STRESSORS PERCEIVED BY CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS DURING MECHANICAL VENTILATION

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CHAPTER I

INTRODUCTION

Scientific advancements are bringing about highly technical and precise systems to preserve life in a crisis situation. Advances in biomedical equipment have been instrumental in prolonging life as well as improving its quality. With these developments, the physiological, psychological, and psychosocial dimensions of illness and hospitalization are being altered. Although no one can deny the great advancements that have occurred, each technological innovation and alteration is accompanied by new human stress.

Any illness produces stress, but for the hospitalized patient in an intensive care unit, the level of stress may reach unparalleled heights as he copes with complex mechanical equipment and alien environmental stimuli. More specifically, a patient with a chronic illness severe enough to warrant intensive care, intratracheal intubation, and mechanical ventilation may be forced to cope with stressors which exhaust his adaptive resources. In particular, what are the stressors which

beset a patient while he depends upon mechanical devices to breathe for him?

It was hoped that through this study, stressors perceived by the chronic obstructive pulmonary disease patient during mechanical ventilation, would be identified. Moreover, it was expected that the relative importance of these stressors would be determined. Finally, it was anticipated that the knowledge obtained would be used to alleviate unnecessary human distress and suffering.

Statement of Problem

The problem of this study was to determine the relative importance of stressors during mechanical ventilation, as perceived by the patient with chronic obstructive pulmonary disease.

Purposes

The purposes of this study were:

1. To identify stressors during mechanical ventilation as perceived by the patient with chronic obstructive pulmonary disease

2. To determine the rank order of stressors perceived by the patient with chronic obstructive pulmonary disease

Background and Significance

Through scientific research, great progress has been made throughout America in overcoming death and disability from contagious disease; however, chronic disease is now identified as a major cause of disability and mortality. Chronic obstructive pulmonary disease, an entity referring to chronic bronchitis, emphysema, and bronchial asthma (Helming 1968), is the most prevalent pulmonary disease in the United States, and in 1970 it ranked ninth as the cause of death from disease (National Tuberculosis and Respiratory Disease Association 1972). The present death rate--15.2 per 100,000 population--has tripled the death rate of the 1950's, and 1974 statistics disclose approximately 13,000,000 Americans cope with the dreadful disease, thus, indicating that this chronic debilitating disease is on the increase (Fuhs 1976).

As the entity of chronic obstructive pulmonary disease becomes better understood, its treatment is becoming more scientific and the patient is subjected to more sophisticated and technical modalities of care, which in turn may contribute to stress potentially detrimental to his recovery. Recovery from illness is considered to be affected by psychosocial stress (Selye

1956; Volicer 1973). According to Selye (1956) and Janis (1958), a moderate degree of stress is conducive to adaptation and recovery, but too much stress exhausts the adaptive potential and impairs the ability of the individual to cope and recover from illness. Although it is widely held that illness itself is a significant stressor, any circumstance which threatens an individual's sense of wholeness or security may be considered as a stressor. West (1975) contends that the environment and sensory deprivation are factors contributing to the psychological distress of the patient.

Stressful events associated with hospitalization have been studied by Volicer (1975), and it was noted as significant that several events rated by patients as very stressful were related to lack of communication of information or lack of communication in a meaningful way. Strain and Grossman (1975) contend that the sick, hospitalized patient is vulnerable to seven categories of psychological stress including the basic threat to narcissistic integrity, fear of strangers, separation anxiety, fear of the loss of love and approval, fear of the loss of control of developmentally achieved functions, fear of loss of or injury to body parts, and reactivation

of feelings of guilt and shame and accompanying fears of retaliation for previous transgressions.

The hospitalization experience, although stressful in itself, is incompletely descriptive of the additional emotional stress experienced by patients in intensive care units. Hackett, Cassem, and Wishnie (1968) found that the stress of illness in a coronary care unit produced severe anxiety in 80 percent of the patients, depression in 58 percent, overt hostility in 21 percent, and acute agitation in 16 percent.

Although intensive care is purposively intended to promote physiological and emotional equilibrium, with the goal of reducing stress to a level conducive for adaptation and recovery, many times other stressors are introduced while attempting to remedy the original state of stress. The patient with chronic obstructive pulmonary disease who suffers respiratory failure may be subjected to many stressors. Therefore, in an effort to relieve the original state of physiological stress, he may undergo intratracheal intubation, suctioning, and mechanical ventilation in an environment saturated with a multitude of unfamiliar sights and sounds. Part of his stress may be alleviated by means of intubation and mechanical ventilation, but his basic ability to

communicate has been assaulted; he no longer can talk, further augmenting his need to adapt to the environment. This continuous adaptation and exchange with the environment was described by Bertalanffy (1950) as a living, open system. Furthermore, this exchange of energy and adaptation to the environment is essential to the life process (Mathwig 1969); yet, environmental stress which is severe or prolonged may exhaust the adaptive potential (DeWalt 1969).

The importance of environmental stressors has been demonstrated in literature describing sensory deprivation (Bolin 1974; Chodil 1970). Altered sensory environments have been shown to produce changes in affect, cognition, and perception (Bolin 1974). Down (1974) demonstrated that individuals subjected to bedrest and social isolation for less than three hours experienced distorted sensations. Recent clinical investigation of sensory deprivation in patients who are in intensive care units has suggested that behavior disturbances following open heart surgery may be related to environmental stimuli, and recommendations were made to reduce monotonous sounds and increase patients' mobility by removing as many wires and tubes as possible (Kornfeld, Zimberg, and Malm 1965).

With information available regarding stress, illness, hospitalization, adaptation to the environment, and sensory deprivation, it would seem clear that the totality of these circumstances may impose additional stress upon patients. The psychological impact of technical equipment and complex biomedical systems on the environment and ultimately upon the patient is not definitely known. Mechanical ventilation, once reserved primarily for the management of patients suffering from total or near apnea, is now commonly used in the management of many varieties of diseases and conditions, including chronic respiratory diseases and acute respiratory emergencies secondary to other diseases and elective procedures (Hudak 1973; Burrell 1969; Sweetwood 1971). Because adequate oxygenation through respiratory support is one of the most frequent requirements of the critically ill, mechanical ventilation is becoming an essential and systematic part of therapeutic treatment regimens for not only the patient with chronic obstructive pulmonary disease, but also for any patient with respiratory insufficiency.

If history gives any indication as to what is ahead, the expansion of scientific knowledge about disease and treatment modalities will demand the further

development of technological innovations aimed at maintaining health and promoting recovery from illness. As nurses assist the patient in coping with stressors in an equipment dominated environment, the stressors imposed upon him must first be identified. The relative importance of these stressors perceived by the patient must then be determined.

It is hoped that the determination of the stressors and their relative importance during mechanical ventilation will be useful in promoting patient comfort. This study was an effort to identify those stressors.

Definition of Terms

Specifically for this study, the following definitions were used:

Chronic obstructive pulmonary disease: a term applied to the exhibition of obstruction of bronchial expiratory air flow in the entities of chronic bronchitis, asthma, or emphysema.

Intratracheal intubation: the placement of either an endotracheal tube or tracheostomy tube within the trachea for the purpose of maintaining a patent airway; a prerequisite for the use of mechanical ventilation.

Mechanical ventilation: the use of mechanical assistance devices in the maintenance of ventilatory function during respiratory impairment, insufficiency, or failure.

Stressor: condition or stimuli, either internal or external, capable of necessitating an increased effort to adjust.

Ventilation: the exchange of gases between the lungs and the environment.

Limitations

There was no control over the following variables:

1. The meaning of illness to the patient
2. The adaptive resources of the patient for coping with stress
3. Response patterns unique to individuals with chronic obstructive pulmonary disease
4. The environmental stimuli
5. Differences in individual nurse-patient interactions during mechanical ventilation

Delimitations

The study was delimited to:

1. Patients who had a primary diagnosis of chronic obstructive pulmonary disease

2. Patients who had been intubated intratracheally

3. Patients who had been mechanically ventilated for a period of at least four consecutive hours

4. Patients who had been in an intensive care unit during mechanical ventilation

Assumptions

The study was based on the following assumptions:

1. Without sufficient oxygenation, life ceases; thus, respiratory distress causes psychic distress

2. Any condition which threatens an individual's sense of wholeness, control, or security evokes stress.

Summary

Illness, hospitalization, the intensive care environment, and mechanical ventilation are considered as stressors. The potential impact of these stressors upon the patient with chronic obstructive pulmonary disease is discussed in Chapter I. Chapter II presents a review of literature relevant to chronic obstructive

pulmonary disease including its physiological and psychological manifestations. The concept of stress, with emphasis on stressors relating to hospitalization, intensive care, and mechanical ventilation is also discussed in this chapter.

