score. Possible scores ranged from 0 to 7 for Part A, and from 0 to 32 for Part B. The total possible score for the entire questionnaire ranged from 0 to 39. The higher the total score, the greater the knowledge level of the subject about COAD and the related therapy.

Content validity of the current instrument was assessed by five experts in the field of pulmonary nursing who were asked to judge each item for validity and relevance to the program. This group consisted of three staff nurses, one professional nurse case manager, and one pulmonary clinical nurse specialist, thus meeting the minimum requirement of five experts as proposed by Lynn (1986). Each expert was familiar with the content of the program and was provided with the general goals of the program and specific learner goals (Appendix F).

Content validity of each item of the questionnaire and of the entire instrument was determined by the use of the Index of Content Validity Scale (Lynn, 1986). Based on a 4-point ordinal rating scale (1 = not relevant, 2 = unable to assess relevance without item revision or item is in need of

such revision that it would no longer be relevant, 3 = relevant but needs minor alteration, 4 = very relevant and succinct), each expert rated each item on the questionnaire and the entire instrument for content validity, providing rationale for their decisions and identifying any areas that had been omitted. All items that had been rated as 3 or 4 were determined to be content valid (Lynn, 1986). Due to the use of the minimum number of experts allowable, it was necessary for all to agree on the content validity.

Based on the critique of the panel of experts, minor changes in wording were made and one question was added. A second evaluation of this revised instrument was judged to have content validity and thus be representative of the content provided to the patients enrolled in the pulmonary education program.

Exercise of Self-Care Agency Scale

The second data collection tool was the Exercise of Self-Care Agency Scale, developed by Kearney and Fleischer (1979). The scale has been used previously to evaluate a COAD population. The tool was a 43-item, five-point Likert scale. The scale ranged from (1) "very uncharacteristic of me" to (5) "very characteristic of me"; the maximum score possible was 215 and the minimum score 43. The higher the score, the greater the degree of exercise of SCA. It was

previously tested for content and construct validity with test-retest reliability of 0.77 (Kearney & Fleischer, 1979).

DATA COLLECTION

A retrospective review of medical records from the four-month period of February to May, 1989 was conducted to identify subjects appropriate for the treatment and comparison groups. All subjects who had completed the pulmonary education program during this time period and subsequently met the criteria for the study were included in the initial sample for Group I. Subjects meeting the criteria for the comparison group (Group II) were identified from patients who had been hospitalized during the same time period as the treatment group, but had not been enrolled in the pulmonary education program.

Following the identification of subjects appropriate for the two groups, the questionnaires and consent were mailed to each individual during a range of 12-15 months after the targeted hospitalization. Upon receiving consent from each subject to be included in the study, demographic data were obtained from the medical records. Additional information, such as length of hospital stays for six months prior to the specified time frame and rehospitalizations at six and 12 months afterwards, was also gathered during this medical record review.

As discussed in the description of the population, two assessment tools, the SCA scale and the Knowledge Questionnaire, were mailed to the subjects in both groups. Directions for filling out the forms were included with each instrument, accompanied by a consent form. An additional form was included requesting information about hospitalizations in the past year or previous enrollment in other pulmonary education programs. A phone number to contact the principal investigator with any questions about the instruments was provided. Direct information about the content of the questions or the correct answers was avoided. Completed forms were returned to the principal investigator via mail using the stamped, self-addressed envelope. Follow-up phone calls were made to subjects who had not responded within two weeks. Additional phone calls were made to subjects returning incomplete questionnaires to clarify answers and/or to obtain an answer to each question. The final sample size for each group was determined by the response rate of the subjects. Figure 2 represents the time periods for data retrieval.

DATA ANALYSIS

Descriptive statistics were used to present the demographic data and questionnaire scores for the two groups. Chi-square analyses and t tests were used to

PRE-EXISTING STATUS

- 6-month period before last day of targeted hospitalization
- Total number of hospitalizations & ER visits for this time period
- Average length of stay for this time period

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TARGETED HOSPITALIZATION

- First 4-day+ hospitalization occurring between 2/1/89-5/31/89
- Group I: Treatment Group (Pulmonary Rehabilitation Education Program)
- Group II: Comparison Group (No formal education program)

|

EVALUATION

- Average number of hospitalizations, LOS & ER visits 6 & 12 months after targeted hospitalization
- Knowledge Questionnaire
- ESCA Scale

ER = Emergency Room
 LOS = Length of Stay
 ESCA = Exercise of Self-Care Agency

Figure 2: Time Periods for Data Retrieval

identify differences between the groups in terms of demographic variables. Analysis of variance was used to compare differences between the scores of the treatment and comparison groups on the Knowledge Questionnaire and the ESCA Scale. The correlation coefficient was used to examine potential relationships between the two instruments, the rate of recidivism, and length of stay for the two groups and the total sample.

LIMITATIONS

Limitations to this study have been recognized. The small number of subjects participating in this study limited the conclusions made based on the results of the analysis of data and restricted the generalization of the findings. The use of mailed questionnaires may have limited the size of the sample.

Certain biases did exist based on the criteria of acceptance into the rehabilitation program. The fact that the subjects in Group I agreed to participate in the rehabilitation program indicated that they were motivated in learning more about their disease and making subsequent changes in their lifestyles. This motivational factor had the potential effect of skewing the results more positively in areas of knowledge and SCA than if based on a truly representative population.

A potential financial bias was posed by the presence of a \$150 fee for the program. Full reimbursement, however, was offered by Medicare and most insurance companies, including the state health care program for the indigent. Thus, with the exception of subjects lacking insurance entirely and unable to pay out-of-pocket, the program was not biased financially.

Follow-up in out-patient programs was available to all patients, whether they participated in the in-patient program or not. Due to their focus on in-depth long-term instruction, out-patient programs could have influenced the scores of any subject participating in them.

CHAPTER 4

ANALYSIS OF DATA

The characteristics of the sample, presentation of findings and statistical analysis are included in this chapter. The findings as related to each research question are also presented. The data analysis was completed using the SPSS/PC statistical package.

CHARACTERISTICS OF THE SAMPLE

Characteristics of the total sample are presented, followed by an examination of similarities and differences between the treatment and comparison groups.

Total Sample

Of the convenience sample of 56 subjects originally contacted, 4 had expired since the targeted hospitalization and 11 had moved with no forwarding address. Nineteen of the remaining 41 subjects participated in the study, for a response rate of 46%.

The final sample of 19 subjects included 11 females (57.89%) and 8 males (42.11%). The mean age of the sample was 66.68 years (s.d.= 8.33), with a range of 46 to 80 years of age. The majority of the subjects (15, 78.8%) were between the ages of 55 and 75, with 2 subjects less than 55

years of age and 2 subjects older than 75 years (Table 1).

A majority of the subjects (14, 73.7%) were married. Only 1 reported being divorced, while 2 were single and 2 were widowed.

All of the subjects had some form of the diagnosis of COAD. Of those with a specific diagnosis, 4 were diagnosed with asthma, 5 with bronchitis and 2 with emphysema. Four subjects were given the general diagnosis of COAD, and an additional 4 were diagnosed with a combination of asthma, bronchitis, and/or emphysema.

Formal education of the subjects ranged from 6 to 18 years, with a mean of 11.74 years (s.d.= 3.14). Thirteen of the 19 subjects (68.42%) were high school graduates, 5 of whom also had some level of college education. Four subjects (21.1%) had completed 6 to 8 years of education, and the additional 2 subjects (10.5%) had finished the tenth grade.

None of the subjects reported having pulmonary rehabilitation experience prior to the targeted hospitalization. Only 2 subjects (10.5%) reported attending an out-patient program after the targeted hospitalization.

Treatment vs. Comparison Group

The treatment group (Group I), those who completed the pulmonary rehabilitation program, consisted of 11 subjects. Eight subjects composed the comparison group (Group II),

those who met the criteria for inclusion in the rehabilitation program but were not enrolled.

