

The Relationship of Dyspnea and Functional Impairment
to Quality of Life in Persons with Chronic
Obstructive Pulmonary Disease

by

Salomeja Garolis, B.S.N.

A MASTERS RESEARCH PROJECT

Presented to
The Oregon Health Sciences University
School of Nursing
in partial fulfillment
of the requirements for the degree of
Master of Science in Nursing

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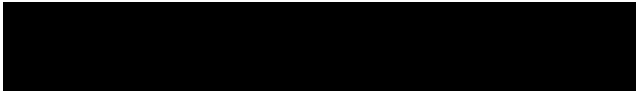
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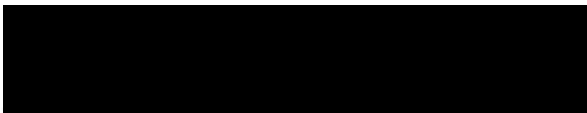
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CHAPTER 1

INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a clinical syndrome comprised of a group of diseases (emphysema, chronic bronchitis) characterized by increased airflow resistance in the airways. Emphysema is the third leading cause of chronic activity limitation and disability days (U.S. Dept. of Health & Human Welfare, 1985, 1986). Additionally, the American Lung Association (1980) estimates that 30,000 individuals die yearly of COPD while 2 million are physically disabled. Work by Kinsman and associates (1973, 1977, 1983) using a symptom checklist for bronchitis, emphysema, and asthma, revealed that dyspnea was the most common and pervasive symptom.

Dyspnea has been associated with physical, social, and emotional changes, including fatigue, inertia, and isolation (Carrieri, Lindsay, & West, 1986). The combined effect of these physical and social changes may negatively affect emotional health, leading to anxiety, depression, and hopelessness (Light, Merrill, Despars, Gordon, & Mutalipassi, 1985), which in turn may reinforce physical and social isolation (Carrieri & Janson-Bjerklie, 1986). In related work by McSweeney and associates (1980, 1982), low life satisfaction was found among individuals with COPD experiencing chronic dyspnea.

Clearly, then, dyspnea is a human response that has the potential to adversely affect the functioning and quality of life of persons

with COPD. However, the relationships among these factors have not been studied.

It was the intent of this research to determine whether a direct or indirect negative relationship exists between dyspnea, functional impairment, and perceived quality of life in subjects with COPD. Knowledge of the relationships among these variables could provide direction for nursing interventions with these patients. Potential interventions could include the skills patients require to manage dyspnea, techniques to mediate and ultimately decrease the sensation of dyspnea, and, lastly, strategies to maintain functional abilities.

Review of Literature

Within the following review, the physiologic basis of COPD will be presented, dyspnea will be defined and the mechanisms of dyspnea discussed. Dyspnea and its subsequent effects on functional impairment are presented. Finally, quality of life is presented and its relationship to COPD explored.

Physiologic Basis for COPD

Initially, the individual with COPD has normal structure of the respiratory system, yet, over time, insidious, irrevocable damage occurs at the histological level. The change develops at the epithelial stage with an increase in mucus production in response to environmental exposure, for example, smoking, and a chronic cough. Increased mucous production incapacitates the cilia, resulting in the

additional response of increased cell division. As greater numbers of cells are produced, the bronchial openings become narrowed and ultimately occluded, resulting in mucus pooling. Over a period of years, the proliferative changes reach the level of the alveoli with resultant loss of alveolar elasticity, alveolar wall destruction, and decreased diffusion capacity. It is at the alveolar level where oxygenation occurs, and through the loss of elastic recoil, the alveoli remain filled with residual air, thereby preventing effective gas exchange. As COPD progresses, extensive destruction of the pulmonary capillary bed occurs. Capillary damage results from the loss of lung parenchyma and weakened alveolar walls. The final outcome is gross enlargement of air space and collapse of airways during expiration (West, 1985). The combined effect of narrowing, occlusion, and loss of elasticity culminate in reduced expiratory flow and diffusion, resulting in decreased oxygenation and hyperinflation of the lungs.

COPD is a combined syndrome of chronic bronchitis and emphysema (ATS, 1983). Bronchitis is characterized by excessive mucous production defined as a productive cough present for at least three months a year for two successive years (ATS, 1983). Associated symptoms include gradually increasing dyspnea with prolonged resolution, weight gain secondary to edema, development of adventitious breath sounds, and, eventually, cyanosis. Bronchitis produces expiratory obstruction through excessive mucous secretions, which results in narrowed airways. Emphysema is an irreversible

enlargement of air spaces distal to the terminal bronchioles as a consequence of alveolar wall destruction and loss of elastic recoil. The hallmark of emphysema is an insidious onset with dyspnea as the predominant symptom. Concurrent symptoms include an increased anterior-posterior diameter of the chest, tachypnea, weight loss, malaise, prolonged expiratory phase and, in late stages, cyanosis. Although each disease has separate characteristics, it is rare that a patient presents with a "pure" disease form. In reality, each patient has a degree of involvement from either of the defined diseases and, as such, no two patients are alike.

Dyspnea

Dyspnea is defined as the subjective perception of the sensation of difficult, uncomfortable breathing by the patient and the reaction of the individual to the sensation (Comroe, 1974). As a subjective sensation, no one definition has been accepted and in practice dyspnea is used to describe respiratory patterns. Mahler, Weinberg, Wells, and Feinstein (1984) reported that physiologic measures such as pulmonary function tests do not correlate with the subjective sensation of dyspnea.

The mechanism of dyspnea remains ambiguous (Gold, 1983; Janson-Bjerklie, Carrieri, & Hudes, 1986; Widinsky, 1979), although three general outcomes are accepted (Rapaport, 1971). Dyspnea first produces discomfort, then an awareness of increased need for ventilation; second, an awareness that an excessive increase in ventilation has

occurred; and last, an awareness of difficulty or discomfort in ventilation. While various theories exist, no one theory explains the origin or clinical manifestation of dyspnea. The medical and scientific community agree that dyspnea develops when an imbalance between ventilatory demand and ventilatory capacity occur (Rapaport, 1971).

Four major theories focus on: (a) stimulation of intrapulmonary stretch, irritant, and J receptors; (b) central nervous system awareness; (c) stimulation of neural muscle and joint receptors within the thorax; and (d) length-tension inappropriateness.

Stimulation of Intrapulmonary Receptors. Intrapulmonary receptors consist of stretch, irritant, and J-receptors, and are located throughout the pulmonary vasculature. Stretch receptors are found in nerve endings of bronchial smooth muscle and are stimulated during inspiration. Stretch receptors regulate the pattern of breathing to inspiratory effort and function as reflex actions to terminate inspiration. The vagal afferent pathway is used as the response to communicate with the neural system and it has been postulated that dyspnea results from the disruption of the pathway (Guz, Noble, & Eisele, 1970; Widdicombe, 1979).

Irritant receptors occur within the nerve endings of airway epithelia. As the name implies, irritant receptor innervation is produced by dust, chemicals, sudden, large changes in lung volume, and bronchial wall stretch. Increased use of irritant receptors is occurs

with decreased lung compliance. Debate exists as to whether the receptors mediate the sensation of dyspnea (Guz et al., 1970; Widdicombe, 1979).

J-receptors are nonmyelinated fibers supplied by the vagus nerve and are found within the location of the pulmonary capillary bed. Studies of the J-receptors have focused on the effects of blocking vagal action to decrease the sensation of dyspnea (Guz et al., 1970). Experimentation on animal models (Jacobs & Comroe, 1971; Widdicombe, 1974) focused on elimination of vagal afferent stimuli, which in some instances produced rapid shallow breathing and apnea.