The method for collection and treatment of data is presented in Chapter III. Twenty selected patients who had undergone mechanical ventilation were interviewed. A description of the questionnaire used to collect the data is also presented in this chapter. A description of the sample population, the analysis of the statistical data, and a summary of the significant findings are presented in Chapter IV. Chapter V contains a summary of the study along with conclusions and implications, as well as recommendations for further study.

CHAPTER II

REVIEW OF LITERATURE

There are many dimensions of stress in relation to a patient's illness, hospitalization, and treatment. This chapter will examine the physiological and psychological manifestations of chronic obstructive pulmonary disease, the concept of stress, with emphasis on stressors relating to hospitalization, intensive care, and mechanical ventilation.

Chronic Obstructive Pulmonary Disease

Chronic obstructive pulmonary disease (COPD), the most prevalent pulmonary disease in the United States, is a major cause of morbidity, disability, and mortality (National Tuberculosis and Respiratory Disease Association 1972; Secor 1969; Thurlbeck 1976; Helming 1968). Statistics for 1974 reflect that an estimated 13,000,000 Americans are victims of the disease (Fuhs 1976; Ford 1976; National Tuberculosis and Respiratory Disease Association 1972). Moreover, it has been estimated that approximately 20 percent of the United States' population has some chronic respiratory disease (Traver 1975). As the incidence

of chronic obstructive pulmonary disease has continued to increase, it has brought crippling effects and invalidism to thousands. As a consequence, worker disability payments under the Social Security Administration have increased by millions of dollars. Approximately 6.8 percent of all disability allowances processed in 1967 were given to patients with COPD. Moreover, the numbers of disabilities due to COPD increased approximately 40 percent during the period from 1963 through 1967 (National Tuberculosis and Respiratory Disease Association 1972; Secor 1969).

In addition to increases in morbidity and disability due to COPD, the mortality rate continues to rise. Deaths due to emphysema, chronic bronchitis, and asthma were estimated at 30,000 in 1970; yet it is contended that if the true number of deaths due to COPD were known, the rate would be much greater (Petty and Nett 1972; National Tuberculosis and Respiratory Disease Association 1972; Rodman and Sterling 1969). In addition, the American Lung Association estimates that over 450,000 new COPD patients are seen each year (Ford 1976). Moreover, the significance and implications of these statistics are far-reaching when considering how profoundly COPD affects individual

lives. The slow progression of the disease brings about pathophysiological changes resulting in disabilities which penetrate every phase of the individual's existence. Furthermore, as people live longer, by the help of modern technology, COPD becomes more and more a sociologic problem as well as a medical problem (Ford 1976).

Physiological Characteristics

Chronic obstructive pulmonary disease refers to those conditions which may be accompanied by chronic or recurrent obstruction to airflow (Thurlbeck 1976). This disorder includes three major disease entities:

1. Chronic bronchitis--characterized by excessive bronchial mucus secretion, usually accompanied by a chronic cough

2. Asthma--characterized by increased tracheal and bronchial responsiveness to various stimuli, resulting in generalized narrowing of the airways.

3. Emphysema--characterized by an abnormal enlargement of the distal air spaces, accompanied by destructive changes of the alveolar walls (American Thoracic Society 1965; National Tuberculosis and

Respiratory Disease Association 1972; Rodman and Sterling 1969; Thurlbeck 1976).

Because COPD progresses insidiously and is in a relatively advanced state when the symptoms noticeably affect the normal activities of an individual, the separate entities of chronic bronchitis, asthma, and emphysema are often indistinguishable on a clinical basis; therefore, a broad range of clinical, physiologic, and roentgenologic abnormalities are seen in COPD (American Thoracic Society 1965; National Tuberculosis and Respiratory Disease Association 1972; Rodman and Sterling 1969; Thurlbeck 1976). Nevertheless, "patients with COPD have at least one symptom in common, that of undue breathlessness on exertion" (National Tuberculosis and Respiratory Disease Association 1972). It is this symptom of dyspnea, the "subjective sensation of difficult breathing," (Chrisman 1974, p. 644) that so vividly and lastingly affects the lives of COPD patients by reducing active productive individuals to respiratory invalids (Petty and Nett 1970; Schwaid 1970; Harris 1975).

Etiological Factors

Although the etiology of this destructive airway obstruction is incompletely understood, several etiologic

factors are considered to be important in its genesis. Cigarette smoking is the most important known factor in the pathogenesis of chronic airway obstruction (Steinfeld 1975; Seriff 1975; Mitchell 1974; National Tuberculosis and Respiratory Disease Association 1972; Petty and Nett 1967; American Thoracic Society 1965). Other factors that produce or contribute to the development of chronic obstructive lung disease are: air pollution, occupational exposure to irritating fumes and dusts, recurrent respiratory infections, aging, climate, and allergy (Carnow 1976; Green 1974; Mitchell 1974; Rodman and Sterling 1969).

Another factor considered to be involved in the development of COPD, particularly emphysema, is a deficiency of alpha 1-antitrypsin (Thurlbeck 1976). According to Mittman (1973), when interaction between this serum protein deficiency and various environmental factors occurs, there is an increase in the incidence of COPD. Mittman also suggests that although there are various levels of the deficiency present in individuals, the presence of any degree of alpha 1-antitrypsin "renders an individual particularly sensitive to cigarette smoke" (Mittman 1973). However, it was also found that patients with severe deficiencies who had

little or no cigarette exposure were also prone to develop the disease (Mittman 1973; Thurlbeck 1976).

Pathological Changes

Although these etiological factors are considered to be involved in the development of COPD, the nature of the airway obstruction is not fully understood. Nevertheless, airway obstruction on expiration is characteristic of all entities of COPD; yet there are different localizations of the obstructive pathology changes. In emphysema the changes occur primarily beyond the terminal bronchioles while in chronic bronchitis and asthma, the obstruction is more pronounced at the bronchial level. In chronic bronchitis, environmental irritants--tobacco smoke and other noxious agents--are believed to cause impaired lung clearance, chronic cough, and expectoration. Altered ciliary activity, hypersecretion of mucus, and narrowing of the air passages manifest themselves into a progressive vicious cycle which includes infection, scarring, and stenosis of the airways. Ultimately this leads to irreversible expiratory airway obstruction (Traver 1975; Cherniack 1972; National Tuberculosis and Respiratory Disease Association 1972; Rodman and Sterling 1969).

The pathogenesis of emphysema, although still incompletely known, is believed to develop as a result of partial or complete bronchiolar obstruction. This obstruction, due to inflammation, infection, and airway narrowing is similar to that in chronic bronchitis (Thurlbeck 1976). Obstruction increases resistance to airflow which produces weakening and dilatation of respiratory bronchioles. As the inflammatory processes continue, air trapping and obliteration of bronchioles proceed until the bronchiolar walls are destroyed. These pathological changes are morphologically descriptive of centrilobular emphysema which usually affects respiratory bronchioles selectively. Panlobular emphysema manifests itself as a nearly uniform enlargement and destruction of alveoli. Although these classifications are given specific individual descriptions, they are not mutually exclusive and commonly overlap. Ultimately, both types of emphysema result in permanent overdistention of the respiratory portion of the lung beyond the terminal bronchioles with loss of pulmonary septal tissues, producing chronic airway obstruction and irreversible damage (Traver 1975; Cherniack 1972; National Tuberculosis and Respiratory Disease Association 1972;

Sweetwood 1971; Secor 1969; Rodman and Sterling 1969; Lagerson 1974).

As with chronic bronchitis and emphysema, the cause of asthma is not completely known, but certain environmental factors including allergy, infection, psychological and non-specific irritants are considered to precipitate recurrent attacks of increased responsiveness of tracheal and bronchial tissues. During this period, the bronchi become plugged with tenacious mucus and the bronchial walls become thickened, producing airway obstruction. Although there is hyperinflation and air-trapping of the alveoli during this period of increased responsiveness, there is no destruction of the alveolar septa or visible permanent changes following an attack; thus, a patient may appear clinically free of airway obstruction between attacks but still have some ventilatory impairment (Fuhs 1976; National Tuberculosis and Respiratory Disease Association 1972). Although asthma is not considered to be a precursor of emphysema, patients who have had asthma for many years may develop emphysema (Rodman and Sterling 1969; Cherniack 1972; National Tuberculosis and Respiratory Disease Association 1972).