The two groups differed in the percentage of males and females present in each. Of the 11 subjects in the treatment group, 8 (72.7%) were female. Only 3 of the 8 subjects (37.5%) in the comparison group were female (Table 1).

The groups were more homogeneous in terms of age of the subjects. The mean age of the treatment group was 64.82 years (s.d.= 5.88) with a range of 54 to 74, while the comparison group had a mean age of 69.25 years (s.d.= 10.78) with a range of 46 to 80. Both groups consisted mainly of subjects who were married (treatment group, 63.3%; comparison group, 87.5%).

The two groups varied slightly in the number of years of education. The treatment group had a mean of 11 years (s.d.= 3.49) with a range of 6 to 18 years, while the mean of the comparison group was slightly higher at 12.75 years (s.d.= 2.44), with a range of 10 to 17 years.

The two groups were compared in terms of demographic variables using the t test (for age, and years of education), and chi-square analyses (for gender and marital status). Despite the slight variances cited, there were no statistically significant differences between the two groups of subjects for the variables of gender, age, marital status, education, or diagnosis (Table 1).

Table 1

Demographic Characteristics of the Total Sample and of
Subjects With (Group I) or Without (Group II) Pulmonary
Rehabilitation Education

Variable	Total Sample	Group I	Group II
Mean Age	66.68	64.82	69.25
Mean Years of Education	11.74	11.00	12.75
% Female	57.89	72.70	37.50
% Married	73.70	63.30	87.50

Note. No statistically significant difference between Group I and Group II for age, gender, years of education, marital status, or diagnosis.

RESULTS

Recidivism

The rate of recidivism was measured at 6- and 12-month intervals after the targeted hospitalization. The number of hospitalizations and the number of Emergency Room (ER) visits were added together for each time period to determine the recidivism rates at these intervals. The length of stay was computed separately.

During the 6 months prior to the targeted

hospitalization, the subjects in the treatment group were hospitalized a total of 6 times, and visited the ER a total of 14 times. Only 4 of the 11 subjects (36.4%) were hospitalized during this time period, and 8 of the 11 (72.7%) had made ER visits. For the comparison group, 1 subject (22.5%) was hospitalized only once, and 6 (75%) had made a total of 7 visits to the ER during the 6 month period before the targeted hospitalization (Table 2).

The recidivism rate for the treatment group at 6 months was 14 hospitalizations or ER visits for the 11 subjects, with a mean of 1.27 per subject. The number of hospitalizations and ER visits increased slightly at the 12 month interval to 22, for a mean of 2 per subject. Considering the number of months in each time period, a comparison of the means indicated a lower recidivism rate for the 12-month period than during the first 6 months (1.27 per 6 months; 2 per 12 months).

A slightly lower recidivism rate was found for the comparison group. At 6 months, 8 hospitalizations or ER visits were accrued by the 8 subjects, producing a mean of 1 per subject. As with the treatment group, the number of hospitalizations and ER visits increased during the 12-month interval for the comparison group to 13, with a mean of 1.62 per subject. Again, taking the number of months within each time period into account, a lower recidivism rate resulted

Table 2

Total Number of Hospitalizations and Emergency Room Visits
for Subjects With (Group I) or Without (Group II) Pulmonary
Rehabilitation Education

Time period	Group I (<u>n</u> = 11)	Group II (<u>n</u> = 8)
<u># Hospitalizations</u>		
6 months before TH	6 (<u>n</u> = 4)	1 (<u>n</u> = 1)
TH	11 (<u>n</u> = 11)	8 (<u>n</u> = 8)
6 months after TH	7 (<u>n</u> = 5)	3 (<u>n</u> = 3)
12 months after TH	12 (<u>n</u> = 6)	5 (<u>n</u> = 4)
<u># Emergency Room visits</u>		
6 months before TH	14 (<u>n</u> = 8)	7 (<u>n</u> = 6)
TH	0	0
6 months after TH	7 (<u>n</u> = 3)	5 (<u>n</u> = 2)
12 months after TH	10 (<u>n</u> = 6)	8 (<u>n</u> = 3)

Note. TH = Targeted Hospitalization.

during the 12-month period than during the first 6 months (1 per 6 months; 1.62 per 12 months). Using chi-square analyses, no significant difference was found between the two groups for recidivism at 6 months ($\chi^2 = 3.70$; $p = .59$) or 12 months ($\chi^2 = 3.62$; $p = .73$).

For both groups, a majority of the subjects had no hospitalizations or ER visits for either time interval. At 6 months, this included 6 subjects in the treatment group (54.54%) and 5 subjects in the comparison group (62.50%). At 12 months, zero recidivism was reported by 4 subjects in both the treatment group (36.36%) and the comparison group (50%).

Considering such a large number of subjects in both groups who had zero recidivism rates, adjusted mean rates of recidivism were calculated, based on only those subjects in each group who were hospitalized or visited the ER during the 6 and 12 months after the targeted hospitalization (Table 3). During the 6-month interval, 5 subjects in the treatment group were hospitalized a total of 7 times, and 3 subjects visited the ER a total of 7 times. By adding the number of hospitalizations and the number of ER visits together and dividing by the number of subjects accruing

Table 3

Mean and Adjusted Recidivism Rates of Subjects With (Group I) or Without (Group II) Pulmonary Rehabilitation Education

Time period	Group I		Group II	
	Recidivism		Recidivism	
	Mean	Adjusted	Mean	Adjusted
6 months before TH	1.82 (<u>n</u> = 11)	2.00 (<u>n</u> = 10)	1.00 (<u>n</u> = 8)	1.33 (<u>n</u> = 6)
6 months after TH	1.27 (<u>n</u> = 11)	2.80 (<u>n</u> = 5)	1.00 (<u>n</u> = 8)	2.67 (<u>n</u> = 3)
12 months after TH	2.00 (<u>n</u> = 11)	3.14 (<u>n</u> = 7)	1.62 (<u>n</u> = 8)	3.25 (<u>n</u> = 4)

Note. Mean Recidivism = Number of Hospitalizations plus Number of Emergency Room Visits Divided by the Number of Subjects in the Group; Adjusted Recidivism = Number of Hospitalizations plus Number of Emergency Room Visits Divided by the Number of Subjects Accruing Them; TH = Targeted Hospitalization

them, an adjusted mean rate of recidivism was calculated to equal 2.8 (compared to the rate of 1.27 for all the subjects in this group). For the 12-month period, 6 subjects were hospitalized a total of 12 times, and 6 subjects made 10 ER visits. The adjusted mean rate of recidivism for this time period equaled 3.14, in comparison to the rate of 2 calculated for all the subjects in the treatment group. During the 6-month interval for the comparison group, 3 subjects were hospitalized once each for a total of 3, and 2 subjects made a total of 5 ER visits. The resulting mean recidivism rate for these subjects was 2.67, in comparison to a rate of 1 for the whole group. At 12-months, 4 subjects were hospitalized 5 times, and 3 subjects made 8 ER visits. The adjusted mean rate of recidivism for this time period was 3.25, in contrast to 1.62 for all the subjects in the comparison group (Table 3).

The lengths of stay (LOS) for subjects in both groups were also similar, with no significant difference between the two. During the targeted hospitalizations, the mean LOS for the treatment group was 6.36 days, and that of the comparison group was 6.12 days (Table 4).