Central Nervous System Awareness. The central nervous system is multifaceted in respiratory response and is affected by both chemical and neural interaction. Neural awareness of respiration is mediated by chemical components, such as partial pressure of carbon dioxide, arterial pH, buffer systems, pharmacologic agents, blood flow, and hypoxia. Neural receptors include inspiratory, expiratory, and pneumotaxic centers within the medulla, the carotid and aortic bodies, and pulmonary and pressoreceptors that exert a smaller degree of influence (Cherniack & Cherniack, 1974).

The theory involves hypoxemia as a disruptor of nerve potential within the cerebral cortex, resulting in a discharge of impulses via the pyramidal tract to respiratory muscles. Frankstein (1979) postulated that respiratory muscle which was weak would create a perceived inspiratory effort to breathe, followed by inadequate muscle contraction resulting in dyspnea.

Neurological and Joint Receptors. Outside of exercise physiology and the evaluation of exercise as a stress resulting in dyspnea, this theory has not received widespread attention. Comroe (1974) suggested that stimulation of mechanoreceptors found in skeletal muscle and joints would produce increased ventilation prior to the chemical stimulus of acid byproducts from metabolism. Comroe proposed that the sensation of dyspnea arose from muscle stimulation rather than chemosensors.

Length-Tension Inappropriateness. Developed by Campbell, Howell, and associates (1961, 1967), the length-tension has received general acceptance, due in part to the ability to explain the majority of dyspneic origins (Carrieri, Lindsey, & West, 1986). The length-tension theory proposed that the perception of dyspnea is a relationship of tension (pressure) generated by respiratory muscle and a change of length (volume). The length and tension are regulated by muscle spindle fibers within the intercostal muscles. Application of the theory to a disease such as COPD graphically demonstrates the appropriateness of using length-tension to explain dyspnea. COPD results in an increased effort to ventilate, due to airway resistance (tension) and requires an increased volume of air (length) to ventilate functioning alveoli and to compensate for anatomic dead space. This creates a disparity, and the muscle spindle fibers within the intercostals transmit afferent neural messages that result in the conscious awareness of dyspnea (Campbell, 1966; Campbell, Freedman,

Smith, & Taylor, 1961; Campbell & Howell, 1963; Killian & Campbell, 1983; Wiley & Zachman, 1966).

Dyspnea and Functional Status

While medical studies have focused on components to understanding dyspnea via the laboratory environment, nursing has focused on understanding the sensation and management strategies to maintain function. Function is defined as activities of daily living, social interaction, and recreation.

Fagerhaugh (1973) used a descriptive study of 22 subjects with emphysema to describe daily activities and the required balance of time, oxygen consumption, regimen, and mobility. Fagerhaugh provided initial insight into management strategies used by subjects with COPD and their impact on functional ability.

Barstow (1974) investigated coping techniques, defined as activities of daily living (ADL's) related to emphysema. She reported that the impact of the sick role was pronounced in COPD, especially with negative effects on work and recreational roles. Additionally, adjustments in ADL's such as pacing and simplification of activity were required. Barstow implied that coping was enhanced through both social support and the applied interventions based on the nursing process.

Chalmers (1983) also studied 30 adults with COPD to describe coping strategies related to lifestyle changes. A semi-structured interview evaluated the influence of COPD on both subject and family.

Final analysis revealed the use of both cognitive and behavioral coping methods.

Petty and Nett (1984), recognized authorities on the care of COPD patients, have not conducted a formal research program. However, they have provided anecdotal findings on the negative consequences of dyspnea on lifestyle. In brief, they have recounted that dyspnea produces a decrease in activity level, which could result in loss of employment, social withdrawal, and dependency. Ultimately, a loss of self-esteem occurs, thereby further reinforcing the social withdrawal.

Carrieri and Janson-Bjerklie (1984) began preliminary work on dyspnea by identifying the variables of dyspnea, measurement, and management of dyspnea. A 1986 study focused on the sensation of dyspnea within a pulmonary population of 68 subjects. Interviews and the Kinsman symptom checklist for asthma, bronchitis, and emphysema were used to define the sensations. Results indicated that dyspnea clustered around the categories of suffocation, tightness, and congestion, and varied in intensity among the groups. Furthermore, the symptoms were often associated with other physiologic responses such as headache, fatigue, and nausea. A further descriptive study (Carrieri et al., 1986) focused on the management strategies related to dyspnea using the stress and coping paradigm of Lazarus. Sixty-eight pulmonary subjects were interviewed and evaluated for dyspnea using the American Thoracic Society's grade of breathlessness scale and a visual analogue scale. Noteworthy was the influence of dyspnea requiring significant changes in the activities of daily living.

Gift, Plaut, and Jacox (1986) examined psychologic and physiologic factors of dyspnea in 20 elderly subjects with COPD. Instruments included a vertical visual analogue scale, state anxiety scale, brief symptom inventory, Beck's depression inventory, and a peak flow meter. Results were evaluated with grouping of subjects into categories of high, medium, and low dyspnea. Significant findings included the verification that dyspnea did not correspond to respiratory effort as measured by the peak flow meter, and that negative relationships existed among anxiety, somatization, symptom distress, and perceived dyspnea. The small sample size limited generalizability.

Quality of Life

Within the last 20 years, quality of life (QOL) has received intense focus both as a sociological and, increasingly, as an evaluative viewpoint to recommend medical diagnostics and intervention. QOL focuses on affective response and constituent domains. Altose, Cherniack, and Fishman (1985) summarized researchers' viewpoints (Dudley, Glaser, Jorgenson, & Logan, 1980; Kinsman, Yarouh, Fernandez, Dirks, Schocket, & Fukuhara, 1983; Light, Merrill, Despara, Gordon, & Mutalipassi, 1985) that dyspnea is a prominent symptom in COPD with consequent effect on QOL.

Studies of the consequences and management of COPD (Barstow, 1974; Carrieri & Janson-Bjerklie, 1986; Dudley et al., 1980; Fagerhaugh, 1972; Light et al., 1985) serve to illustrate the

shift in health care from quantity to quality of life. Quality of life measures include life satisfaction scales because the measure of satisfaction is within the domain of specific life concerns (Flanagan, 1982).

Life satisfaction studies (Edwards & Klemmack, 1973; Markides & Martin, 1971; Neugarten, Havighurst, & Tobin, 1961; Palmore & Luikart, 1972) focused on determining components of life satisfaction. Broad categories included health, socioeconomic status, activity, and social-psychological factors. Palmore and Luikart (1972) and Markides and Martin (1979) reported health status as most important to their subjects' life satisfaction while Edwards and Klemmack (1973) reported socioeconomic status followed by health as the important variables of life satisfaction.

Quality of life studies drew from the life satisfaction results to further evaluate life domains. Flanagan (1978) examined the general categories and physical and material well-being; relations with other people; social, community, and civic activities; personal development and fulfillment; and recreation. Results from a random sample ($N = 3000$) indicated that health was of primary importance, followed by relationship with a spouse, and material well-being.

QOL studies focused on COPD include those by Hilles (1978), McSweeney, Grant, and Heaton (1982); McSweeney, Heaton, Grant, Cugell, Soliday, and Timms (1980); and Prigatoni, Wright, and Levin (1984). Hilles (1978) examined global domains of life satisfaction with COPD subjects using demographic, social, and health characteristics.

Thirty-two ambulatory male outpatients, aged 37-68 years, were interviewed. Measurement scales included Cantril's ladder of satisfaction and an objective rating of each subject's dyspnea by a physician. Both life satisfaction and self-perceived health were measured by Cantril's ladder. The degree of dyspnea was used as an objective rating of health status. Hilles reported that none of the demographic characteristics were related to life satisfaction. Self-perceived health status was not associated with life satisfaction. This was due in part to the lack of discriminatory power of the measure. The degree of dyspnea was significantly related to life satisfaction. It has been noted that the study evaluated dyspnea from an objective approach rather than as a self-perceived measure that is inherent in the definition of dyspnea.