Clinical Manifestations

In essence, chronic airway obstruction is the result of pathological changes. Consequently, these pathological changes result in characteristic symptoms and features, thereby manifesting a unique clinical picture. Although COPD usually begins with only slight shortness of breath on exertion and a slight morning cough, it gradually progresses to produce an incurable, eventually fatal disease. However, during the progression of the disease, a variety of clinical manifestations may appear, including chronic productive cough, wheezing, an increased anteroposterior diameter of the chest, excessive use of accessory muscles of respiration, depressed diaphragm with restricted movement, fatigue, weight loss, peptic ulcer, and cyanosis of the mucous membranes (Traver 1975; Cherniack 1972). Alteration in pulmonary function is also a feature of COPD. Depending on the severity and components of the disease, the patient may demonstrate an increased residual volume, reduced vital capacity, reduced forced vital capacity, reduced forced expiratory volume in one second, and a variety of other pulmonary function abnormalities (Cherniack 1972; Traver 1975).

Physical findings will also vary with the type and severity of the airway obstruction and may include suppressed breath sounds, accentuated second heart sounds in the pulmonic area, rhonchi, and basal rales. As the disease progresses and lung tissue deteriorates, mismatching of ventilation and perfusion results in increased hypoxia. Furthermore, when there is increased work of breathing, as in infection, alveolar ventilation may become inadequate, bringing about increased hypoxia, hypercapnia, and eventually pulmonary hypertension (Cherniack 1972; Sedlock 1972; Thurlbeck 1976).

Acute exacerbations of infection may give rise to severe hypoxia and acidosis, thereby increasing pulmonary vascular resistance, ultimately leading to extreme pulmonary hypertension and right ventricular strain. As the disease progressively worsens, chronic right-sided heart failure and neurologic changes may ensue. Manifestations of right-sided heart failure include cardiac enlargement, venous engorgement, hepatomegaly, peripheral edema, pleural effusion, and ascities (American Thoracic Society 1969; Sedlock 1972; Cherniack 1972; National Tuberculosis and Respiratory Disease Association 1972). As a result of blood-gas abnormalities, the progression of the disease may finally lead to impairment of mental acuity.

Somnolence, coma, and respiratory failure may follow and lead to death as the patient loses the fight against breathlessness.

In essence, the clinical picture of the patient with severe COPD may include a wide range of features, manifestations, and complications with respiratory failure considered to be the most common complication (Mitchell 1974). Other complications include cor pulmonale, peptic ulcer with hemorrhage and perforation, and spontaneous pneumothorax (Sedlock 1972; Rodman and Sterling 1969; Mitchell 1974; National Tuberculosis and Respiratory Disease Association 1972). Other conditions often associated with COPD include arteriosclerotic heart disease and pulmonary thromboembolic disease (National Tuberculosis and Respiratory Disease Association 1972; Thurlbeck 1976). Causes of death from chronic obstructive pulmonary disease in order of frequency include: (1) congestive heart failure secondary to cor pulmonale, (2) respiratory failure, (3) pneumonia, (4) bronchiolitis, (5) pulmonary thromboembolism, (6) perforation or hemorrhage from peptic ulcer, and (7) spontaneous pneumothorax (Mitchell 1974).

Course and Prognosis

Although recent developments in treatment modalities have brought comfort and an improved sense of well-being to many patients with COPD, there is at present no cure for the disease. Specific combinations of therapy are life-saving during episodes of acute respiratory failure, but the survival rate varies little regardless of the form or intensity of therapy (Sobol 1973). The course of disease and prognosis for patients with COPD have been studied in efforts to determine the best indicators for prediction of survival (Renzetti 1967). A poor prognosis has been shown to be related to many features of the disease including severity of pulmonary function impairment, evidence of cardiac disease, blood gas abnormalities, weight loss, early onset of disease, residence at high altitude, and roentgenologic evidence of emphysema; yet, the observed progression of these features has not been related to subsequent survival (Burrows and Earle 1969; Renzetti 1967). However, in an eight-year study by Burrows and Earle involving patients with COPD, findings suggested that:

1. The disease progressed in a manner whereas reasonably precise predictions of longevity could be made

2. Best indicators for prognosis and survival were ventilatory capacity, resting heart rate, and carbon dioxide levels

3. Most manifestations of COPD worsened with time and this trend became increasingly evident as patients were followed for long periods of time

4. The disease is a slowly progressive disorder beginning many years prior to the onset of clinical symptoms, perhaps even in childhood (Burrows and Earle 1969; Sobol and Emirgil 1973)

In essence, the clinical picture of the patient with far-advanced COPD portrays an individual in an unrelenting battle against breathlessness, infection, therapy, hospitalizations, and further progression of the disease. Physiological abnormalities are brought about by airflow obstruction and the continuous work of breathing. However, this picture is far from complete without including the psychic consequences of COPD and its attendant disabilities.

Psychological Consequences

Barstow (1974) describes a sequence of changes as a result of pulmonary emphysema, beginning with a decrease in oxygenation, leading to alteration in activities, changes in roles, and changes in living

patterns. This role change also influences changes within the individual with subsequent and concurrent changes in intrafamily and social relationships. Nett and Petty (1970) describe the disease as a "complete psychosocial and pathophysiologic entity" in that it affects every part of the self. The frustration of having to work to breathe coupled with the realization that the disease is incurable may produce a sense of hopelessness and the patient may react with anger, fear, and depression. The depression may be "characterized by poor appetite, lack of interest in outside activities, and altered sleep patterns" (Nett and Petty 1970, p. 1253), thereby promoting a vicious cycle of disability and depression.

Leonard (1972) contends that the emotional reaction to chronic illness also influences body image in that disabilities and disturbances of body integrity are perceived as a threat. Fears associated with chronic illness and disability include fears of death, incapacitation, pain, abandonment, loss of self esteem, and disturbance of interpersonal relationships (Leonard 1972). The fear of death may exceed other fears for the COPD patient in that the fear is based on the fact that unless he has enough oxygen, he will die.

Psychophysiology

The paramount importance of the relationship between emotional states and physiologic changes was acknowledged by Dudley (1969b) when he postulated a mechanism by which "disability is produced and perpetuated" in many patients with obstructive lung disease, with disability having special reference to dyspnea. Activation (behavior and emotions) is set forth in two categories: nonaction orientation and action orientation. The action orientation variables include exercise, anger, anxiety, and fear, and are associated with elevated ventilation and oxygen consumption. Variables associated with a decrease in ventilation and oxygen consumption include sleep, apathy, depression, sadness, and are designated as nonaction orientation (Dudley 1969b). Depending on the specific activation, changes in ventilation and oxygen consumption occur. Hence, these changes lead to symptom production, usually manifested as dyspnea, which in turn leads to further changes in emotional states and further physiologic change (Dudley 1969b). Essentially, the perpetuating factor lies with the secondary reaction to the symptom of dyspnea which may be anxiety, fear, and/or depression. These symptoms then serve as

stimulus for further emotional and physiologic changes (Dudley 1973). Moreover, Dudley (1973) contends

> The circular process, consisting of sensory input and physiologic, psychologic, and symptom response, can be augmented to the point of producing death or complete disability in patients who do not seem particularly ill in the usual pathophysiologic sense. In summary, emotional states of either action or nonaction orientation may rapidly upset the patient's precarious cardiopulmonary balance and lead to decompensation (p. 391).

Nevertheless, some patients were found to have developed protective mechanisms against this vicious cycle. When 40 subjects with diffuse obstructive lung disease were studied over a period of four years, it was found that they utilized the mechanisms of isolation, denial, and repression. In relation to long-term adjustment, these mechanisms provided protection from psychologic stress which promoted disability and discomfort (Dudley 1969a; Dudley 1973). Furthermore, these defenses were viewed as necessary for survival and failure to adequately utilize the defenses was associated with physiologic and psychologic deterioration (Dudley 1969a).

The importance of psychosocial assets of these patients in terms of treatment, prognosis, and death was also acknowledged by Dudley (1969a). By utilizing the Berle Index, a test providing a qualitative assessment

of total psychosocial assets, in conjunction with measurements of ventilatory function, scores for deceased subjects were compared to those of living, hospitalized, and discharged subjects (Dudley 1969a). When considering the additive effect of psychosocial and physiological variables, significant differences were found between deceased and living subjects, thus suggesting that psychosocial assets were deemed to be as important as physiologic assets in the treatment of these patients. Moreover,

> Patients with high psychosocial assets were found to be more effective in protecting themselves from dangerous symptoms or behaviors and were more likely to proceed with realistic, appropriate treatment programs (Dudley 1969a, p. 310).