The mean LOS for each group was lower during the 6-month interval before the targeted hospitalization. The mean for the treatment group was 1.45 days, while the mean of the comparison group was lower at .75 days. When the LOS was

Table 4

Mean and Adjusted Lengths of Stay (LOS) of Subjects With
(Group I) or Without (Group II) Pulmonary Rehabilitation
Education

Time period	Group I		Group II	
	LOS		LOS	
	Mean	Adjusted	Mean	Adjusted
6 months before TH	1.45 (<u>n</u> = 11)	2.67 (<u>n</u> = 6)	0.75 (<u>n</u> = 8)	6.00 (<u>n</u> = 1)
Targeted Hospitalization	6.36 (<u>n</u> = 11)	6.36 (<u>n</u> = 11)	6.12 (<u>n</u> = 8)	6.12 (<u>n</u> = 8)
6 months after TH	3.18 (<u>n</u> = 11)	5.00 (<u>n</u> = 7)	3.25 (<u>n</u> = 8)	8.66 (<u>n</u> = 3)
12 months after TH	4.54 (<u>n</u> = 11)	4.17 (<u>n</u> = 12)	4.75 (<u>n</u> = 8)	7.60 (<u>n</u> = 5)

Note. Mean LOS = length of stay divided by number of subjects in group; Adjusted LOS = length of stay divided by number of hospitalizations accrued during that time period.

evaluated based on the number of subjects in each group who were hospitalized, the mean for the treatment group was lower than that of the comparison group. Four of the 11 subjects in the treatment group were hospitalized 6 times during the 6 months before the targeted hospitalization, with a range of 2 to 5 days, and a total of 16 days. The adjusted mean for these four patients, then, was 2.67 days. In contrast, only 1 subject in the comparison group was hospitalized during this time period for a total of 6 days, making the adjusted mean LOS for this group equal to 6. Although more subjects in the treatment group were hospitalized during the 6-month period before the targeted hospitalization, the LOS for each of these subjects was less than that of the one subject in the comparison group.

In comparison to the 6-month period before the targeted hospitalization, LOS during the following 6- and 12-month intervals was higher. At 6 months, the means for the treatment and comparison groups were 3.18 and 3.25 days respectively, while at 12 months the means increased slightly to 4.54 and 4.75 days.

Again, considering only the subjects who were hospitalized during the 6- and 12-month intervals, the adjusted mean LOS for each group was slightly different. Only 5 subjects in the treatment group were hospitalized 7 times during the 6 months following the targeted

hospitalization. The LOS ranged from 4 to 13 days, with a total of 35 days. The adjusted mean LOS, therefore, was 5 (35 days per 7 hospitalizations). For the 12-month interval, 7 subjects were hospitalized 12 times for a total of 50 days, with a mean of 4.17.

For the comparison group, 3 of the 8 subjects were hospitalized a total of 3 times during the 6-month period after the targeted hospitalization for a range of 6 to 14 days, for a total of 26 days. The adjusted mean LOS for this time period, therefore, was 8.66 (26 days per 3 hospitalizations). For the 12-month interval, 4 subjects were hospitalized 5 times for a total of 38 days, resulting in a mean LOS of 7.6 (Table 4).

Knowledge Questionnaire

The 15-item multiple-choice Knowledge Questionnaire was used to evaluate the subjects' level of knowledge about COAD and related therapy. The questionnaire consisted of two parts, Part A containing 7 questions and Part B containing 8 questions. Possible scores for Part A ranged from 0 to 7; possible scores for Part B ranged from 0 to 32. The highest score that could be obtained for the total questionnaire was 39. The higher the score, the greater the knowledge level of the subject.

Initially, the scores for Part B of the Knowledge

Questionnaire were rather low due to a large number of omissions by the subjects. Rather than answering "yes" or "no" to each of the four parts of the eight questions, several subjects answered "yes" to only one option, leaving the other three blank. The original scores for the total sample on Part B of the questionnaire ranged from 4-29, with a mean of 19.053 and a standard deviation of 8.58.

Those subjects who did not answer all four options of each question in Part B were recontacted by the investigator to clarify the directions and gain more complete answers. Following this intervention, the scores for Part B subsequently increased to a range of 21-31, with a mean of 25.84 and a standard deviation of 2.99 for the total sample.

The scores on the Knowledge Questionnaire for the total sample ranged from 24 (61.54% correct) to 38 (97.43% correct), with a mean of 31.63 and a standard deviation of 3.66. Fourteen subjects (74%) scored 75% or more correct. The raw scores for the treatment group ranged from 28 to 38, with a mean of 33.09 and a standard deviation of 3.21. The comparison group scored slightly lower. The raw scores ranged from 24 to 37, with a mean of 29.63 and a standard deviation of 4.32 (Table 5). Using analysis of variance, there was no significant difference between the mean scores of the two groups ($F = 4.03$, $p = .0609$). Also, no statistically significant differences were noted between the

treatment and control groups on either Part A ($F = 1.28$, $p = .2734$) or Part B ($F = 3.83$, $p = .0668$). The first research question was: "Do subjects participating in the pulmonary rehabilitation education program have significantly higher scores on the Knowledge Questionnaire than the comparison group?" Although the treatment group did obtain higher scores on the Knowledge Questionnaire than did the comparison group, the difference was not statistically significant (Table 5).

Table 5

Mean Questionnaire Scores and Analysis of Variance for Total Sample and Subjects With (Group I) or Without (Group II) Pulmonary Rehabilitation Education

Scale	Total Sample		Group I		Group II		p
	Mean	S.D.	Mean	S.D.	Mean	S.D.	
Knowledge	31.63	3.66	33.09	3.21	29.63	4.32	.0609
ESCA	94.15	15.59	87.64	13.05	103.13	18.64	.0474*

Note. ESCA = Exercise of Self-Care Agency

* $p < .05$ between Group I and Group II.

Exercise of Self-Care Agency Scale

The Exercise of Self-Care Agency (ESCA) Scale consisted of 43 items on a 5-point Likert scale. Possible scores ranged from 43 to 215, with a higher score indicating a greater degree of exercise of self-care agency.

The raw scores for the total sample on the ESCA scale ranged from 75 to 133, with a mean of 94.15 and a standard deviation of 15.59. Raw scores for the treatment group ranged from 71 to 112, while those of the comparison group varied from 72 to 133. The subjects in the treatment group had a mean score of 87.64 and a standard deviation of 13.05 as compared to the mean score of 103.13 and a standard deviation of 18.64 in the comparison group. The scores for the treatment group were significantly lower than for the comparison group ($F = 4.57$, $p = .0474$), answering the second research question: "Do subjects participating in the pulmonary rehabilitation education program have significantly higher scores on the ESCA scale than the comparison group?" The variations between the two groups are summarized in Table 5.

STATISTICAL ANALYSIS

As presented, analysis of variance was used to evaluate the first two research questions. In answering the final five research questions, Pearson Product Moment Correlations

were calculated to identify relationships between the scores of the two questionnaires, the rate of recidivism, and length of stay for each group as well as the total sample (Table 6). The original mean recidivism rates and mean LOS values were used in determining relationships between these variables.

There were no significant correlations found ($p < .01$) between the scores on the two questionnaires for either group or the total sample, thus answering the third research question: "Is there a significant correlation between the scores on the Knowledge Questionnaire and the Exercise of Self-Care Agency Scale?" Negative correlations were found for both the total sample ($r = -.3863$) and the treatment group ($r = -.5988$), indicating a trend for a lower ESCA score to be associated with a higher knowledge score. For the comparison group, a positive correlation ($r = .0395$) was found: as the knowledge scores tended to increase so did the ESCA scores.

The data related to the fourth research question: "Is there a significant correlation between the rate of recidivism and the scores on the Knowledge Questionnaire?" also revealed that there was no significant relationship between the two variables (Table 6). For the total sample, negative correlations were found for the 6- and 12-month intervals of recidivism ($r = -.0156$, and $r = -.1964$); there

Table 6
Correlations (r) Between Variables for the Total Sample and
 for Subjects With (Group I) or Without (Group II) Pulmonary
 Rehabilitation Education

Variable	Group	Knowledge Questionnaire	ESCA Scale
ESCA	I	-.5988	---
Scale	II	.0395	---
	Total sample	-.3863	---
Recidivism	I	.0126	-.3072
at 6	II	-.1437	-.5018
months	Total sample	-.0156	-.3816
Recidivism	I	-.4676	-.0192
at 12	II	-.0657	-.4289
months	Total sample	-.1964	-.2425
Length of	I	-.2306	.3292
Stay	II	-.2025	-.5197
	Total sample	-.0875	-.1420

Note. None of the correlations were significant at $p < .01$.

was a tendency for higher knowledge scores to be associated with lower rates of recidivism. Negative correlations were also found for the comparison group for the two time periods (6-month, $r = -.1437$; 12-month, $r = -.0657$). The results for the treatment group were slightly different. At the 6-month time period, a positive correlation existed with the Knowledge Questionnaire ($r = .0126$), while at the 12-month interval the correlation was negative ($r = -.4676$). None of these correlations was found to be significant at the .05 level. The only significant correlation found was between the scores on the Knowledge Questionnaire and the number of hospitalizations (excluding ER visits) during the 12-month interval for the treatment group ($r = -.6916$).