McSweeney et al. (1980) focused on QOL with 166 patients from a concurrent study of nocturnal oxygen treatment. The Minnesota Multiphasic Personality Inventory (MMPI), the Profile of Mood States (POMS), and the Sickness Impact Profile (SIP) were used to evaluate QOL. QOL was defined as emotional, social, functional, and recreational aspects of daily living. Analysis was accomplished by use of Pearson's r . Results suggested that individuals with COPD were impaired in most areas and that socio-emotional changes may be secondary to lifestyle restriction of the dyspneic COPD subject.

McSweeney et al. (1982) further evaluated QOL by testing 203 patients from the nocturnal oxygen study and 73 healthy subjects matched for age, gender, race, and neighborhood of residence.

Measures included the MMPI, POMS, and SIP as self-report scales. Additionally, the Katz Adjustment Scale was completed by someone who interacted with the subject on a regular basis to provide an objective measure. Correlational analysis and t-tests revealed depression as influencing the subject as well as physical somatization of symptoms and general life dissatisfaction. QOL was affected by the statistical significance of physiological variables, including the degree of pulmonary-cardiovascular function, as well as neurophysiological function. Age and socioeconomic status also influenced QOL in the subjects. McSweeney and associates concluded that COPD affected QOL and that further research remained to be conducted to evaluate the relationships among the variables.

Prigatoni, Wright, and Levin (1984) drew from 985 patients across North America who were participating in a concurrent study of intermittent positive pressure breathing in an attempt to define predictors of QOL. Measures included the SIP, POMS, and Recent Life Changes Questionnaire. Two major conclusions were reached in predicting QOL. First, physical and psychosocial function could be predicted from exercise limitations and tension-anxiety scores. Secondly, severity of disease was not related to limitation of psychosocial function. Prigatoni et al. (1984) emphasized the preliminary nature of the results and the need for further study across the severity of the COPD spectrum to validate the findings.

In summary, the literature consistently identified dyspnea as a pervasive symptom of COPD. Preliminary conclusions have been drawn in

relation to physiological variables and their effect on the components of QOL. The specific correlation of dyspnea as a physiologic variable has not been studied in relation to QOL. Descriptive studies have documented management strategies and the reordering of lifestyle required by dyspnea. However, no relationships have been drawn to QOL. Rather, the trend has been to focus on coping with dyspnea (Carrieri & Janson-Bjerklie, 1986; Chalmers, 1983, 1987 (in press)). The literature further identified a lack of information in relation to severity of either disease process or symptoms as influencing QOL. Lastly, the QOL studies (McSweeney et al., 1980, 1982; Prigatoni et al., 1984) utilized objective measures to evaluate the subjective sensation of dyspnea and the perception of QOL.

Conceptual Framework

The conceptual framework chosen for this research was an integrated model drawn from the literature of chronic illness and QOL. The object was to hypothesize an explanatory relationship between dyspnea (symptom) functional impairment and quality of life.

Quality of life is perceived solely by an individual (Lubkin, 1986) and is influenced by personal value, perspective of the illness, and self-imposed standards (Cluff, 1981). While numerous theories of chronic illness have been proposed, including loss, powerlessness, control, and coping, there is not sufficient focus on individual meaning and interaction with the environment as an effect on QOL. Therefore, symbolic interaction theory, with its focus on individual

construction and assignment of meaning to situation, was chosen to be integrated with quality of life concepts.

Mead (1934) originated the framework of symbolic interactionism with minor revisions by Turner (1978). Three concepts, mind, self, and society, are key to understanding the theory. The mind, also referred to as situational definition, defines the thinking process, perceives and makes choices, and initiates action based on definition of the world. Self is developed from both the assumed role and the integrated viewpoint of others. Although values are reflected as "self" they are a shared part of the society as a whole. Society serves as the milieu of development and also as an association. Mead portrayed an individual living in a world of physical, social, and abstract objects, which could be represented by symbols (words, gestures, pictures). The individual's response to symbols and assigned meaning forms the basis of the theory. It should then be clear that the individual's definition of QOL is constructed by both classification and definition of a situation. Furthermore, this serves as rudimentary insight as to how society's devaluation of chronic illness is incorporated into personal beliefs, thereby resulting in the complex management problems of the chronically ill.

Strauss and Glaser (1975, 1984) studied chronic illness and its subsequent effect on quality of life. They categorized living strategies into eight areas and labelled them: prevention and management of medical crises; control of symptoms; regimen adherence; promotion of decreased social isolation; adjustment to the disease

trajectory; normalizing; economics; and confronting psychological, marital, and familial problems. Lubkin (1986) identified quality of life measures in the general population as the need for maintaining health, financial resources, social approval, self-esteem, and social status. Lubkin agreed with Strauss et al. (1984) that time management, regimens, symptom control, and maintenance of daily living were vital factors in contributing to quality of life in chronic disease. Particular emphasis was given to maintenance of function via symptom management. Carrieri and Janson-Bjerklie (1986) have described how management of dyspnea affects functional and emotional status. McSweeney et al. (1980, 1982) also reported negative life consequences of COPD, but could not explain the variability of individuals who appeared to be managing well. The interaction approach with subsequent individual definition of life quality would have been useful in further analyzing the data and adding to the theoretical base of chronicity.

Application of Theory to Proposed Model

The model was constructed for the purpose of discussing dyspnea as the perceived symptom and the effect of dyspnea on functional impairment and quality of life. Diagrammatic representation of the theory appears in Figure 1 (page 17).

Dyspnea was the first component of the model and was listed as a symptom. The review of literature has shown that dyspnea was a pervasive symptom affecting daily management. The model visualized

Relationship of symptom, functional impairment, and quality of life

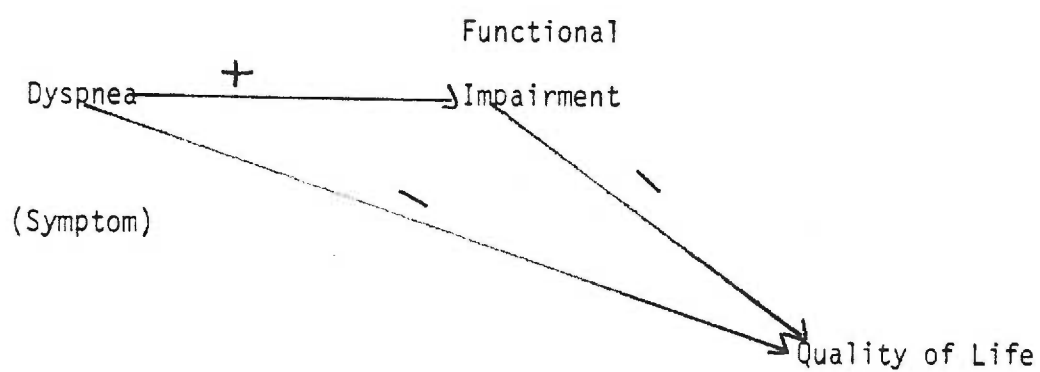


Figure 1. Conceptual Framework.

dyspnea as having a positive relationship with functional impairment (Carrieri et al., 1986; McSweeney et al., 1980, 1982; Prigotani et al., 1984). Dyspnea was also pictured as having a direct negative relationship with quality of life. Functional impairment was negatively associated with quality of life and was derived from the works of Strauss et al. (1984) and McSweeney et al. (1980, 1982). Inherent in the model was the symbolic interactionism and the precept that each individual assigns meaning, based on their definition, to symptom, functional impairment, and quality of life.