Patients possessing high psychosocial assets were also viewed as coping better with a nonhospital or unprotected environment than those individuals with low psychosocial assets. Because individuals with few psychosocial assets have fewer coping behaviors, they experienced a greater number of affective changes and a greater variation in respiratory changes, bringing about respiratory insufficiency, disability (dyspnea), and death (Dudley 1969b).

The relevance of these psychosocial and psychophysiologic variables pertain not only to the prognosis and treatment of patients with COPD, but also to their

rehabilitation. Dudley (1969b) describes patients with few psychosocial assets as needing but resisting rehabilitation while patients with high psychosocial assets as needing little or no assistance in rehabilitation. In terms of successful vocational rehabilitation, both physiologic and psychologic factors are considered important. However, Dudley (1969b) maintains that the motivated, interested patient who has some skills but who has a poor medical prognosis and low exercise tolerance is more likely to achieve rehabilitation goals than a poorly motivated patient without skills who has a good medical prognosis and a high exercise tolerance.

In essence, physiologic and psychologic factors are equally important in the long-term adjustment, prognosis and rehabilitation of patients with COPD (Dudley 1969a). Thus, the picture of the patient with COPD is influenced not only by pathophysiological processes but also by subsequent and concurrent psychological responses to the disease.

Sociological Consequences

In addition to the physiological and psychological factors influencing the picture of the COPD patient, sociological factors are also considered to be important. Changes in intrafamily and social relationships occur in

response to alterations in the patient's role (Barstow 1974). Since disability from the disease usually occurs during the fourth or fifth decade of life when productivity and responsibility are at high levels, and since the prevalence of disease in males is approximately ten times that of females (National Tuberculosis and Respiratory Disease Association 1972; Anderson and Foraker 1976), one of the first roles to change is the role of the working man (Barstow 1974). His relationship to his family may change, as he becomes more dependent on other family members for assistance in activities of daily living as well as assistance in earning a living (Nett and Petty 1970; Harris 1975). With each change in his condition, adjustments must be made within the family structure. In a study involving ten wives of men who were disabled by COPD, Jones (1974) found that the spouse tended to be responsible for maintaining the family as a unit. It was also indicated that these women utilized denial in coping with the life style and role changes brought about by their husband's illness (Jones 1974). Thus, as the disease progresses, the role of others may change or expand if outside assistance is not possible. Consequently, this chronic episodic illness involves changes in the person's self concept, as well as changes

within and outside the family structure. In essence, COPD brings about physiological, psychological, and sociological changes, thereby touching every phase of the individual's being.

The Concept of Stress

The definitions, usages, and applications of the word "stress" are multifarious. Because of the wide spectrum of situations involving the concept of stress, no one specific definition is universally utilized. Although there are many definitions of stress, an analysis of the literature discloses four general areas of its usage. Some definitions are based primarily on response patterns while other definitions emphasize the element of stimuli. The third usage portrays stress as a total situation with emphasis on the individual. Stress is also defined in terms of conditions which produce disturbances. However, rarely do definitions fit consistently into these categories, and usually usages are combinations of categoric definitions (May and Sprague 1976; McGrath 1970; Cohen 1967).

Stress as a Response

In terms of response patterns, Pepitone (1967, p. 182) viewed stress as a "set of physiological or

behavioral responses, which are symptoms of a disturbing inner state. . . ." Basowitz, Persky, Korchin, and Grinker (1955) considered stress as an organism's "response to internal and external processes which reach those threshold levels that strain its physiological and psychological integrative capacities. . . ." (p. 289). Selye, who introduced the stress concept in 1936, defined stress as "the rate of wear and tear in the body" as well as a particular pattern of physiological responses (Selye 1956). Moreover, Selye (1965) detailed this biologial response pattern into the "general adaptation syndrome" consisting of three phases. In the "alarm reaction phase," defensive forces are mobilized. In the "stage of resistance," maximum adaptation occurs, and in the third stage, that of "exhaustion," adaptive mechanisms collapse if the stress is excessive and prolonged (Selye 1965). This biological response pattern, referred to as "systemic stress," is typically characterized by autonomic excitability, adrenaline discharge, heart rate, muscle tone, and blood content changes, and gastrointestinal ulceration (Selye 1956; Appley and Trumbull 1967; Moss 1973).

Stress as a Stimulus

In regard to describing stress in terms of stimuli and situations, Lazarus (1966) indicated that a

variety of other terms including "extreme situations," "conflict," and "frustration" are used to refer to the phenomena of stress. Janis (1958) referred to the psychological fears and anxieties expressed by surgical patients as stress. Jaco (1970, p. 211) regards stress as a "force or stimuli, whatever its form may be, which provokes the individual organism to respond in a condition of disturbance." Appley and Trumbull (1967) suggest that the term "stress" is used commonly in reference to anxiety, emotional distress, ego-threat, threat to security, and tension arousal.

Stress as a Total Situation

In relation to the third category of definitions, May and Sprague (1976, p. 254) describe stress as a "total situation possessing a certain quality--a kind of dynamic matrix in which the subject himself is the only variable. . . ." McGrath (1970) emphasizes that:

> Stress is a particular kind of reaction of an organism to environmental events. The occurrence of environmental change. . . leads to the perception of threat . . . but any change in the environment does not lead to threat (p. 14).

Thus, "a crucial factor in defining stress is the individual's perception of an event as harmful or potentially harmful" (Sedgwick 1975, p. 20). Appley and Trumbull (1967, p. 7) also contend that "with the exception of

extreme and sudden life-threatening situations . . . no stimulus is a stressor to all individuals exposed to it." Even the most obviously stressful situation may produce no reaction in some individuals (Oken 1967); Shontz 1975). Hence, in relation to studies relating to stress and individual vulnerability, Appley and Trumbull (1967) list eight general observations:

1. Stress is probably best conceived of as a state of total organism under extenuating circumstances rather than as an event in the environment.
2. A great variety of different environmental conditions is capable of producing a stress state.
3. Different individuals respond to the same conditions in different ways. Some enter rapidly into a stress state, others show increased alertness and apparently improved performance, and still others appear to be "immune" to the stress-provoking qualities of the environmental conditions.
4. The same individual may enter into a stress state in response to one presumably stressful condition and not another.
5. Consistent intra-individual but varied inter-individual psychological response patterns occur in stress situations.
6. The behavior resulting from operations intended to induce stress may be the same or different, depending on the context of the situation of its induction.
7. The intensity and the extent of the stress state, and the associated behavior may not be readily predicted from a knowledge of the stimulus condition alone, but require an analysis of underlying motivational patterns and of the context in which the stressor is applied.
8. Temporal factors may determine the significance of a given stressor and thus the intensity and extent of the stress state and the optimum measurement of effect (p. 11).

Stress as Conditions

The final area of definition--conditions producing disturbances--is defined by Haward (1966) as "a class of conditions productive of disturbance within the individual and envisaged as a continuum of stimuli . . ." (pp. 186-187). Although it is recognized that a variety of environmental, somatic, and psychological conditions is capable of evoking a stress response (Levine 1971), it must also be concurrently recognized that the "induction of stress depends on the mediation of cognitive factors" (Glass and Singer 1972, p. 6). Specifically, according to Lazarus (1966), the condition can produce stress only if the individual perceives he will be unable to cope adequately with the demand; thus, any condition has stress producing capabilities. Selye (1974, pp. 28-29) asserts that it is immaterial whether the agent or situation is pleasant or unpleasant; "all that counts is the intensity of the demand for readjustment or adaptation."

Adaptation

A defining characteristic of life is adaptation to change (Shontz 1975; Selye 1974). Glass and Singer (1972, p. 7) define adaptation as "a response or structural

change in an organism brought about by disturbances to . . . equilibrium." Therefore,

> Adaptation may be achieved through automatic physiological mechanisms (e.g., restoration of bodily temperature by evaporation of perspiration), or through cognitive and behavioral mechanisms (e.g., turning on air-conditioning to aid in temperature regulation) (Glass and Singer 1972, p. 7).