The results related to the fifth research question: "Is there a significant correlation between the rate of recidivism and the scores on the ESCA scale?" also revealed negative nonsignificant correlations; there was a trend for higher scores on the ESCA scale to be associated with lower rates of recidivism. For the total sample, the correlations for the 6- and 12-month intervals were similar ($r = -.3816$; $r = -.2425$). The correlations for the comparison group also showed little difference (6-month, $r = -.5018$; 12-month, $r = -.4289$). The treatment group had correlations of $r = -.3072$ for the 6-month interval and $r = -.0192$ for the 12-month interval (Table 6).

The final two research questions dealt with the relationships between length of stay and scores on the two questionnaires. The sixth research question asked, "Is there a significant correlation between length of stay and the scores on the Knowledge Questionnaire?", while the seventh research question asked, "Is there a significant correlation between length of stay and the scores on the ESCA Scale?" For the total sample, negative correlations were found for both questionnaires (Knowledge Questionnaire, $r = -.0875$; ESCA Scale, $r = -.1420$); there was a tendency for higher knowledge or ESCA scores to be associated with shorter lengths of stay. Negative correlations were also found for the comparison group (Knowledge Questionnaire, $r = -.2025$; ESCA Scale, $r = -.5197$). The treatment group varied slightly as a negative correlation was found for the Knowledge Questionnaire ($r = -.2306$), while a positive correlation was found for the ESCA Scale ($r = .3292$); there was a tendency for higher ESCA scores to be associated with a longer length of stay. None of these r values reached significance at the .01 level for a 1-tailed test, indicating the lack of a relationship between these variables. The correlations between the scores on the two questionnaires, rate of recidivism, and length of stay for the total sample and each group are summarized in Table 6.

SUMMARY

Based on the analysis of the data as presented in this chapter, several conclusions can be made about the sample and the research questions. There were no significant differences between the treatment and comparison groups in relation to variables such as gender, age, marital status, years of education, or diagnosis. The treatment group did score higher on the Knowledge Questionnaire, but the difference between the means of the two groups was not statistically significant. The comparison group attained a statistically significant higher score on the ESCA Scale than did the treatment group. No significant correlations were found between the scores on the Knowledge Questionnaire and scores on the ESCA scale, the rate of recidivism, or length of stay. Similarly, no significant correlations were found between the scores on the ESCA scale and the rate of recidivism, or length of stay.

CHAPTER 5

DISCUSSION/CONCLUSIONS

This chapter presents the interpretation of data, discussion of findings as related to the literature and the conceptual framework. The implications for nursing, recommendations for future research, and conclusions are also presented.

QUESTIONNAIRE RESULTS RELATED TO PREVIOUS LITERATURE

The results for the total sample on the Knowledge Questionnaire obtained in this study were similar to those reported by Longstaff (1981). Both studies evaluated patients with COAD who had received some form of education regarding their pulmonary disease. While the current study focused on a short-term in-patient pulmonary rehabilitation education program, Longstaff (1981) evaluated out-patient education in the form of group classes or unstructured individual teaching over an unspecified period of time.

Due to the changes made in the Knowledge Questionnaire by the investigator in this study, the range of possible scores differed. Scores for the original questionnaire could range from 0 to 80, while the revised version had a possible range of 0 to 39. Despite these changes, the mean percent correct for the total sample in both studies was similar. The mean

score in this study was 26.16 (67.08% correct), while Longstaff (1981) reported a mean score of 49.42 (61.78% correct).

The distribution of scores for the two versions of the questionnaire differed somewhat, however. In this study, 14 of 19 subjects (74%) scored 75% or more correct. Only 8 of 35 subjects (22%) in Longstaff's (1981) study scored in this same range, and 7 of 35 (20%) scored less than 50%. Perhaps changes in the questionnaire, made to ensure that the tool measured the general information provided in the specific pulmonary education program, may have rendered the questionnaire less difficult and therefore less discriminatory. More rigorous reliability and validity testing should be conducted on the current questionnaire, using subjects with COAD, to determine its usability in further research.

The separate examination of Parts A and B of the Knowledge Questionnaire was not conducted by Longstaff (1981). Although in the current study no statistically significant differences were noted between the treatment and control groups on either Part A ($F = 1.28$, $p = .2734$) or Part B ($F = 3.83$, $p = .0668$) of the Knowledge Questionnaire, the original scores on Part B were deficient due to a poor initial response to this portion of the questionnaire. The tendency of the subjects to omit answers for some of the

four parts to the eight questions may have been due to the lack of explicit instructions. Clarification of the instructions might be achieved by changing the responses for each question from "yes" or "no" to "true" or "false".

The scores on the ESCA Scale for the current study were not consistent with previous literature. Stockdale-Woolley (1984), who used the ESCA Scale to evaluate COAD patients who attended group outpatient rehabilitation classes, reported higher mean scores than obtained in the current study. The ESCA Scale was administered by Stockdale-Woolley (1984) prior to and at the conclusion of a series of four classes. The mean pretest score was 157.28 (s.d.= 26.56), while post-test scores were slightly higher with a mean of 163.40 (s.d.= 25.08). In the current study, the mean score for the total sample following the education program was only 94.15 (s.d.= 15.59).

The discrepancy in scores may be due to the different settings of the two studies. While the current study evaluated an in-patient pulmonary rehabilitation program which had to be ordered by the patient's physician, Stockdale-Woolley (1984) focused on a voluntary community out-patient program. The fact that the patients chose to attend the out-patient classes voluntarily may indicate that they were more motivated to change their behavior than those in the current study who were enrolled in the program by

their physicians during an exacerbation of their illness. Such factors may account for the differences in ESCA scores between the two studies.

Results from reliability testing of the original ESCA questionnaire, developed by Kearney and Fleischer (1979), also yielded higher mean scores than in the current study. For a group of nursing students, the mean for the first testing was 122.72 (s.d.= 13.75), while for the second testing the mean was 125.57 (s.d.= 14.26. A single testing of psychology students produced a mean of 120.04 (s.d.= 17.74. The use of psychology and nursing students as subjects, however, may have accounted for the higher scores. Subjects with a progressively debilitating disease such as COAD would be more likely to have lower ESCA scores than relatively healthy students.

FINDINGS RELATED TO CONCEPTUAL FRAMEWORK AND LITERATURE

One aim of this study was to evaluate the level of knowledge about COAD and related therapy demonstrated by two groups of subjects, those who participated in a pulmonary rehabilitation program, and those who did not. Relationships between knowledge level and other variables such as ESCA, recidivism and length of stay were also examined.

The findings of this study indicate that, although the treatment group did score higher on the Knowledge

Questionnaire, there was no significant difference in the scores between the treatment and comparison groups ($p = .0609$). The lack of difference between the two groups may be partially related to the general population and the program design. All of the subjects in the study were diagnosed with some form of COAD, and were in-patients on the same respiratory medical-surgical unit with exacerbations of COAD. Although the subjects in the pulmonary rehabilitation program received individualized instruction, those in the control group were not denied the same information on a more informal basis. The inclusion of patients in the rehabilitation program was based on physician referral and patients' willingness to participate in the program. Subjects in the control group, therefore, may have qualified for the rehabilitation program, but either their physician did not provide an order, or the patient refused the service. Rarely did the program fee play a factor in preventing any patient from taking part.