The model has implications for the delivery of health care and nursing interventions. Nursing care is based on the human response to actual or potential health problems (American Nurse's Association, 1980). Additionally, nursing care in chronic illness is dedicated toward obtaining the goals of optimal function at the highest level of independence (Lubkin, 1986). Through the nursing process, symptoms and functional impairment can be assessed and managed with outcomes focused on improving quality of life. It was the intent of the research to raise the consciousness of nurses in assessing and planning care of the dyspneic patient, and to focus on symptom management and functional improvement.

Quality of life was the model's endpoint. QOL was incorporated into the model because specific domains of physical well-being, relations with people, participation in social and community activities, and recreation are affected by the functional status of COPD.

Research Question/Hypothesis

It was the intent of this research to determine whether a direct negative relationship existed between the degree of dyspnea as measured by a self-perceived dyspnea visual analog scale, functional impairment as measured by the Human Activity Profile, and perceived quality of life as measured by the Adapted Quality of Life Scale in subjects with chronic obstructive pulmonary disease.

Hypotheses

1. Self-perceived dyspnea has a direct negative relationship with perceived quality of life.
2. Self-perceived dyspnea has a positive relationship with functional impairment.
3. Functional impairment has a negative relationship with perceived quality of life.
4. Self-perceived dyspnea has an indirect negative relationship with perceived quality of life through functional impairment.

CHAPTER 2

METHODS

Design

The study was correlational in nature. Subjects were a convenience sample from the community. Each subject was tested once with three instruments, The Dyspnea Visual Analog Scale, The Human Activity Profile, and the Adapted Quality of Life Scale.

Subjects

The sample consisted of 60 subjects who met the following criteria:

1. Physician documented diagnosis of COPD.
2. Primary diagnosis of COPD (bronchitis-emphysematous type).
3. English speaking.
4. No hospital admissions within 2 weeks prior to interview.
5. No cognitive impairment as ascertained by the interviewer when initially contacted for participation.

Of the 60 subjects, 51 were from private medical practice and 9 were from an ambulatory clinic. Seven potential subjects who were contacted refused based on time constraints (4) and impending medical/surgical therapy (3). Information on demographics appears in Table 1. Age ranged from 47-85 with a mean of 67.41. The sample

The sample

included 31 women and 29 men. Of the subjects, 59 were Caucasian and 1 was Native American. Marital status included 27 subjects who were married, 14 divorced, 18 widowed, and 1 who had never been married. Consistent with the age distribution, 48 subjects were retired, 9 medically disabled, and 3 currently employed. One of the subjects had completed graduate school, 21 were college graduates, and 17 subjects had 1-4 years of college education. Ten subjects had completed high school, while the remaining 11 had 7-11 years of education. Socioeconomic status data noted 38 subjects with an average yearly income of \$5,000-\$14,999. The results of the questionnaire regarding the subjects' lung disease appear in Table 2. Graphic presentation can be found in Figure 2. From the sample of 60, 28 subjects required oxygen, with a flow range of 0.5-6 liters. Twenty-three of the subjects used oxygen continuously, 3 on an as-needed basis, and 2 with activity. From the total sample, 5 subjects still smoked cigarettes etc. Fifty-two stated that they had quit. Three subjects had no history of tobacco use. Pack history ranged from 0.25-3 packs per day, with a mean consumption of 1.30 packs per day ($SD = .642$). Mean years of smoking was 35.49 ($SD = 2.05$), with a range of 3-60 years. Sixteen subjects from the sample had attended a formal pulmonary education program. Self-perceived length of disease (breathing difficulties) ranged from 1-30 years with a mean of 6.95 ($SD = 5.21$).

The data regarding subjects' self-perceptions of dyspnea are summarized in Table 3.

TABLE 1
DEMOGRAPHICS OF SAMPLE

(N = 60)

CHARACTERISTIC	FREQUENCY	PERCENT
<u>Age</u>		
47-62	18	30.0
63-70	19	32.0
71-85	23	38.0
<u>Race</u>		
Caucasian	59	98.3
Black	0	0.0
Spanish American	0	0.0
American Indian	1	1.7
<u>Gender</u>		
Male	29	48.3
Female	31	51.7
<u>Marital Status</u>		
Married	27	45.0
Separated	0	0
Divorced	14	23.3
Widowed	18	30.0
Single (never married)	1	1.7
<u>Employment</u>		
Retired	48	80.0
Disabled	9	15.0
Working	3	5.0
Unemployed	0	0.0
<u>Education</u>		
Professional/Grad. School	1	1.7
College Graduate	21	35.0
1-4 Years College	17	28.3
High School	10	16.7
Grades 10-11	9	15.0
Grades 7-9	2	3.3
<u>Income (\$)</u>		
< 4,999	1	1.7
5,000 - 9,999	21	35.0
10,000 - 14,999	17	28.3
15,000 - 19,999	10	16.7
20,000 - 24,999	9	15.0
25,000 - 39,999	2	3.3
> 40,000	0	0.0

TABLE 2
PULMONARY CHARACTERISTICS OF SUBJECTS

(N = 60)

CHARACTERISTIC	FREQUENCY	PERCENT
<u>Use of Oxygen</u>		
Yes	28	46.7
No	32	53.3
<u>Liter Flow of Oxygen</u>		
None	32	53.3
0.5	1	1.7
1.0	8	13.3
1.5	5	8.3
2.0	11	18.3
3.0	1	1.7
4.0	1	1.7
6.0	1	1.7
<u>Use of Oxygen</u>		
Continuous	23	38.3
With activity only	2	3.3
PRN	3	5.0
Not at All	32	53.3
<u>Cigarette Smoking</u>		
Currently smoking	5	8.3
Quit	52	86.7
Never smoked	3	5.0
<u>Participation in Pulmonary Rehabilitation Education Program</u>		
Yes	16	26.7
No	44	73.3

Data Collection Instruments

Instruments used in the study included a self-perceived dyspnea visual analog scale, self-reported Human Activity Profile, self-perceived Adapted Quality of Life Scale, and a demographic profile. Self-report and self-perceived measures were selected because the operational definitions within the study were subjective for dyspnea and QOL.

A review of literature suggested that the visual analog scale is more sensitive to self-perception when categorization is avoided with word or numerical descriptors (Joyce, 1975). Furthermore, a vertical format had produced slightly higher means (Downie, 1978) than a horizontal presentation (11.05 and 10.85, respectively). Gift et al. (1986), who studied a COPD population, reported that the vertical scale was easier to comprehend for the subjects, although no reliability data was published. Janson-Bjerklie et al. (1986) established concurrent validity of the visual analog scale ($r = .40$, $p = .001$) to the Grade of Breathlessness Scale. The visual analog scale as a subjective rating has validity (McGuire, 1978), while reliability fluctuates with different concepts (Borg, 1974).

The dyspnea visual analog scale is a self-report measure of perceived dyspnea. Table 3 displays the visual analog scale scores for the sample. A 100 mm vertical line with anchor words "no shortness of breath" at one end and "very severe shortness of breath"

TABLE 3
SCALE SCORES FOR VISUAL ANALOG SCALES

(N = 60)

SCALE	RANGE (mm)	MEAN	SD
Visual Analog Scale -- Shortness of Breath Today	6 - 94	57.73	22.17
Visual Analog Scale -- Shortness of Breath Over Last Year	18 - 87	59.95	18.25
Visual Analog Scale -- Shortness of Breath with Activities of Daily Living	28 - 98	71.66	17.53

at the opposite end was used as the continuum of intensity. No descriptive words or phrases were placed along the line. The term "shortness of breath" was used synonymously to mean "dyspnea," because the average layperson was not familiar with the medical definition. Subjects were asked to mark a line through the point at which they perceived their dyspnea to be in response to three questions:

1. How short of breath do you feel with most day-to-day activities?
2. How short of breath do you feel today?
3. How short of breath have you felt on most days during the past year?