Prosser (1966, p. 88) refers to adaptation as "any property of an organism which permits physiological activity and survival in a specific environment" and that it is characteristically related to stressful components of the environment. Also relating adaptation to environmental stress, Glass and Singer (1972, p. 7) consider adaptation as being achieved through a process of cognitive appraisal: "repeated presentations of a reappraised stressor will cease to yield an adverse reaction." According to Lazarus (1966) adaptation occurs both physically and psychologically through an organized system of communication channels.

> At the psychological level, there must be a central cognitive response to the conditions of threat and the possibilities and dangers of coping with it in particular ways. At the physiological level, disturbances produced by noxious stimuli must be communicated to some central regulating agency which sets into motion built-in adaptational responses such as the hormonal secretions of the adrenal cortex. These communicating and regulating agencies include both neural and biochemical structures. In both cases, psychological and

> physiological, the response pattern must be normally capable of taking the system out of jeopardy (Lazarus 1966, p. 422).

Therefore, life is contingent upon the adaptation process. Moreover, Dubos (1968, p. 71) contends that "the achievement of a health state depends . . . upon man's ability to become well adapted to a stable environment."

Although adaptation is essential to life, Levine (1970) asserts that when there is a failure of adaptive resources, stress occurs. Moreover, Dubos (1968, p. 65) points out that "disease is commonly the consequence of inappropriate or excessive adaptive responses to environmental stimuli." Selye (1965) refers to certain nervous and emotional disturbances, high blood pressure, allergic, cardiovascular and renal disease as diseases of adaptation "because they are not due to any particular pathogen but to a faulty adaptive response to the stress induced by some pathogens." Moss (1973) lends his support to Selye's theory by viewing disease as the overstraining of adaptive capacities. It is suggested that "disease itself can be viewed as occurring when the adaptive responses of the organism to stressful stimuli are inappropriate in kind or amount or both" (Levine 1970, p. 283). Dubos (1965) contends that in response to mental stimuli, adaptive efforts may be misdirected

which may result in a "neurosis that is mentally incapacitating" (Dubos 1965, p. 65).

In discussing environmental stress and the adaptive process, Glass and Singer (1972) contend that the costs of adaptation may be paramount in that:

> Continued exposure to the stressor may produce cumulative effects that appear only after stimulation is terminated. . . . It is thought the organism does not experience maximal stress until he is no longer required to cope with the stressor (p. 10).

Moreover, the cost of adaptation and the effect of adjustment is referred to by Glass and Singer (1972) as "energy depletion." Selye (1956) also viewed the "body's adaptability" or "adaptation energy" as finite. Consequently, although adaptation is necessary for survival, the adaptive process in itself may be deleterious. Thus, the circumstances, situations, and stimuli which call forth adaptive energy may be of critical importance to individuals who are already coping with chronic stressful conditions.

Advantages of Stress and Adaptation

Although reference has been made to stress as a "condition of tension" (Levine 1970, p. 21) as well as "the rate of wear and tear in the body" (Selye 1965, p. 98), stress can be advantageous. Collins (1974, p. 48) asserts that "to do our best work, we all need to

generate some tension, some stress." Glass (1972, p. 12) maintains that "stress is an unavoidable, even routine component of each individual's existence." Moss (1973, p. 36) states that "stress comprises stimuli that produce anxiety in most individuals, resulting in a number of physiological, psychological, and behavioral changes, possibly pathological but also possibly leading to higher levels of functioning and new forms of adjustment." Stress, according to Selye (1956, p. 266) "seems to be the great equalizer of activities within the body; it helps to prevent one-sided overexertion." Oken (1974) refers to stress as a friend which can make one stronger. When stressful activity is presented gradually, stress may have protective adaptation value against disease (Selye 1965). Moreover, Selye (1974) also contends that individuals must learn to live with stress in that complete freedom from stress is death. Therefore, just as life without stress may imply death, stress which is severe or prolonged may also bring death through exhaustion.

Environmental Factors as Stressors

"It is accepted today that to learn, to survive, to grow and develop normally, one must have meaningful stimulation in his environment" (Morris 1969, p. 139).

Without suitable environments--both internal and external--man cannot achieve physical and mental health (Dubos 1968; Shafer 1971). It is now recognized that certain environmental factors function as stressors (Rule and Nesdale 1976; Purdom 1971). McGrath (1970) contends that stress occurs when there is substantial imbalance between environmental demand and response capability (McGrath 1970). Literature relating to the environmental conditions of noise and sensory deprivation will be reviewed. Situations involving the environments of hospitals and intensive care areas will be given particular attention.

Noise

Noise is primarily referred to as "unwanted sound" (Kryter 1970, p. 1); Purdom 1971, p. 45; Catlin 1965, p. 509; Welch 1970, p. v). Purdom (1971, p. 1) contends that this definition of sound "implies sound which interferes with human communication, comfort, health. . . ." Although noise-induced deafness has been identified as a significant health problem (Kryter 1970; Golub 1969), Welch (1970) contends that hearing impairment is only one of many important adverse effects that noise may have upon bodily functions. The significance

of sound on physiological functioning is far-reaching when considering that

> sound, either continuous or intermittent, activates subcortical neuronal systems to continually modify the pacing of the brain of cardiovascular, metabolic, endocrine, reproductive and neurological function (Welch 1970, p. 5).

The extra-auditory effects of sound on the special senses was reviewed by Anticaglia (1970). Transitory effects of sound on the field of vision included modification of color perception, alteration in depth perception and intraocular pressure, and mydriasis. However, permanent narrowing of the field of vision was observed in workers exposed to noise over longer periods of time. In essence,

> Evidence is presented that noise can adversely affect certain visual functions, induce nystagmus and vertigo, disrupt equilibrium, influence the galvanic skin response, and act as an audio-analgesic (Anticaglia 1970, p. 146).

Another consequence of auditory stimulation is sleep loss. Kryter (1970, p. 524) concludes from various studies that "perhaps one of the greatest hazards of noise to man's health is that of stimulating the sleeping person." Williams (1970, p. 277) asserts that "chronic loss of sleep may impair performance and cause psychological disturbances" including visual hallucinations, delusions of persecution, and disorientation

for time and place, especially when sleep deprivation is prolonged. However, according to Williams (1970), chronic sleep loss where the subject is partially deprived of sleep every day for many days has not been systematically studied.

Glass and Singer (1972) contend that adaptation to noise may be more significant than the physiological response to the noise itself. Although laboratory tests show physiological adaptation occurs with repeated presentations of noise, noise may still be psychologically unacceptable. The importance of cognitive variables in noise-produced stress during task performance was demonstrated in a study involving individuals working with puzzles and pencil and paper problems. Glass and Singer (1972) concluded that the context in which the noise occurs, not the intensity or duration of sound, is a determining factor in the production of deleterious aftereffects. Furthermore, when the subjects could predict and control the noise, fewer stress effects were observed. Catlin (1965) in reviewing noise and emotional stress, contends that cultural and environmental factors may make noise acceptable in one situation and unacceptable in another. Thus, "one man's noise is another man's music" (Catlin 1965, p. 517).

Noise in the Hospital Environment

A related area of study involves the effect of noise upon patients in the hospital environment. Minckley (1968) measured noise levels at half-hour intervals in a ten-bed recovery room. She hypothesized that the

> postoperative patient, already suffering from surgical pain, is made more uncomfortable as the noise over which he has no control in his immediate environment increases (p. 247).

Moreover, it was assumed that if the hypothesis was to be supported, more pain medications would be given per patient during high noise levels and less during periods of low noise levels. Sounds recorded during this period included telephone ringing, children crying, patients crying out, vomiting, snoring, moaning, and talking by staff members. The results of the five day study supported the hypothesis. In addition, Minckley (1968) contended that:

> The result indicates that semi-conscious recovery room patients do interpret the quality, character, and meaning of certain noises, and that this plays an important role in their reactions to noise (Minckley 1968, p. 250).

Thus, the results of this study may have important implications for patients in intensive care areas who also are subjected to noise.