Interestingly, the mean score of the comparison group on the ESCA Scale (mean = 103.13; s.d. = 18.64) was higher than that of the treatment group (mean = 87.64; s.d. = 13.05). The treatment group may have benefitted from the individualized instruction, resulting in a higher knowledge score than the control group (although not significantly different), but perhaps this group was not coping as well

with their illness. Six months before the targeted hospitalization, the comparison group had a lower number of hospitalizations (an average of 1 compared to 1.5 for the treatment group) and fewer ER visits (an average of 1.16 compared to 1.75 for the treatment group). Perhaps because the subjects in the comparison group were requiring fewer hospitalizations and ER visits than those in the treatment group, it can be assumed that they were coping better with their illness and did not need to be referred to the pulmonary rehabilitation program.

As pointed out by Neish and Hopp (1988), sicker patients might take longer to internalize new information, thus limiting any increase in Self-Care Agency, than those who did not have as severe limitations. Many pulmonary rehabilitation programs focus on the patients who seem to need the most intervention, namely those who have had the disease a long period of time and are not coping well with the associated life changes. In-patient programs, especially those like the one evaluated in this study which are initiated after the patient is hospitalized for an exacerbation of the illness, tend to include patients who are less able to devote their energy and attention to learning new skills during an acute phase of their illness (Scalzi, Burke, & Greenland, 1980). The effectiveness of the program in improving an individual's Exercise of Self-Care

Agency could therefore be limited. Lertzman and Cherniak (1976) advocated teaching patients techniques for coping with a chronic illness while they are in the early stages of the disease before they developed maladaptive coping styles. Unfortunately, since the knowledge and ESCA levels were not measured in the current study before the teaching program, increases or decreases in either variable as a result of the intervention cannot be determined.

No statistically significant relationship was found between the scores on the Knowledge Questionnaire and the Exercise of Self-Care Agency Scale for either group (comparison group, $r = .0395$; treatment group, $r = -.5988$) or the total sample ($r = -.3863$). The relatively high negative correlation for the treatment group contradicted the original proposal that a higher ESCA would correlate with a higher knowledge level. Although knowledge and acquisition of additional skills necessary to cope with the changes associated with chronic illness constitute a large portion of what Orem (1980) describes as self-care agency, the willingness and motivation to take self-care action are equally important.

As Orem (1980) emphasizes, information alone might not affect an individual's Self-Care Agency. Individuals with chronic diseases also need to learn how to integrate the information into their daily lives to cope with the life-

style changes resulting from the progressive deterioration of the disease process. The use of behavior modification to help individuals visualize themselves managing health crises effectively, as suggested by Kaplan, Reis, and Atkins (1985), might be an alternative approach. Such a combination of regimens might more effectively augment an individual's Self-Care Agency.

Recidivism rates for both the treatment and comparison groups were lower in the total 12 months following the targeted hospitalization than in the first 6 months of this time period. Other studies also reported a decline in recidivism following a pulmonary rehabilitation program (Howard, Davies, & Roughman, 1987). The fact that the comparison group in the current study, the group which did not receive individualized education, also had a decrease in recidivism rate indicates that such a variable might not be an appropriate outcome criteria.

Continued low rates of recidivism and other benefits over time, however, did not tend to persist in previous studies. Howland, et al. (1986) concluded that the impact of an in-patient program can diminish over time without reinforcement. The importance of such follow-up is also held by other authors. Burrows and Petty (1971) considered that an in-hospital program may offer some initial advantage, but continued follow-up was essential. Kimbel, et al. (1971)

suggested that while an in-patient program initiated the learning process, the out-patient follow-up provided support in the home environment. In-patient teaching alone was insufficient, but individuals may not have participated in out-patient teaching without the initial contact in the hospital. Since the current study did not evaluate the effect of out-patient follow-up, it is not known whether such additional intervention would have improved the patient outcomes.

Overall, the comparison group had fewer rehospitalizations or ER visits than the treatment group. The mean for the comparison group was 1.625 for the 12 months following the targeted hospitalization, while the treatment group had a mean of 2.00. Length of stay for the same time interval decreased for both groups. The mean for the treatment group (4.54) was very similar to that of the comparison group (4.75), with no significant difference between the two. As discussed above, the potential for the health status of the treatment group to be less than that of the comparison group, thus possibly requiring more frequent hospitalizations, could account for the higher recidivism rate for this group. The lack of a significant difference between the lengths of stay for the two groups may be due to a small sample size and a limited follow-up period.

No significant relationship was found between knowledge

level and rate of recidivism for the total sample or either group. The only significant correlation found was between the scores on the Knowledge Questionnaire and the number of hospitalizations (excluding ER visits) during the 12-month interval for the treatment group ($r = -.6916$); the higher the knowledge score, the fewer number of hospitalizations. There were no significant relationships found between ESCA level and recidivism, or between the scores on either questionnaire and length of stay. As suggested by Lakin (1988), there may be a difference between individuals' intended and actual involvement in self-care activities due to limitations imposed by a chronic illness. As described by Kearney and Fleischer (1979), ESCA is a dispositional trait of an individual rather than a measure of actual self-care practices. Therefore, there may be no relationship between ESCA and recidivism due to the difference between the intent to maintain self-care practices and the actual ability to do so. Further study needs to be done before any conclusions can be made.

IMPLICATIONS FOR NURSING

The results of this study have many implications for nursing. Considering that, in general, patients with strong psychosocial assets are more likely to respond to rehabilitation (Make, 1986), then the ESCA Scale might be

more appropriately used as a screening tool rather than, as suggested by Kearney and Fleischer (1979), an outcome criterion to evaluate the effectiveness of patient teaching. The tool could be used to identify individuals who have high levels of ESCA, and therefore might benefit from a short-term rehabilitation program. Individuals with a low ESCA score might need to be referred to a long-term program focusing on cognitive-behavior modification, as suggested by Kaplan, Reis, and Atkins (1985); more than simple teaching of information and physical training may be required to gain lasting benefits.

The exclusive use of the ESCA Scale to document the effectiveness of nursing care based on the amount of increase in the scores after intervention might yield false negative results. It would be unfortunate to assume that a short-term program is ineffective because the scores of individuals with low levels of ESCA did not increase, when the program might be effective for individuals with high levels of ESCA. Although a program might not increase a patient's ESCA, the knowledge gained might be helpful to a patient with a pre-existing high level of ESCA. Limiting the use of the tool to that of evaluation only might restrict its potential.

The limitations of in-hospital patient teaching, necessitating a focus on short-term outcomes, suggest a

restructuring of in-patient education. As recommended by Steele and Ruzicki (1987), teaching within the hospital should be focused on what is possible for the staff to teach during a short length of stay, and what is reasonable for patients to learn while ill. Referrals to follow-up teaching in the out-patient setting are also important to monitor and maintain the knowledge and skills gained during a short-term hospitalization, and to help integrate the information into individuals' everyday lives and possibly augment their ESCA.

RECOMMENDATIONS

Numerous recommendations for future study were proposed. The use of a larger sample size and matched control and treatment groups would lend more generalizability to future findings. Individual personal interviews with each subject to collect data rather than by mailing the questionnaires would probably increase the response rate and ensure more representative responses. A concurrent rather than retrospective study design, in addition to a lesser reliance on self-report, might also allow for more accurate recordings of hospitalizations and lengths of stay.

Changes in the questionnaires have also been discussed. In addition to altering Part B of the Knowledge Questionnaire to ensure more explicit instructions, and

subsequently conducting tests for discriminant power and validity, a study using pre- and post-test design with the same instruments would be useful in more accurately evaluating the effect of a pulmonary rehabilitation program on knowledge level and Exercise of Self-Care Agency. The Knowledge Questionnaire, as a part of usual clinical practice, could prove to be a valuable tool to evaluate and document patient learning of information related to COAD. The examination of the effect of long-term interventions such as outpatient pulmonary rehabilitation programs on these variables in addition to or in contrast with inpatient programs would also be of value.