Separate scales were used for each question (Appendix A). A sample question unrelated to dyspnea was included with the directions.

The Human Activity Profile (HAP) is a self-administered paper and pencil test consisting of 94 items that measure functional status and requires 15 minutes to complete (Appendix B). The items estimate the impact of dyspnea on physical lifestyle and are scored as activities that the subject is still doing, quit doing, or never did. The HAP produces two scores, a maximum current activity, which is the highest level of activity a person is still able to perform, and a normative impairment index. The normative impairment index (NII) is calculated by subtracting the maximum current activity score from the number of items the individual has stopped doing below the maximum activity (HAP manual, 1986).

Interpretation of the NII is straightforward--a lower score means greater functional impairment. The NII is more sensitive to impairment and as such a more accurate measure of functional impairment than the maximum current activity score (HAP manual, 1986).

The HAP was chosen because it is a paper and pencil test not requiring physical exertion. Daughton, Fix, Kass, Bell, and Patil (1982) correlated the HAP with maximal oxygen consumption during exercise tolerance programs. The subjects (39) were from the COPD population. Initial results yielded validity of Pearson's r at .83 ($p < .01$) (Daughton et al., 1982). The HAP was further validated with forced expiratory volume measurement on 41 COPD subjects and correlation of .57 $p < .05$ was obtained (Daughton, Fix, Cass, McDonald, & Stevens (1983)).

The difference in the two studies was attributed to the fact that the forced expiratory volume measured only one aspect of pulmonary function, which might not necessarily reflect the comprehensiveness of either HAP or maximal oxygenation. Since those studies, reliability of the maximum current activity and normative impairment index has been established at r .84 and r .79, respectively (alpha levels not published, HAP manual, 1986).

As a test that has been developed in the last 7 years, the final 17 items focus on physical activities and physical fitness. While in the normative stages, Daughton established that approximately 55% of older healthy respondents (age 60 or greater) never had performed

intense physical activity outside of swimming 25 yards. While this is of interest, it is not viewed as a threat to use of the HAP in the study, since Daughton also established that climbing 50 steps nonstop (item 74) significantly differentiated ($p < .01$) COPD subjects from the other impaired and healthy patient groups (HAP manual, 1986).

The Adapted Quality of Life Scale (A-QOLS) is a 15-item scale requiring 10 to 15 minutes to complete and uses Flanagan's (1982) domains of life quality (Appendix C). Five ranks of importance--not important to very important--comprise one response range. The A-QOLS scale is adapted in that the original satisfaction ratings of "needs being met very well" or "not at all" have been changed to a 7-point "delighted-terrible" scale. The construct validity of the 7-point satisfaction scale was established by Andrews and Withey (1976) using the multitrait-multimethod testing. This was done in order to broaden the affective response range. The A-QOLS has a possible range of 15-105 with higher scores signifying a higher perceived quality of life. Reliability of the tool for use in one chronic population was established by Burckhardt (unpublished manuscript) using 122 rheumatoid arthritic subjects. Internal consistency of Chronbach's Alpha = 0.84 was obtained and a 4-6 week retest consistency of $\alpha = 0.85$.

Demographic data were collected on each subject (Appendix D). Questions with a respiratory focus examined smoking history, attendance at formal pulmonary rehabilitation classes, and use of oxygen (Table 2).

Procedures

Potential subject names were provided by pulmonologists from three tertiary care centers in a metropolitan area. Potential subjects were initially contacted by telephone to screen for cognitive impairment and to obtain verbal consent for participation. Subjects were told that the interview would take place at their home or other location of their choice and last no longer than 1 hour. In order to eliminate any possible sensitizing effect of dyspnea focus, the scales were administered in random order with each subject.

Data collection occurred over three months, June 1987 - August 1987, in which the incidence of pneumonia, flu, and colds is limited and adverse weather conditions that could impact the health status of the subjects are not pronounced.

Setting/Protection of Human Subjects

The subjects were interviewed and tested either in the home or a mutually agreed upon location, date, and time. Subjects resided in a metropolitan area. Fifty-seven subjects were interviewed in their home. Three subjects preferred to meet the investigator at a local medical center instead of their residence.

Subjects were fully informed about the study and signed an informed consent form (Appendix E). Anonymity was guaranteed through use of code numbers in completing the questionnaires.

Data Analysis

This study was correlational in nature. Pearson's correlation was the statistic used to evaluate the first three hypotheses. Partial correlation was used to analyze the fourth hypothesis. The alpha level for significance was set at .01.

CHAPTER 3

RESULTS, DISCUSSION, AND IMPLICATIONS

Results

All four hypotheses were supported. Self-perceived dyspnea had a significant direct negative relationship with perceived quality of life. Self-perceived dyspnea had a significant positive relationship with functional impairment. Functional impairment had a significant negative relationship with perceived quality of life. Dyspnea had a significant indirect negative relationship with perceived quality of life through functional impairment.

Discussion

This section discusses the findings of the study, potential limitations of both the methods and instruments. The relationship of the results to the previously discussed literature are presented.

Hypothesis 1. Self-perceived dyspnea will have a direct negative relationship with perceived quality of life. This hypothesis was supported in the predicted direction ($r = -0.57$, $p < .01$). According to the results, the higher the perceived dyspnea, the lower the quality of life.

The Adapted Quality of Life Scale had a scoring range of 43-92. This sample had a mean score of 74.0. Internal consistency of the

scale was 0.84. As an adapted measure no standard or normal range exists for either a healthy or impaired population. However, Burckhardt (1987, work in progress) has applied the scale with four chronic illness populations and has obtained similar means.

To date, no previous study has examined the relationship between self-perceived dyspnea and QOL. Although Hilles (1978) examined life satisfaction in COPD, she utilized a physicians' rating of the severity of dyspnea and reported a negative association between the two variables. This current study, while using the subjects' own perception of dyspnea and a different life quality scale, supports Hilles's research in that as dyspnea was rated to be more severe, life satisfaction decreased. Additionally, quality of life studies, termed "life satisfaction" by the researchers (Edwards & Klemmack, 1973; Flanagan, 1978; Palmore & Luikert, 1972), noted that health status was a primary factor in predicting life satisfaction. Although dyspnea in and of itself is not a health status measure, dyspnea is an important physiologic development to consider in COPD, especially in light of the detailed information provided by Fagerhaugh (1973), and Carrieri and Janson-Bjerklie (1984, 1986). Subjects in this study reported their current dyspnea level to be moderate. During the course of data collection the visual analog scale was randomly administered; that is, no predetermined sequence of instrument presentation existed. It is believed that this method controlled for sensitization of the subject to the dyspneic sensation. To exclude the possibility of extraneous variables affecting quality of life, the demographic information was

analyzed. Table 4 summarizes these data results. No significant correlations were noted.

A study by McSweeney et al. (1982) analyzed the severity of disease (COPD) and subsequent effect on quality of life. It is important to differentiate the fact that disease severity in McSweeney's study was an objective measure of physiological function (maximum exercise tolerance, oxygen saturation, resting heart rate, and predicted forced expiratory volume), while dyspnea was a subjective report. McSweeney's results indicated that life quality is affected by disease severity. This study noted similar results.