A study of hospital noise in relation to levels and potential health hazards gives attention to noise

levels from personnel and patients as well as from mechanical equipment. Falk and Woods (1973) measured noise levels in infant incubators, a recovery room, and two rooms of an acute-care unit in an effort to relate these levels to possible pathophysiologic effects on the hospitalized patient. Sources of noise from mechanical equipment included suction machines, intermittent-positive-pressure-breathing apparatus, chest suction, a bedpan washer, an ice machine, a telephone, a cardiac monitor, a Bennett respirator and its alarm system, the operation of a bedscale, and a computer terminal. Sources of noise levels from personnel and patients in the recovery room and acute-care areas included suctioning patients, admitting patients, encouraging patients to cough and deep breathe, moving a bed, emptying garbage, delivering supplies to the utility room, coughing by patients, and crying by children. Measurements were made at five-minute intervals over a period of twenty-four hours. In the recovery room and acute-care area, noise levels were correlated with the number of hospital staff. The average noise levels were as follows in these locations:

Incubators: 57.7 dB(A)
At patient's head: 65.6 dB(A)
Recovery room: 57.2 dB(A)
Room 1-acute care: 60.1 dB(A)
Room 2-acute care: 55.8 dB(A)

Noise levels are expressed in decibel (dB) units and are used to represent intensity of sound. The "A" indicates the use of the weighted scale which approximates the frequency of the human ear (Woods and Falk 1974). In adults, impaired hearing can result if noise levels are above 80 dB(A) with impairment increasing proportionately to exposure. In addition, 35 dB(A) can induce full awakening during the electroencephalographic stages of sleep occurring at the end of the night (Falk and Woods 1973). Based on knowledge of the physiologic effects of noise, Falk and Woods (1973) concluded that:

> These noise levels probably stimulate the hypophyseal-adrenocortical axis of patients, exceed the noise threshold for peripheral vasoconstriction, pose a threat to hearing in patients receiving aminoglycosidic antibiotics and are incompatible with sleep (Falk and Woods 1973, p. 774).

A 1974 study by Fowler revealed that noise levels in an intensive care area were often at undesirable levels for patient rest and recuperation. Moreover, 60 percent of the patients identified noise as the most irritating factor in the intensive care area while 90 percent indicated that they were aware of the noise. Fowler (1974) also revealed that 80 percent of the patients contended that they would have rested better in a quieter environment.

Hospitalization

Although noise has been identified as a stressor within the hospital environment, the event of hospitalization itself may be stressful. "Entrance into the patient role is often accompanied by many shades of stress and anxiety" (Freeman, Levine, and Reeder 1972, p. 300). Moreover, according to Williams (1974, p. 37),

> The stressful event may precipitate a crisis in the individual and his family, depending on their interpretation of the event and on their coping mechanisms for dealing with it.

In studying stressful events of hospitalization, Volicer and Bohannon (1975) asked patients to rank order events related to the experience of hospitalization using the scale of 1-49 with 1 being the least stressful and 49 being the most stressful. The items listed in Table 1 of their study present the events related to the experience of hospitalization.

1 Having strangers sleep in the same room with you
2 Having to eat at different times than you usually do
3 Having to sleep in a strange bed
4 Having to wear a hospital gown
5 Having strange machines around
6 Being awakened in the night by the nurse
7 Having to be assisted with bathing
8 Not being able to get newspapers, radio, or TV when you want them
9 Having a roommate who has too many visitors
10 Having to stay in bed or the same room all day
11 Being aware of unusual smells around you
12 Having a roommate who is seriously ill or cannot talk with you

13 Having to be assisted with a bedpan
14 Having a roommate who is unfriendly
15 Not having friends visit you
16 Being in a room that is too cold or too hot
17 Thinking your appearance might be changed after your hospitalization
18 Being in the hospital during holidays or special family occasions
19 Thinking you might have pain because of surgery or test procedures
20 Worrying about your spouse being away from you
21 Having to eat cold or tasteless food
22 Not being able to call family or friends on the phone
23 Being cared for by an unfamiliar doctor
24 Being put in the hospital because of an accident
25 Not knowing when to expect things will be done to you
26 Having the staff be in too much of a hurry
27 Thinking about losing income because of your illness
28 Having medications cause you discomfort
29 Having nurses or doctors talk too fast or use words you can't understand
30 Feeling you are getting dependent on medications
31 Not having the family visit you
32 Knowing you have to have an operation
33 Being hospitalized far away from home
34 Having a sudden hospitalization you weren't planning to have
35 Not having your call light answered
36 Not having enough insurance to pay for your hospitalization
37 Not having your questions answered by the staff
38 Missing your spouse
39 Being fed through tubes
40 Not getting relief from pain medications
41 Not knowing the results or reasons for your treatments
42 Not getting pain medication when you need it
43 Not knowing for sure what illness you have
44 Not being told what your diagnosis is
45 Thinking you might lose your hearing
46 Knowing you have a serious illness
47 Thinking you might lose a kidney or some other organ
48 Thinking you might have cancer
49 Thinking you might lose your sight
(Volicer and Bohannon 1975, p. 358).

Although many stressors are indicated in Volicer's study, this study included only medical-surgical patients outside

the intensive care area; thus, the intensive care unit may present additional or different stressors to the patient who is already coping with a chronic illness.

The Intensive Care Environment

Although intensive care areas were designed to save lives through providing maximal care, Abram (1969) contends that the intensive care area has created new and serious psychological problems. One factor considered to contribute to the psychological distress of the patient is the environment. Hay and Oken (1972, p. 110) describe the atmosphere of the intensive care unit "not unlike that of the tension-charged strategic war bunker." They contend that

> . . . initially the greatest impact comes from the intricate machinery, with its flashing lights, buzzing and beeping monitors, gurgling suction pumps, and whooshing respirators (Hay and Oken 1972, p. 110).

Moreover, patients themselves are connected to machines by means of cables, tubing, and catheters (Downey 1972). West (1975) considers the environment "grim" asserting that one undesirable characteristic of the environment is the "lack of familiar sounds." Abram (1969) described the environment as "foreign and anxiety producing" and contends that patients are aware of other critically ill and dying patients around them. In addition to the alien

environment, Taylor (1971) contends that two other problem areas which affect the patient as an individual within the intensive care area are: (1) the loss of normal time-patterns due to disturbed and irregular rest and (2) the removal of direct human communication by the dominating presence of machines. Benoliel and Van De Velde (1975, p. 263), two nurses who formulated perspectives on the meaning of intensive care experience to patients, believe that "the major difficulty faced by these patients centers around the depersonalizing and dehumanizing aspects of intensive-care experience."

In regard to the impact of the intensive care environment, Kornfeld, Zimberg, and Malm (1965) considered it a major factor in the occurrence of psychological disturbances and delirium in open-heart surgery patients. Results indicated that a psychosis of the acute organic variety occurred in 38 percent of ninety-nine adult patients subjected to open heart surgery. The psychosis occurred after an initial lucid interval of three to five days and cleared within twenty-four to forty-eight hours after patients were transferred to the standard hospital environment. The study also suggested that the environmental factors of limited patient movement, unfamiliar noises, and frequent nursing care tasks made uninterrupted

sleep impossible for the patient. Moreover, it was suggested that the onset of the psychosis with perceptual distortions and hallucinations "closely resembled the psychoses of sleep and sensory deprivation" (Kornfeld, Zimberg, and Malm 1965, p. 290). In a later study of nursing assessment of post-cardiotomy delirium, Sadler (1976) concluded that the duration and degree of the delirium was significantly related to the time the patient stayed in the intensive care unit.

Grant and Klell (1974) recognized patients' needs for normal sleep cycles in intensive care units. A normal sleep cycle usually lasts for approximately ninety minutes and consists of four stages in addition to rapid eye movement sleep (REM). Stage 1 reflects relaxation on the electroencephalograph. During this stage, the individual is easily awakened. In stage 2, the person is somewhat harder to awaken and begins to have fragments of dreams. In stage 3, the person is very relaxed. Stage 4 takes place about 15-30 minutes after the person falls asleep and lasts 10-20 minutes and during this time the person is hard to awaken. During this stage, there is an increase in growth hormone which influences healing of fractures and tissues. When a person has completed stage 4, he slowly starts retracting stages until he

reaches stage 2 again. Then instead of entering stage 1, he enters REM sleep. REM sleep is a time of autonomic excitement, hormone release, metabolic acceleration, as well as dreaming. Dreams are thought to play a role in psychologically helping a person adapt, to problem-solve, and to integrate daily activities (Grant and Klell 1974). Thus, patients who are continuously stimulated may not enter REM sleep often enough to adapt and integrate daily activities. Hence, when this deprivation is combined with anxiety and an altered physiologic state, delirium may result (Abram 1969).

Although these studies considered the effects of the environment of patients who manifested psychological disturbances, DeMeyer (1967) interviewed patients who had so-called "uneventful recoveries." Some of these patients expressed the need for more privacy and less noise. DeMeyer (1967, p. 268) concluded that patients in intensive care units "are receiving physical overstimulation and emotional deprivation." Baxter (1975a) discusses the interrelationship of the intensive care environment and the post-cardiotomy patient, pointing out studies that attribute multiple factors including psychological stress and physiological alterations as the cause of delirium. However, Baxter (1975a) maintains that even

if the ICU environmental factors are found not to be of major importance in producing delirium, the environment should still provide meaningful stimuli with adequate time for uninterrupted sleep.