CONCLUSIONS/SUMMARY

The findings discussed here lead to the conclusion that, for subjects with COAD, participation in the inpatient pulmonary rehabilitation program evaluated in this study had neither beneficial nor detrimental effects on knowledge, ESCA or recidivism levels. Although the long-term benefits of in-hospital patient education were not demonstrated in this study, the importance of early intervention should be considered. Further study is necessary with consideration of the recommendations previously outlined before determining the value of an inpatient pulmonary rehabilitation program in regards to

increasing knowledge or ESCA levels, or decreasing
recidivism and lengths of stay.

APPENDIX A
HUMAN SUBJECTS APPROVAL



Carondelet St. Mary's

April 24, 1990

Karen J. Wright, RN
5900 N. Calle Tiburon
Tucson, AZ 85704


Dear Karen:

Your request for access to Carondelet St. Mary's Hospital and Health Center for the purpose of conducting the study, "Knowledge, Exercise of Self-Care Agency and Recidivism Levels After Pulmonary Education Program" has been approved.

We will need to coordinate your request for medical records with the schedule of the Medical Records Department. In the past, Medical Records has requested that individuals requiring records for research (1) make their request for records on the appropriate form, (2) limit their request to 20 records each week and (3) allow one week for retrieval of each set of 20 records. Please contact me about access to hospital records prior to beginning record review. I will work with you to facilitate this process with Medical Records.

We wish you much success in your research endeavor. Please let me know when you have completed data collection. Also, please let me know how I might assist you in your plans to share your research findings with the staff at St. Mary's.

Sincerely,



Gerri S. Lamb, PhD, RN
Clinical Director for Research
Professional Nurse Case Manager

GL/pb

*Please let me know if I can help you
in any way.
Gerri*

1601 West
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Road
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622-5833

A Community Hospital and Health Center
Sponsored by the Sisters of St. Joseph of Carondelet

Human Subject Committee

THE UNIVERSITY OF
ARIZONA
 HEALTH SCIENCES CENTER

1690 N. Warren (Bldg. 526B)
 Tucson, Arizona 85724
 (602) 626-6721 or 626-7575

3 April 1990

Karen J. Wright, R.N.
 c/o Gayle Traver, M.S.N., R.N.
 College of Nursing
 Arizona Health Sciences Center

RE: HSC# A90.44 KNOWLEDGE, EXERCISE OF SELF-CARE AGENCY, AND RECIDIVISM
 LEVELS AFTER A PULMONARY EDUCATION PROGRAM

Dear Ms. Wright:

We received your 27 March 1990 letter and accompanying revised consent form for your above referenced project. The procedures to be followed in this study pose no more than minimal risk to participating subjects. Regulations issued by the U.S. Department of Health and Human Services [45 CFR Part 46.110(b)] authorize approval of this type project through the expedited review procedures, with the condition(s) that subjects' anonymity be maintained. Although full Committee review is not required, a brief summary of the project procedures is submitted to the Committee for their endorsement and/or comment, if any, after administrative approval is granted. This project is approved for one year effective 3 April 1990.

The Human Subjects Committee (Institutional Review Board) of the University of Arizona has a current assurance of compliance, number M-1233, which is on file with the Department of Health and Human Services and covers this activity.

Approval is granted with the understanding that no changes or additions will be made in study personnel, to the procedures followed or to the consent form(s) used (copies of which we have on file) without the knowledge and approval of the Human Subjects Committee and your College or Departmental Review Committee. Any research related physical or psychological harm to any subject must also be reported to each committee.

A university policy requires that all signed subject consent forms be kept in a permanent file in an area designated for that purpose by the Department Head or comparable authority. This will assure their accessibility in the event that university officials require the information and the principal investigator is unavailable for some reason.

Sincerely yours,

Milan Novak

Milan Novak, M.D., Ph.D.
 Chairman
 Human Subjects Committee

MN/ms

cc: Departmental/College Review Committee

APPENDIX B
CONSENT FORM

SUBJECT'S CONSENT

KNOWLEDGE, EXERCISE OF SELF-CARE AGENCY AND RECIDIVISM
LEVELS AFTER A PULMONARY EDUCATION PROGRAM

YOU ARE BEING ASKED TO READ THE FOLLOWING MATERIAL TO ENSURE THAT YOU ARE INFORMED OF THE NATURE OF THIS RESEARCH STUDY AND OF HOW YOU WILL PARTICIPATE IN IT, IF YOU CONSENT TO DO SO. SIGNING THIS FORM WILL INDICATE THAT YOU HAVE BEEN SO INFORMED AND THAT YOU GIVE YOUR CONSENT. FEDERAL REGULATIONS REQUIRE WRITTEN INFORMED CONSENT PRIOR TO PARTICIPATION IN THIS RESEARCH STUDY SO THAT YOU KNOW THE NATURE AND THE RISKS OF YOUR PARTICIPATION AND CAN DECIDE TO PARTICIPATE OR NOT PARTICIPATE IN A FREE AND INFORMED MANNER.

PURPOSE

We would like to invite you to volunteer to take part in the research project named above. The purpose of this project is to compare the knowledge level and self-care agency level (a measure of the individual's ability to meet changes in the need for self-care brought about by his/her lung condition) of two groups. One group includes patients who were enrolled in the pulmonary education program, and the second group includes patients who were not in the

program. Rehospitalizations and lengths of stay of the two groups will also be compared.

SELECTION CRITERIA

You are being invited to participate because you were hospitalized for at least four days on the pulmonary unit at St. Mary's Hospital during the period of Feb.- May, 1989 with a diagnosis of COPD (asthma, bronchitis, or emphysema). You were either enrolled in the pulmonary education program or received the usual care. Approximately 40 to 60 subjects will be enrolled in this study.

PROCEDURE

If you agree to participate, you will be asked to agree to the following: complete three questionnaires which are included in this packet and return them by mail in the self-addressed stamped envelope within two weeks. The first questionnaire involves listing the number of times you were hospitalized or visited an emergency room for respiratory problems within the last year. You are also being asked if you have ever been enrolled in a pulmonary education program before, and the highest level of education you have completed. Information such as age, sex, diagnosis, and number of hospitalizations and lengths of stay will be obtained from a review of your medical records. The second

questionnaire involves answering 15 questions (true-false, and multiple choice) which will help the principal investigator get a better idea of what you know about your lung condition. The last questionnaire involves responding to 43 items (on a scale of 1 to 5) which will help the principal investigator determine your level of self-care in maintaining a healthy state. These three questionnaires should take only about 30 minutes for you to complete.

RISKS

Your participation in this study poses no known risks to you. If you should choose not to participate, your decision will not affect your future care in any way.

BENEFITS

Your participation in this study provides no benefits to you other than that the information will be used to help improve patient education at St. Mary's Hospital.

CONFIDENTIALITY

All information will be kept confidential by the principal investigator, Karen J. Wright, RN. A code number will be used on the questionnaires, and all forms will be kept in a locked file cabinet.

PARTICIPATION COSTS

There are no costs to you as a participant of this study.

You can obtain further information from Karen J. Wright BSN RN at (work) 622-5833 ext. 3740 or (home) 887-7773. If you have questions concerning your rights as a research subject, you may call the Human Subjects Committee Office at 626-6721.

AUTHORIZATION

"IN GIVING MY CONSENT BY SIGNING THIS FORM, I AGREE THAT THE METHODS, INCONVENIENCES, RISK AND BENEFITS HAVE BEEN EXPLAINED TO ME AND MY QUESTIONS HAVE BEEN ANSWERED. I UNDERSTAND THAT I MAY ASK QUESTIONS AT ANY TIME AND THAT I AM FREE TO WITHDRAW FROM THE PROJECT AT ANY TIME WITHOUT CAUSING BAD FEELINGS OR AFFECTING MY MEDICAL CARE. MY PARTICIPATION IN THIS PROJECT MAY BE ENDED BY THE INVESTIGATOR OR BY THE SPONSOR FOR REASONS THAT WOULD BE EXPLAINED. NEW INFORMATION DEVELOPED DURING THE COURSE OF THIS STUDY WHICH MAY AFFECT MY WILLINGNESS TO CONTINUE IN THIS RESEARCH PROJECT WILL BE GIVEN TO ME AS IT BECOMES AVAILABLE. I UNDERSTAND THAT THIS CONSENT FORM WILL BE FILED IN AN AREA DESIGNATED BY THE HUMAN SUBJECTS COMMITTEE WITH ACCESS RESTRICTED TO THE PRINCIPAL INVESTIGATOR, KAREN J. WRIGHT RN, OR AUTHORIZED REPRESENTATIVE OF THE NURSING

DEPARTMENT. I UNDERSTAND THAT I DO NOT GIVE UP ANY OF MY LEGAL RIGHTS BY SIGNING THIS FORM. A COPY OF THIS SIGNED CONSENT FORM WILL BY GIVEN TO ME."