Additionally, during the course of data collection it was noted that the subjects viewed their overall health as better, worse, or the same as one year ago. This information was obtained when subjects completed the dyspnea visual analog scale, which asked them to rate their dyspnea level over the last year. To further examine the effect of dyspnea on quality of life, the sample was grouped into three categories. The categories were labelled "worse over the last year" ($n = 15$), "the same over the last year" ($n = 36$), and "better over the last year" ($n = 9$). The categories were determined by a 10 mm change in the visual analog scale of current dyspnea level and dyspnea level over the last year. Table 5 presents the range of scores for each group. The group labelled "better" had the least amount of self-perceived dyspnea, were less functionally impaired, and QOL scores were the highest. Conversely, the group labelled "worse" had the highest scores of self-perceived dyspnea, were functionally impaired, and had

TABLE 4

CORRELATION BETWEEN SELECTED VARIABLES AND
THE ADAPTED QUALITY OF LIFE SCALE

VARIABLE	A-QOL
Human Activity Profile (NII)	-0.632*
Visual analog scale--shortness of breath today	-0.579*
Income	0.236
Education	-0.087
Age	-0.014
Gender	0.072
Marital status	0.037
Smoking history	-0.137
Length of disease--self-perceived	0.150

* $p < .01$

TABLE 5
DYS-PNEIC GROUPINGS AND RANGE OF INSTRUMENT SCORES

Variable	A-QOL	HAP	VAS
Worse	54-81	6-52	44-90 mm
Same	43-89	2-73	14-94 mm
Better	69-92	20-55	6-69 mm

low QOL scores. These data support the hypothesis. The dyspneic groupings were arbitrary and 10 mm may not have been a sensitive enough marker to clearly differentiate the subjects. This may explain the variability of scores in the group labelled "same." Consideration should also be given to the possibility of outside factors that were not measured. For example, subjects volunteered anecdotes that a change in treatment regimen, co-morbidity, change in their support system, or a change in socioeconomic status affected their lives. Future studies may focus on these and other variables. Based on the obtained scores, self-perceived dyspnea has a negative relationship with QOL.

Hypothesis 2. Self-perceived dyspnea has a positive relationship with functional impairment. This hypothesis was supported by the data ($r = +0.63$, $p < .01$). Similar findings have been reported by McSweeney et al. (1980) and Burckhardt (1985). Burckhardt analyzed the relationship of pain and functional impairment to QOL in subjects with arthritis. She reported a significant correlation ($r = 0.52$, $p < .01$) between pain and functional impairment. While this study examined self-perceived dyspnea and functional impairment, a similar correlation was obtained ($r = 0.63$, $p < .01$). In addition, researchers have also focused their efforts on describing and analyzing coping, functional impairment, and dyspnea (Carrieri & Janson-Bjerklie, 1986; Chalmers, 1983; Fagerhaugh, 1973), but have not specifically examined the effect of dyspnea. This study raises the possibility of studying the mediating effect of coping with dyspnea and subsequent quality of life outcomes.

The functional impairment score indicates a severely functionally impaired sample in relation to Daughton's sample. Daughton et al. (1982) reported a mean normative impairment index of 72.9 for a sample of 39 pulmonary rehabilitation subjects as compared to a 31.30 mean normative impairment index for the current study ($N = 60$). Daughton's 1986 study, which reported only median scores, resulted in a normative impairment index of 51.5 for 30 COPD subjects and 72 for 102 healthy elderly, as contrasted to a median of 29.5 for this study sample. The partial difference can be explained by examining the two samples. Daughton limited his subjects to ambulatory COPD rehabilitation patients, thereby essentially excluding the homebound subject. The present study collected data at each subject's home and had almost double the sample size. Daughton reported results as a correlation, as does this study.

Hypothesis 3. Functional impairment has a negative relationship with perceived quality of life. This hypothesis was supported ($r = -0.63$, $p < .01$). The result is comparable to McSweeney et al. (1980), who suggested that improvement in various aspects of daily living would influence quality of life. Both Palmore and Luikart (1972) and Edwards and Klemmack (1973) identified the importance of activity, both within and outside the family, as influencing life satisfaction. This was reported anecdotally by some of the subjects as well as by Petty and Nett (1984). The strength of the obtained relationship potentially could be increased through the use of two impairment scales--a scale to measure daily activities and a scale to

measure recreational and work impairment. This hypothesis is in agreement with the previous life satisfaction studies (Edwards & Klemmack, 1973; Flanagan, 1982; Palmore & Luikart, 1972) and lends support to their premise that social, civic, familial, and recreational activities are domain factors contributing to life satisfaction.

Hypothesis 4. Self-perceived dyspnea has an indirect negative relationship with perceived quality of life through functional impairment. This hypothesis was supported by the data (partial correlation = -0.42, $p < .01$) and suggests that dyspnea has a pervasive effect on quality of life. The influence of functional impairment was statistically controlled by partial correlation. Dyspnea continued to have a significant negative relation with QOL. This result supports the reports of McSweeney et al. (1980, 1982). They examined QOL, daily activity, and severity of disease. Their results provided beginning evidence that QOL is influenced by the lifestyle restrictions (activities of daily living) imposed by dyspnea. In addition, descriptive studies (Chalmers, 1983; Fagerhaugh, 1973) reported a reordering of lifestyle and activities of daily living secondary to dyspnea. Both researchers suggested that QOL was negatively affected but did not pursue their findings. This hypothesis supports their findings.

Implications

The findings of this study provide a basis for further research to further evaluate the effect of dyspnea and functional

impairment on quality of life. This can be best discussed by examining the potential implications of each hypothesis.

Hypothesis 1 examined the effect of dyspnea on quality of life and found a significant negative relationship. Future work could focus on the skills patients develop to manage dyspnea, if those skills are effective, and furthermore if self-taught skills are more effective than current nursing interventions. For example, pursed lip breathing is often taught as one way to manage dyspnea. Perhaps some other technique that is self-taught or patient-taught is more effective. The research paradigm of coping with dyspnea needs to be linked to quality of life in order to examine the effect of coping on quality of life outcomes. While nursing cannot change the underlying disease process, nursing can research and apply interventions to assist in the management of the dyspneic sensation. The research base would positively influence practice. Additionally, the theoretical construct would be expanded for future practitioners.

Hypothesis 2 suggested that increased dyspnea is associated with increased functional impairment. This finding further supports the need for nursing to research dyspnea interventions, either patient or nurse-developed, to diminish the sensations. Future studies could then examine if a decrease in perception of dyspnea results in increased functional ability. Nursing has abdicated parts of the functional strategies to the rehabilitation services. Now is the time to reclaim the teaching and review the techniques for effectiveness, as well as their effect on dyspnea. A potential research approach,

which has had success in the social science, is the self-efficacy paradigm. Associated with this are specific techniques of behavior and cognitive modifications. Kaplan, Atkins, and Reinsch (1984) have successfully used the paradigm to increase exercise program compliance in subjects with COPD. Their results infer the promise of self-efficacy toward other arenas, of which functional status and dyspnea management are prime areas of focus. This focus is directly within the scope of nursing research and could possibly assist in some strategy evaluation or development to decrease or control the sensation of dyspnea. Again, it is the research base that would influence nursing practice.

Hypothesis 3 suggested that as functional impairment increases quality of life decreases. The variable for nursing focus is the functional impairment and noting the importance of restoring or at the very least maintaining function. It is hoped that the continued use of the Human Activity Profile would accurately identify a baseline functional ability and, furthermore, provide a basis for achievement of function following exacerbation. Moreover, the Human Activity Profile could be the assessment whereby goals are contracted in an attempt to return to a previous activity. It is presumed that such an achievement would increase life satisfaction and thereby affect quality of life. Nursing has the opportunity to positively influence patient outcomes through a research-based practice.

Hypothesis 4 stated that dyspnea has an indirect effect on quality of life through functional impairment. The implication calls

nursing to review not one but various factors in a patient and to use the nursing process, particularly the assessment, to plan nursing care. This study utilized the human activities profile as one way to measure functional states. Future work will need to focus on how the information can be used. For example, the assessment of mild dyspnea and functional status as impairment could lead to targeted interventions, that is, mild impairment could focus on decreasing environmental exposure and planning activities. Moderate impairment could provide teaching strategies and reinforcement. Severe dyspnea might focus on both end-stage care and emotional support. Perhaps the interventions applied at the functional level such as graduated activity would then affect the degree of dyspnea. While this is currently conjecture, research would provide some answers to guide practice and application of specific interventions. Ultimately, it is through the scientific method that nurses will treat the human response of dyspnea.