Although patients in Kornfeld's (1965) study were cared for in an environment similar to intensive care areas, it was actually a special open-heart recovery room. Moreover, the entire population in Kornfeld's study consisted of post-cardiotomy patients who had an average length of stay of approximately six days. Literature suggests that there are definite differences between intensive care and coronary care units (Baxter 1975b). Stephney (1974) compared the amount and causes of psychological stress involved in the two types of nursing to determine if differences existed. She concluded "that there is more stress in intensive care nursing than coronary care nursing, particularly in relation to the patient and his care" (Stephney 1974, p. 90). The item analysis indicated that moaning, crying, and screaming by patients more frequently occurred in intensive care areas than coronary care areas. Data from Stephney's study also indicated that patients in intensive care areas were more frequently unable to communicate their needs than patients in coronary care areas (Stephney 1974, p. 75). The COPD

patient who is on mechanical ventilation will usually be placed in an intensive care environment. Thus, he may be subjected to an environment as described above.

Although the intensive care area may be commonly viewed as an environment for patients with acute illnesses of relatively short duration, Benoliel and Van De Velde (1975) point out that some patients have prolonged stays.

> Acute exacerbations of . . . chronic ailments often require the use of special procedures (such as tracheostomies) and extensive application of equipment . . . to ensure survival. . . .
>
> Patients who have to be hospitalized in intensive care settings for weeks and sometimes months because of these chronic long-term problems are trapped in something of an untenable situation. They are caught in the conflicting pulls of three critical elements--the need for attachment to the machine, their heavy dependence on other people for survival, and the "drag" of a bedridden existence for weeks at a time--perhaps for the remainder of their lives (Benoliel and Van De Velde 1975, p. 262).

Woods and Falk (1974) contend that the risk of noise and sleep interferences for long-term patients is greater than short-term patients. Moreover,

> As the patient's stay in an acute care area is lengthened, the potential for sleep deprivation and sensory deprivation is intensified (Woods and Falk 1974, p. 149).

Thus, for the COPD patient in respiratory failure, his extended stay in the intensive care area may subject him to a barrage of stressors. Although the literature

lacks specific studies regarding the COPD patient and sensory and/or sleep deprivation, literature pertinent to sensory deprivation will be presented.

Sensory Deprivation

Although there is evidence that excessive intensity of environmental stimuli can be harmful, Dubos (1965, p. 271) also warns that "complete absence of challenge can thus be as deleterious." Normal function of the brain depends on arousal generated and regulated through the reticular activating system (Selye 1976). It is theorized that "when this regulatory system is upset by disturbances in sensory input . . . compensatory adjustments are made within limits" (Bolin 1974, p. 243). However, when these adjustments fail, behavior becomes disorganized (Bolin 1974; Chodil and Williams 1970). Research involving sensory deprivation has led to an array of terms used in conjunction with sensory deprivation. Brownfield (1965) listed 25 terms used synonymously with sensory deprivation including perceptual deprivation, social deprivation, stimulus deprivation, sensory isolation, and perceptual isolation, as well as a variety of other terms. However, Jackson and Ellis (1971) determined that the two terms of sensory deprivation and perceptual deprivation are used more

systematically and that sensory deprivation "refers to decreases in the amount of intensity of stimulation" while perceptual deprivation refers to "reductions in patterning or meaningfulness of stimulation." In addition, Jackson and Ellis (1971) pointed out that neither term implies the absence of all stimulation, but a reduction in stimulation from some previous condition.

Although there is "a conglomeration of research data" involving sensory deprivation (Rossi 1969, p. 16), Jackson and Ellis (1971) classified data from studies into six groups. The first group consists primarily of animals subjected to conditions of deprivation including social isolation, sound, and movement restriction. The second group encompasses studies involving people, usually children with congenital or early developmental sensory deficits which contribute to educational and social development. "Adults who incur a sensory impairment following a period of normal sensory development and experience" compose the third group of studies and the most common impairment studies in this group is blindness (Jackson and Ellis 1971). The fourth type of study involves adults with normal sensory functioning who are exposed to environments with drastic changes in stimulation, such as shipwrecked sailors. Another

type of study involves laboratory investigations in which "adults with presumably normal sensory functioning are exposed to deliberately altered and controlled sensory conditions" (Jackson and Ellis 1971). The last group of studies involves hospitalized patients

> . . . who experience changes in stimulation either as a function of their sensory impairment, per se, or as a function of some side effect of this treatment (Jackson and Ellis 1971).

Studies in this group involve primarily postoperative eye surgery patients, patients who are in intensive care, and immobilized orthopedic patients (Bolin 1974; Jackson and Ellis 1971).

Studies involving hospitalized patients have reported that altered sensory environments primarily produce changes in affect, cognition, and perception (Bolin 1974). Affective changes include fear, anxiety, depression, and rapid changes in mood (Jackson and Ellis 1971). Perceptual changes vary and include mild images such as dots and colors, as well as severe perceptual distortions described by some as hallucinations. Cognitive disturbances have ranged from difficulty in concentrating to paranoid-like delusions (Jackson and Ellis 1971).

Jackson and Ellis (1971) contend that although some studies in sensory deprivation have been done in hospitals, many variables exist which are not well

controlled. Moreover, the term "sensory alteration" would better describe changes in stimulation due to the hospital atmosphere. A variety of factors seem to be important in producing sensory alteration. Visual deprivation and restricted movement were considered to cause behavioral and thought disturbances in patients who had eye surgery (Jackson 1969; Ohno 1971). Immobilization, confinement, and restricted movement were evaluated as crucial variables in producing sensory deprivation (Zuckerman 1969; Boren 1974; Kornfeld, Zimberg, and Malm 1965). As discussed earlier, the environment of the intensive care area has been viewed as a cause of altered sensory experience. Factors contributing to this experience are considered to be monotony of sounds, restricted movement due to tubes, cables, and catheters, lack of normal auditory stimulation, as well as sleep deprivation (Boren 1974; Kornfeld, Zimberg, and Malm 1965; Grant and Klell 1974). Hence, the COPD patient with respiratory failure may be subjected to a combination of these sensory alterations as he is mechanically ventilated.

Mechanical Ventilation

The use of mechanical ventilation is recorded as early as the mid-sixteenth century when Andreas Vesalius showed that animals could be kept alive by the rhythmic

inflation of the lungs with air pumped through an opening in the windpipe with a bellows (Heironimus 1970). However, it did not become established as a therapeutic procedure until 1952 in Denmark when it was recognized as a factor in saving many lives during an epidemic of poliomyelitis (Heironimus 1970; Hunter 1972). Since that time its use has greatly increased and is currently indicated in a wide variety of conditions and disease states (Petty 1974; Hudak 1973; Burrell 1969). Although respiratory failure is a syndrome which may be associated with postoperative surgical states, trauma, neuromuscular defects, or poisonings, it is the most common complication of chronic obstructive pulmonary disease (Mitchell 1974). Thus, COPD patients who develop infection, bronchospasm, or congestive heart failure may literally depend on mechanical ventilation for life support until the underlying factors are under control (Petty 1974; Bigelow 1967).

When mechanical ventilation is necessary, tracheal intubation using an oro-tracheal, naso-tracheal or tracheostomy tube is employed initially (Bushnell 1973; Harris 1972). With tracheal intubation, the patient "no longer has air passing through the larynx; therefore

he is aphonic and must be provided with other means of communicating. . . ." (Secor 1969, p. 113).

> Eliminating the glottis from the air route deprives the patient of the ability to induce activities associated with the Valsalva maneuver by which forced expired air is blocked so that pressure distal to the glottis is markedly increased. Without this ability, the patient is unable to produce an effective cough; he is unable to defecate with force or to accomplish any straining activity unless he temporarily occludes the tracheostomy. He is also deprived of important emotional outlets expressed through crying, sobbing, sighing, and laughing (Secor 1969, p. 113).

In addition to these disadvantages of intubation, there are also potential complications directly attributable to the use of continuous mechanical ventilation. These complications include: atelectasis, pulmonary infection, pneumothorax, subcutaneous emphysema, positive water balance, gastrointestinal bleeding, tracheal damage, pulmonary oxygen toxicity, and airway obstruction (Bushnell 1973; Sweetwood 1971). Sweetwood (1971) also recognizes psychological complications associated with mechanical ventilation.