Subject's Signature

Date

Parent/Legal Guardian (if necessary)

Date

INVESTIGATOR'S AFFIDAVIT

This consent form has carefully explained to the subject the nature of the above project. I hereby certify that to the best of my knowledge the person who is signing this consent form understands clearly the nature, demands, benefits, and risks involved in his/her participation and his/her signature is legally valid. A medical problem or language or educational barrier has not precluded this understanding.

Signature of Investigator

Date

APPENDIX C
DATA COLLECTION FORMS

DEMOGRAPHIC DATA COLLECTION FORM

Subject I.D. # _____

Tucson Address: _____

Permanent Address: _____

Phone() _____

Phone() _____

Admitting Dx (Targeted Hosp.): _____

Targeted Hospitalization

Date of Admission to Hospital: _____

Date of Discharge: _____

Length of Hospital Stay: _____

Number of Days in P.R.E.P.: _____ (Group I)

No P.R.E.P.: _____ (Group II)

Hospitalizations 6 Months Prior to Target Hosp.: _____

ER visits 6 Months Prior to Target Hosp.: _____

Avg Length of Stay 6 Months Prior to Target Hosp.: _____

Hospitalizations 6 Months After Target Hosp.: _____

ER visits 6 Months After Target Hosp.: _____

Avg Length of Stay 6 Months After Target Hosp.: _____

Hospitalizations 12 Months After Target Hosp.: _____

ER visits 12 Months After Target Hosp.: _____

Avg Length of Stay 12 Months After Target Hosp.: _____

Age: _____ Sex: _____ Marital Status: _____

Prior Rehab Experience: Yes _____ No _____ Inpatient _____
Outpatient _____ Both _____ Date _____Enrolled in Outpt Program After Target Hosp.: Yes _____ No _____
Date _____

Years of Education: _____

Knowledge Score: _____ ESCA Score: _____

Comments:

REPORT OF REHOSPITALIZATIONS

Please answer the following questions regarding hospitalizations and ER visits within the past year. We are also interested if you have ever been enrolled in a pulmonary education program before.

1. In the space provided, please write down the number of times you were hospitalized with respiratory problems within the last year. For each hospitalization, please include the approximate date and about how long you stayed in the hospital. Please include all hospitalizations, not just those at St. Mary's Hospital.

2. Please list the number of times you visited an Emergency Room within the last year due to your respiratory condition. Please list the dates for each Emergency Room visit.

3. Have you been enrolled in a pulmonary rehabilitation program other than one at St. Mary's Hospital?

Yes _____ No _____ Date _____

4. If you answered yes to question 3, please mark the type of program you attended:

Outpatient _____ Inpatient _____ Both _____

5. Please write the total number of years of education you have completed (for example, completion of high school and 2 years of college = 14 years):

APPENDIX D
TEACHING RECORD

PULMONARY REHABILITATION TEACHING RECORD

Date of Admit: _____ Date of Referral: _____

TOPIC	INSTRUCTOR	DATE	OBJ. MET	COMMENTS
Resp. A & P	:	:	:	:
Define Bronchitis, Asthma or Emphysema	:	:	:	:
Signs & Symptoms of Bronchitis, Asthma, or Emphysema	:	:	:	:
Prevention of Asthma: Attack	:	:	:	:
Treatment Applicable: to Patient	:	:	:	:
Use of MDI	:	:	:	:
Breathing Techniques:	:	:	:	:
Controlled Coughing	:	:	:	:
Home Oxygen & Other Respiratory Therapy	:	:	:	:
Diet	:	:	:	:
Medications Applicable to Patient	:	:	:	:
a. Bronchodilators	:	:	:	:
b. Corticosteroids	:	:	:	:
c. Others	:	:	:	:
_____	:	:	:	:
_____	:	:	:	:
Energy Conservation	:	:	:	:
Other _____	:	:	:	:

APPENDIX E
TESTING INSTRUMENTS

KNOWLEDGE QUESTIONNAIRE
adapted from Longstaff, L. J. (1981)

Part A

Directions: Circle the one best answer for each of the following questions.

1. Wheezing sounds during breathing are caused by:
 - a. excess fluid in the lungs.
 - b. collapse of the air sacs.
 - c. narrowing of the airways.
 - d. infection in the air sacs.

2. Breathing exercises are important in:
 - a. strengthening back muscles.
 - b. preventing infection in the lungs.
 - c. helping to control shortness of breath.
 - d. decreasing the amount of secretions in the lungs.

3. The benefits of a productive cough include which one of the following?
 - a. Maintains open airways by removing excess secretions
 - b. Eliminates the need for oxygen
 - c. Opens up the air sacs deep within the lung
 - d. Strengthens the diaphragm so deeper breaths can be taken

4. Oxygen is prescribed for patients when they:
 - a. become short of breath when exercising.
 - b. have a low amount of oxygen in their blood.
 - c. tend to get frequent colds or pneumonia.
 - d. have difficulty taking bronchodilators.

5. Which of the following can be done to thin secretions?
 - a. Increase the intake of fluids
 - b. Decrease the amount of humidity in the home
 - c. Decrease the intake of fluids
 - d. Increase the amount of exercise

6. Which of the following activities can help clear secretions from the airways?
 - a. Walking a little more each day
 - b. Keeping the room air dry
 - c. Using pursed-lip breathing when exercising
 - d. Using a controlled cough

7. To avoid bloating or tiring when eating, one should:
- eat two meals a day.
 - eat meals more quickly.
 - drink fluids during meals.
 - eat small meals more frequently.

Part B

Directions: Answer each of the four parts of the following questions with "yes" or "no". If you feel that the answer is correct, write "yes" in the blank; if you feel it is not correct, write "no".

8. Ways in which you can save yourself energy as you go about your daily activities are:
- allow extra time so that you do not have to rush
 - bend over at the waist to pick up objects
 - avoid lifting and carrying heavy objects
 - when possible, sit down to do your work
9. If you are becoming short of breath, you should:
- sit up and lean slightly forward
 - stay calm and concentrate on your breathing
 - use pursed-lip breathing and try to breathe out slowly
 - lie down with your head elevated on one pillow
10. You should take your antibiotics:
- if your sputum becomes more watery than normal
 - until you begin to feel better
 - when your sputum changes color to yellow or green
 - if you get a fever
11. The breathing medications called bronchodilators:
- relax smooth muscle, opening up the airways
 - make your heart beat slower
 - help fight infections in your lungs
 - help eliminate extra fluid from your body
12. The major side effects of your bronchodilators are:
- upset stomach
 - feeling jittery or nervous
 - difficulty falling asleep
 - swelling of your ankles

13. Signs that your body is retaining excess fluid include:
- your sputum becomes thicker
 - your ankles or fingers become puffy
 - you gain 3 to 5 pounds in a few days
 - you feel unusually dizzy or sleepy .
14. Inhalers are used to:
- deliver medication into the airways
 - increase the amount of blood flowing to the lungs
 - help relieve lung congestion from thick secretions
 - decrease spasms of the walls of the airways.
15. Steroids, such as Prednisone, can:
- irritate the lining of your stomach
 - decrease the swelling in your airways
 - cause increased appetite and weight gain
 - be stopped suddenly when your breathing improves