The following factors may have influenced the results. First, the effect of mood (depression) was not controlled. both Sexton (1983) and Light et al. (1985) discussed the prevalence of depression in COPD. It is recommended that future studies account for or incorporate a measure to evaluate the effect of depression upon the other variables. This sample had 29 men and 31 women, while within the COPD population men are more frequently affected. In addition, the educational achievement of the sample was higher than the general population. These characteristics were attributed to the nature of

the nonrandom sample and subjects' self-selection for participation. Social desirability and interviewer presence might have affected the responses to questions. However, this is believed to be minimal due to the honest and complete responses from each subject. Subject fatigue was not believed to have affected the responses because of ongoing assessment throughout the interview, as well as Sexton's (1983) report that dyspneic subjects could tolerate a 1½-hour open-ended interview. Thus, any generalizations made from this study should be interpreted within the limitations of the sample.

This correlational study is preliminary in evaluating the effect of self-perceived dyspnea and functional impairment on quality of life. This research suggests a moderate association between the variables. Replication of the study using a random and larger sample size are suggested. Future studies should attempt to control for the influence of psychological state.

Once this has been done, then the focus can turn to research and evaluation of nursing interventions. It is the nursing process that guides practices and assists individuals in the management of their illness. This research established an association between dyspnea, functional impairment, and quality of life. Now the need is for further research on the components of the nursing process, especially an evaluation of current dyspnea management strategies and functional status interventions, the efficacy of those interventions, and the development of further interventions to alter quality of life. Such research would both add to the theoretical knowledge of dyspnea and

stimulate further research, thereby modifying practice. While such goals are feasible, albeit long-term, they can be achieved to better understand the complexity of dyspnea.

This study correlated the relationship of dyspnea and functional impairment to quality of life. It was found that dyspnea had a negative impact for the sample. The immediate effect of this research is an increased awareness of the human response to the consequences of dyspnea on quality of life in persons with chronic obstructive pulmonary disease.

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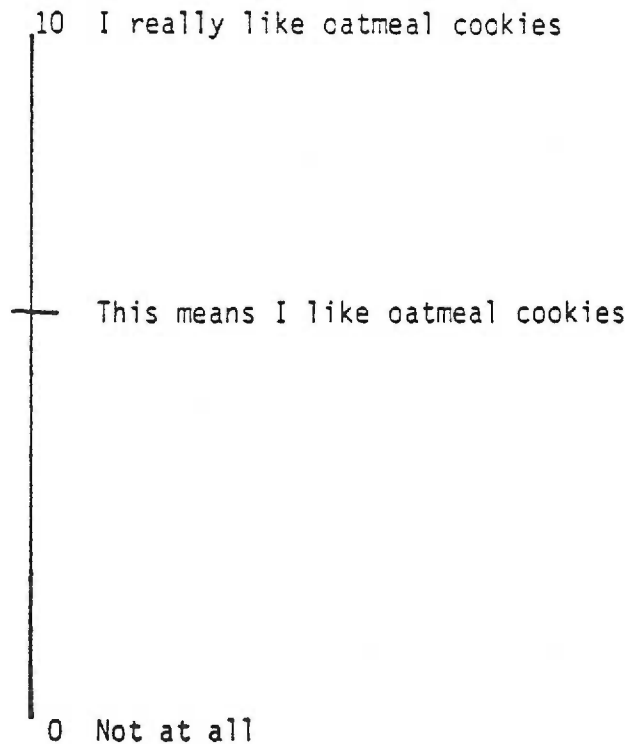
APPENDICES

APPENDIX A

DYSPNEA VISUAL ANALOG SCALE

Directions: In answering the following questions, place a mark on the line between 0 (no shortness of breath) and 10 (very severe shortness of breath).

Example: Indicate how much you like oatmeal cookies.



1. Indicate how you feel today.

10 Very severe shortness of breath

0 No shortness of breath

2. Indicate how you have felt on most days during the past year.

10 Very severe shortness of breath

0 No shortness of breath

3. Indicate how you feel day to day with activity.

10 Very severe shortness of breath

0 No shortness of breath

APPENDIX B

INSTRUCTIONS

Please check each activity according to these directions:

Check Column 1 ("Still Doing This Activity") if:

You completed the activity unassisted the last time you had the need or opportunity to do so.

Check Column 2 ("Have Stopped Doing This Activity Because of Shortness of Breath") if:

You have engaged in the activity in the past, but you probably would not perform the activity today even if the opportunity should arise.

Check Column 3 ("Never Did This Activity") if:

You have never engaged in the specific activity.

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HUMAN ACTIVITY PROFILE

By David M. Daughton and A. James Fix, Ph.D.

Name _____ Age _____ Male _____ Female _____ Smoker _____ Non-Smoker _____
 (Optional)
 Occupation _____ Married _____ Single _____ Separated/Divorced _____
 Any Chronic Ailments? Yes _____ No _____ Highest school grade completed _____

	Still Doing This Activity	Have Stopped Doing This Activity	Never Did This Activity
1. Getting in and out of chairs or bed (without assistance)			
2. Listening to the radio			
3. Reading books, magazines or newspapers			
4. Writing (letters, notes)			
5. Working at a desk or table			
6. Standing (for more than one minute)			
7. Standing (more than five minutes)			
8. Dressing or undressing (without assistance)			
9. Getting clothes from drawers or closets			
10. Getting in or out of a car (without assistance)			
11. Dining at a restaurant			
12. Playing cards/table games			
13. Taking a bath (no assistance needed)			
14. Putting on shoes, stockings or socks (no rest or break needed)			
15. Attending a movie, play, church event or sports activity			
16. Walking 30 yards (27 meters)			
17. Walking 30 yards (non-stop)			
18. Dressing/undressing (no rest or break needed)			
19. Using public transportation or driving a car (100 miles or less)			
20. Using public transportation or driving a car (99 miles or more)			
21. Cooking your own meals			
22. Washing or drying dishes			
23. Putting groceries on shelves			

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	Still Doing This Activity	Have Stopped Doing This Activity	Never Did This Activity
24. Ironing or folding clothes			
25. Dusting/polishing furniture or polishing cars			
26. Showering			
27. Climbing six steps			
28. Climbing six steps (non-stop)			
29. Climbing nine steps			
30. Climbing 12 steps			
31. Walking 1/2 block on level ground			
32. Walking 1/2 block on level ground (non-stop)			
33. Making a bed (not changing sheets)			
34. Cleaning windows			
35. Kneeling, squatting to do light work			
36. Carrying a light load of groceries			
37. Climbing nine steps (non-stop)			
38. Climbing 12 steps (non-stop)			
39. Walking 1/2 block uphill			
40. Walking 1/2 block uphill (non-stop)			
41. Shopping (by yourself)			
42. Washing clothes (by yourself)			
43. Walking one block on level ground			
44. Walking two blocks on level ground			
45. Walking one block on level ground (non-stop)			
46. Walking two blocks on level ground (non-stop)			
47. Scrubbing (floors, walls, or cars)			
48. Making beds (changing sheets)			
49. Sweeping			
50. Sweeping (five minutes non-stop)			
51. Carrying a large suitcase or bowling (one line)			
52. Vacuuming carpets			
53. Vacuuming carpets (five minutes non-stop)			
54. Painting (interior/exterior)			
55. Walking six blocks on level ground			