EXERCISE OF SELF-CARE AGENCY SCALE
by Kearney, B. Y. & Fleischer, B. J. (1979)

Please answer the following questions by circling the appropriate number coinciding with the statement that most applies to you:

- 1 = Very Characteristic of Me
- 2 = Somewhat Characteristic of Me
- 3 = No Opinion
- 4 = Somewhat Uncharacteristic of Me
- 5 = Very Uncharacteristic of Me

- | | | | | | |
|---|---|---|---|---|---|
| 1. I would gladly give up some of my set ways if it meant improving my health. | 1 | 2 | 3 | 4 | 5 |
| 2. I like myself. | 1 | 2 | 3 | 4 | 5 |
| 3. I often feel that I lack the energy to care for my health needs the way I would like to. | 1 | 2 | 3 | 4 | 5 |
| 4. I know how to get the facts I need when my health feels weakened. | 1 | 2 | 3 | 4 | 5 |
| 5. I take pride in doing the things I need to do in order to remain healthy. | 1 | 2 | 3 | 4 | 5 |
| 6. I tend to neglect my personal needs. | 1 | 2 | 3 | 4 | 5 |
| 7. I know my strong and weak points. | 1 | 2 | 3 | 4 | 5 |
| 8. I seek help when unable to care for myself. | 1 | 2 | 3 | 4 | 5 |
| 9. I enjoy starting new projects. | 1 | 2 | 3 | 4 | 5 |

- 1 = Very Characteristic of Me
 2 = Somewhat Characteristic of Me
 3 = No Opinion
 4 = Somewhat Uncharacteristic of Me
 5 = Very Uncharacteristic of Me

- | | | | | | |
|---|---|---|---|---|---|
| 10. I often put off doing things that I know would be good for me. | 1 | 2 | 3 | 4 | 5 |
| 11. I usually try home remedies that have worked in the past rather than going to see a doctor or nurse for help. | 1 | 2 | 3 | 4 | 5 |
| 12. I make my own decisions. | 1 | 2 | 3 | 4 | 5 |
| 13. I perform certain activities to keep from getting sick. | 1 | 2 | 3 | 4 | 5 |
| 14. I strive to better myself. | 1 | 2 | 3 | 4 | 5 |
| 15. I eat a balanced diet. | 1 | 2 | 3 | 4 | 5 |
| 16. I complain a lot about the things that bother me without doing much about them. | 1 | 2 | 3 | 4 | 5 |
| 17. I look for better ways to look after my health. | 1 | 2 | 3 | 4 | 5 |
| 18. I expect to reach my peak wellness. | 1 | 2 | 3 | 4 | 5 |
| 19. When I have a problem, I usually want an expert to tell me what to do. | 1 | 2 | 3 | 4 | 5 |
| 20. I deserve all the time and care it takes to maintain my health. | 1 | 2 | 3 | 4 | 5 |
| 21. I follow through on my decisions. | 1 | 2 | 3 | 4 | 5 |

- 1 = Very Characteristic of Me
 2 = Somewhat Characteristic of Me
 3 = No Opinion
 4 = Somewhat Uncharacteristic of Me
 5 = Very Uncharacteristic of Me

- | | | | | | |
|---|---|---|---|---|---|
| 22. I have no interest in learning about my body and how it functions. | 1 | 2 | 3 | 4 | 5 |
| 23. If I am not good to myself, I believe I cannot be good for anyone else. | 1 | 2 | 3 | 4 | 5 |
| 24. I understand my body and how it functions. | 1 | 2 | 3 | 4 | 5 |
| 25. I rarely carry out the resolutions I make concerning my health. | 1 | 2 | 3 | 4 | 5 |
| 26. I am a good friend to myself. | 1 | 2 | 3 | 4 | 5 |
| 27. I take good care of myself. | 1 | 2 | 3 | 4 | 5 |
| 28. Health promotion is a chance thing for me. | 1 | 2 | 3 | 4 | 5 |
| 29. I have a planned program for rest and exercise. | 1 | 2 | 3 | 4 | 5 |
| 30. I am interested in learning about various disease processes and how they affect me. | 1 | 2 | 3 | 4 | 5 |
| 31. Life is a joy. | 1 | 2 | 3 | 4 | 5 |
| 32. I do not contribute to my family's functioning. | 1 | 2 | 3 | 4 | 5 |
| 33. I take responsibility for my own actions. | 1 | 2 | 3 | 4 | 5 |

- 1 = Very Characteristic of Me
 2 = Somewhat Characteristic of Me
 3 = No Opinion
 4 = Somewhat Uncharacteristic of Me
 5 = Very Uncharacteristic of Me

34. I have little to contribute to
 others. 1 2 3 4 5
35. I can usually tell I am coming down with
 something days before I get sick. 1 2 3 4 5
36. Over the years I have noticed the things
 to do that make me feel better. 1 2 3 4 5
37. I know what foods to eat and keep me
 healthy. 1 2 3 4 5
38. I am interested in learning all that
 I can about my body and the way it
 functions. 1 2 3 4 5
39. Sometimes when I feel sick I ignore
 the feeling and hope it goes away. 1 2 3 4 5
40. I seek information to care for
 myself. 1 2 3 4 5
41. I feel I am a valuable member of my
 family. 1 2 3 4 5
42. I remember when I had my last health
 check and return on time for by next
 one. 1 2 3 4 5
43. I understand myself and my needs
 pretty well. 1 2 3 4 5

APPENDIX F
GOALS AND OBJECTIVES OF PROGRAM

GENERAL EDUCATIONAL GOALS OF P.R.E.P.

The COPD patient will be able to:

1. Correctly state what happens in their specific disease process.
2. Correctly state appropriate treatment modalities specific to their disease process.
3. Correctly state purpose of and correctly perform proper breathing techniques to decrease dyspnea.
4. Correctly state purpose of and perform proper panic control techniques and relaxation techniques to decrease anxiety attacks.
5. Correctly state the medications they are taking, how often and when they should take the medication, along with the purpose for taking the medication.
6. Correctly state the type of diet they are on, and verbalize appropriate understanding of their dietary needs and requirements.
7. Correctly verbalize their understanding of the need for oxygen and other respiratory care related treatments if applicable and the proper use of their respiratory care equipment.
8. Correctly demonstrate the proper technique for administering their aerosolized medication via a metered-dose inhaler.

From P.R.E.P. Syllabus, St. Mary's Hospital

SPECIFIC LEARNER OBJECTIVES FOR P.R.E.P.

The COPD patient will be able to:

1. State cause, signs, symptoms and treatment of asthma. Knows simple anatomy and physiology of respiratory system.
2. State cause, signs, symptoms and treatment of bronchitis and/or emphysema. Knows simple anatomy and physiology of respiratory system.
3. State causes of asthma attacks and ways to avoid them.
4. Demonstrate use of inhaler correctly. Can name own inhaler and how often to use it. Can state purpose of using inhaler.
5. Demonstrate pursed-lip breathing and how it can decrease shortness of breath.
6. State reason to keep airways cleared. Can correctly demonstrate coughing techniques.
7. State signs and symptoms of hypoxia. Able to set oxygen tank at correct liter flow.
8. State ways to decrease SOB during meals. Can state ways to increase calories.
9. State bronchodilators prescribed, purpose, how and when to take them and possible side effects.
10. State prescribed steroids, how and when to take them, and possible side effects.
11. State reason for taking KCl, dosage and possible side effects of low potassium.
12. Name diuretic they are taking, action and possible side effects.
13. State need for energy conservation. Able to increase repetitions of simple upper body exercises and distance ambulated.
14. State ways to relax and how relaxation aids in breathing.

Revised from "St. Mary's Hospital and Health Center Respiratory Teaching Guide"

*Additional items included in the Respiratory Teaching Guide that are not common to all COPD patients were omitted. These include:

tranquilizers and sedatives, mucolytics and expectorants, sexual activity, trach care and suctioning, and travel. Information on these categories are provided to the patients on an individual basis.

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