		Have Stopped		
		Still Doing This Activity	Doing This Activity	Never Did This Activity
56.	Walking six blocks on level ground (non-stop)			
57.	Carrying out the garbage			
58.	Carrying a heavy load of groceries			
59.	Climbing 24 steps			
60.	Climbing 36 steps			
61.	Climbing 24 steps (non-stop)			
62.	Climbing 36 steps (non-stop)			
63.	Walking one mile			
64.	Walking one mile (non-stop)			
65.	Running 110 yards (100 meters) or playing softball/baseball			
66.	Dancing (social)			
67.	Doing calisthenics or aerobic dancing (5 minutes non-stop)			
68.	Mowing the lawn (power mower, but not a riding mower)			
69.	Walking two miles			
70.	Walking two miles (non-stop)			
71.	Climbing 50 steps (2+ floors)			
72.	Shoveling, digging or spading			
73.	Shoveling, digging or spading (five minutes non-stop)			
74.	Climbing 50 steps (non-stop)			
75.	Walking three miles or golfing 18 holes without a riding cart			
76.	Walking three miles (non-stop)			
77.	Swimming 25 yards			
78.	Swimming 25 yards (non-stop)			
79.	Bicycling one mile			
80.	Bicycling two miles			
81.	Bicycling one mile (non-stop)			
82.	Bicycling two miles (non-stop)			
83.	Running or jogging 1/4 mile			
84.	Running or jogging 1/2 mile			
85.	Playing tennis or racquetball			
86.	Playing basketball/soccer (game play)			
87.	Running or jogging 1/4 mile (non-stop)			
88.	Running or jogging 1/2 mile (non-stop)			

	Still Doing This Activity	Have Stopped Doing This Activity	Never Did This Activity
89. Running or jogging one mile			
90. Running or jogging two miles			
91. Running or jogging three miles			
92. Running or jogging one mile in 12 minutes or less			
93. Running or jogging two miles in 20 minutes or less			
94. Running or jogging three miles in 30 minutes or less			

APPENDIX C

Here is a list of things that some people have said are important to their quality of life. Please read each item and first circle the one letter that indicates how important the item is to you. Then rate how satisfied you are with each area by circling one number. Please try to answer each item.

	IMPORTANCE						SATISFACTION					
	Very Important	Important	Moderately Important	Slightly Important	Not Important	Delighted	Pleased	Mostly Satisfied	Mixed (about equally satisfied & dissatisfied)	Mostly Dissatisfied	Unhappy	Terrible
1. Material comforts - shelter, food	V	I	M	S	N	7	6	5	4	3	2	1
2. Health - being physically fit	V	I	M	S	N	7	6	5	4	3	2	1
3. Relationships with relatives	V	I	M	S	N	7	6	5	4	3	2	1
4. Having and rearing children	V	I	M	S	N	7	6	5	4	3	2	1
5. Close relationship with spouse or significant other	V	I	M	S	N	7	6	5	4	3	2	1
6. Close friends	V	I	M	S	N	7	6	5	4	3	2	1
7. Helping and encouraging others	V	I	M	S	N	7	6	5	4	3	2	1
8. Participating in organizations	V	I	M	S	N	7	6	5	4	3	2	1
9. Learning - attending school	V	I	M	S	N	7	6	5	4	3	2	1
10. Understanding yourself	V	I	M	S	N	7	6	5	4	3	2	1
11. Work - job or in home	V	I	M	S	N	7	6	5	4	3	2	1
12. Expressing yourself creatively	V	I	M	S	N	7	6	5	4	3	2	1
13. Socializing	V	I	M	S	N	7	6	5	4	3	2	1
14. Reading, listening to music or observing entertainment	V	I	M	S	N	7	6	5	4	3	2	1
15. Participating in active recreation	V	I	M	S	N	7	6	5	4	3	2	1

APPENDIX D

DEMOGRAPHICS

Date of birth: _____

Sex: Male _____
 Female _____

Marital Status: Single _____
 Married _____
 Widowed _____
 Separated _____
 Divorced _____

Race: White _____
 Black _____
 Asian _____
 Other _____

Highest grade of
school completed: _____

Income: \$ 0 - 4,999 _____
 \$ 5,000 - 9,999 _____
 \$10,000 - 14,999 _____
 \$15,000 - 19,999 _____
 \$20,000 - 24,999 _____
 More than 25,000 _____

Have you attended a pulmonary rehabilitation program?

No _____

Yes _____ What year? _____

Do you use oxygen? No _____

Yes _____

What liter flow? _____

When? _____

Do you smoke? No _____

Yes _____

How many packs per day? _____

How long have you been smoking? _____

How long have you had your lung disease? _____ years

APPENDIX E

THE OREGON HEALTH SCIENCES UNIVERSITY

School of Nursing
Office of Research Development
and Utilization

3181 S.W. Sam Jackson Park Road Portland, Oregon 97201 (503) 225-7796

INFORMED CONSENT FORM

I, _____, herewith agree to serve as a subject in the investigation named "The Relationship of Dyspnea and Functional Impairment to Perceived Quality of Life in Subjects with COPD," conducted by Salomeja Garolis, R.N., B.S.N., under the supervision of Carol Burckhardt, R.N., Ph.D., at the Oregon Health Sciences University, School of Nursing. The research aims to discover whether shortness of breath affects my life and daily activities. I understand that my participation will involve:

1. Accepting a clinic or home visit from Salomeja Garolis to receive three (3) paper and pencil tests. This visit will last no longer than one (1) hour.

2. All information that I give will be handled confidentially. My anonymity will be maintained on all documents, which will be identified by code numbers.

3. I will not benefit directly, but my participation in this study will help nurses in planning nurse care for patients with breathing problems.

4. My participation does not involve any known risks.

5. I understand that I am free to participate in this study at any time and it will in no way affect my relationship with, or treatment from, my doctor, Portland Veteran's Administration Hospital, or Oregon Health Sciences University.

6. Salomeja Garolis has offered to answer any question I might have about the study and what is required of me.

I have read the explanation and agree to participate as a subject in the study described.

Date _____

Signed _____

Witness _____



Schools of Dentistry, Medicine and Nursing
University Hospital, Doernbecher Memorial Hospital for Children, Crippled Children's Division, Dental Clinics

Abstract

Title: THE RELATIONSHIP OF DYSPNEA AND FUNCTIONAL IMPAIRMENT TO
QUALITY OF LIFE IN PERSONS WITH CHRONIC OBSTRUCTIVE
PULMONARY DISEASE

Author: SALOMEJA GAROLIS

Approved:

Carol S. Burckhardt, R.N., Ph.D.

Advisor

The purpose of this study was to determine whether a direct negative relationship exists between the degree of perceived dyspnea, functional impairment, and perceived quality of life in subjects with chronic obstructive pulmonary disease. A convenience sample of subjects in this study included 31 women and 29 men between the ages of 47 and 85. Ninety-eight percent of the sample was white. Data were collected through interviews in the subjects' homes. Instruments, which were interviewer administered, included the Dyspnea Visual Analog Scale, the Human Activity Profile, and the Adapted Quality of Life Scale, and demographic characteristics.

Four hypotheses were tested using Pearson's r and partial correlation, which posited relationships between the variables of dyspnea, functional impairment, and quality of life. All four hypotheses were supported. The results suggest that: (a) The worse the perceived dyspnea, the lower the perceived quality of life; (b) The worse the perceived dyspnea, the more functional impairment is

present; (c) As functional impairment increases, perceived quality of life decreases; (d) Self-perceived dyspnea has an indirect relationship with quality of life through functional impairment. These results form a beginning basis to more closely examine dyspnea and functional impairment in COPD patients.

The study did not control for the effect of mood. The sample was obtained by convenience. Thus, any generalizations made from this study should be interpreted within the limitation of the sample.

This study found that dyspnea and functional impairment negatively affect patients' lives. The immediate effect of this study is an increased awareness of the consequences of dyspnea on quality of life in persons with chronic obstructive pulmonary disease.