> Even before intubation, the conscious patient will most likely be suffering from anxiety and indeed may be in a state of sheer panic. This may be due in part to cerebral hypoxia, but is no doubt largely caused by fear of imminent death (Sweetwood 1971, pp. 116-117).

Thus, because respiration is essential to life, "anxiety is an ever-present psychological response to respiratory

impairment" (Dobkin 1972, p. 115). Moreover, to many patients, being alive is equated with being able to breathe (Bushnell 1973). Sweetwood (1971) also contends that patients' reactions to continuous mechanical ventilation vary greatly. Some patients become calm and interested in their surroundings while others become "progressively disoriented to the point of experiencing paranoid delusions" (Sweetwood 1971, p. 117).

Although patients with severe COPD are described by Dudley (1973) as living in an "emotional straitjacket," he also contends that these problems may change when the patient is placed on assisted breathing.

> For the first time in years the patient is receiving a sufficient amount of oxygen to totally supply his metabolic needs. The patient is then able to allow himself to participate in emotional expression which was denied to him previously because of his pending respiratory embarrassment secondary to the physiologic concomitance of emotional change (Dudley 1973, p. 392).

The "inability to wean from the ventilator" has been cited by Bushnell (1973) as a complication of continuous ventilation. Moreover, Dudley (1973) asserts that although dependence on the ventilator will occur,

> The dependence is usually not related so much to the patient not having the drive or determination to breathe on his own, as it is to the reluctance to give up feeling emotionally normal or near normal (Dudley 1973, p. 392).

Thus, the patient with COPD is appraised by Sweetwood (1971, p. 119) as having "a special kind of psychological problem, since his illness is likely to be protracted and complete recovery improbable." Patients in an intensive respiratory care unit have been described as being very closely in touch with death since many of them never get well enough to leave the unit (Pick 1976). Thus, the stressors associated with respiratory failure may include both physiological and psychological factors.

Respiratory Failure

Although there are various definitions of respiratory failure, Bushnell (1973) considers respiratory failure as the need for artificial ventilation. However, Wade (1973) refers to respiratory failure as the inability of the respiratory apparatus to maintain adequate oxygenation of the blood, with or without carbon dioxide retention. Patients with chronic obstructive pulmonary disease usually develop respiratory failure characterized by a reduction in arterial oxygen tension (60 mm Hg or below) and an elevated arterial carbon dioxide tension (greater than 50 mm Hg) (Wade 1973; Sykes 1976). Thus, the diagnosis of respiratory failure is most accurately made by analysis of arterial blood gases demonstrating hypoxemia and/or hypercapnia (Sykes 1976; Kettel 1973).

The management of respiratory failure in chronic obstructive pulmonary disease primarily includes the maintenance of clear airways by the use of aerosols, postural drainage, and percussion, adequate ventilation, effective oxygenation, drug therapy, hydration, control of infection, and rehabilitation (Petty 1974; Wade 1973; Egan 1973). However, if adequate ventilation cannot be restored following vigorous chest physiotherapy, the use of bronchodilators to relieve bronchospasm, and intermittent-positive-pressure-breathing therapy to aerate underventilated alveoli, mechanical ventilation may be indicated. However, according to Bushnell (1973) the most difficult questions in the management of respiratory failure in patients with chronic obstructive pulmonary disease are not concerned with the temporary correction of physiologic abnormalities, but rather the patient's ultimate prognosis.

Prognosis for Respiratory Failure

Bushnell (1973, p. 41) ponders the question, "should a patient with chronic lung disease with progressive deterioration of blood gases be ventilated?" The question merits attention since artificial ventilation may result not in salvage of life, but rather in agonizing prolongation of death. The prognosis of respiratory

failure in chronic lung disease patients was studied by Jessen, Kristensen, and Rasmussen (Bushnell 1973, p. 42). The survival rate following tracheostomy and artificial ventilation was categorized into three groups of patients: group A, patients able to work; group B, patients unable to work but able to leave home for shopping and to manage personal requirements; group C, patients either bedridden or unable to leave home. Three years following discharge from the hospital, more than 50 percent of group A and 30 percent of group B were alive; but less than 10 percent of group C were alive one year after discharge. Thus, it was maintained that the outcome of artificial ventilation in patients with COPD can best be predicted by knowledge of the patient's previous level of activity at home as well as other physiological measurements (Jessen, Kristensen, and Rasmussen 1967 in Bushnell 1973).

Kettel (1973) reported the results of therapy for 117 chronic obstructive lung disease patients who suffered acute respiratory failure. A deliberate decision was made to avoid intubation and mechanical ventilation in several patients because of associated disease, frequent recurrence of episodes, advanced age, or other humanitarian reason; thus, only twenty patients were intubated. Of the 97 patients treated without intubation, 87.5

percent survived. Although the most severely ill patients were intubated, only 20 percent of these patients survived (Kettel 1973).

Carroll (1976) confirms the dismal prognosis of patients with COPD who develop respiratory failure. His study involved 84 patients with an initial diagnosis of respiratory failure due to chronic obstructive bronchopulmonary disease. Of the study population, nine patients had an endotracheal tube, and six had tracheostomy. There was a 15 percent mortality rate in six months (only 80 percent of the total number could be followed for six months) (Carroll 1976). In addition, Carroll (1976) contends:

> The long hospital stay, the large number of admissions per patient and the large number of patients who received treatment in the Intensive Care Unit all indicate how unsatisfactory is the treatment of this disease. Perhaps the most discouraging figure of all is that nearly a third (29) of the total patients followed six months had been readmitted (Carroll 1976, p. 77).

Carroll describes the disease as a major cause of prolonged and repeated hospitalizations which requires sophisticated technological management. He further contends that it has an extremely poor prognosis and is very costly and "possibly wasteful" of hospital resources (Carroll 1976). Moreover, according to Carroll, although technology has prolonged life for patients with chronic

obstructive pulmonary disease, most of these patients were "uncomfortable, short of breath, badly depressed, lethargic and immobolized during their final years" (Carroll 1976, p. 77).

The Impact of Stressors During Mechanical Ventilation

Although the prognosis of patients with COPD is generally described as dismal, the additional impact of environmental and psychological stressors, although incompletely known, may be significant in relation to the patient's recovery as well as the "quality of life." Although Dudley (1973) asserts that the patient is relieved to be on assisted ventilation, the intensive environment may contribute to sleep deprivation, sensory alteration, and depersonalization (Dobkin 1972; Sweetwood 1971). Furthermore, Bothamley (1975) describes the experience of ventilated patients as frustrating and fearful, contending that being unable to speak causes anxiety for most patients. Frustration in not being able to communicate with staff members was described by Allen (1974) when a patient endeavored to communicate by shaking her head, moving her lips, and writing with a pencil. Lawless (1975) contends that patients with endotracheal and tracheostomy tubes may lose touch with reality and

resort to manipulative behavior if adequate information through communication is not provided.

Another fear associated with mechanical ventilation is the fear of being left alone. This is especially significant in that life may depend upon the machine and the machine could malfunction (Bothamley 1975; Allen 1974). "Fighting the ventilator," another experience associated with mechanical ventilation, occurs when the patient overpowers the ventilator with his own spontaneous respiratory effort. Morphine and/or various neuromuscular blocking agents may be used to better control ventilation; hence, skeletal muscles, including muscles of respiratory movement, may become paralyzed temporarily. Thus, even though the patient is intubated and temporarily paralyzed, he still may be able to hear everything going on around him (Bushnell 1973).

Thus, the patient undergoing mechanical ventilation may face specific environmental and psychosocial stressors unknown to other patients in the intensive care area. In essence, the patient with COPD may be forced to cope with the stress of his chronic disease as well as an environment filled with social isolation, sleep deprivation, sensory alteration, dependence on machinery, and temporary loss of speech. Hence, the importance of

identifying stressors during mechanical ventilation as perceived by the patient: when stressors are identified, nurses may then intervene to reduce their impact and thereby promote recovery.

Summary

The potential impact of environmental stressors upon the patient with chronic obstructive pulmonary disease is discussed in Chapter II. The review of literature presents studies regarding: (1) chronic obstructive pulmonary disease and its physiological and psychological manifestations and complications; (2) the concepts of stress and adaptation; (3) the significance of noise in relation to stress; (4) the hospital and intensive care environments in relation to sensory alteration; and (5) mechanical ventilation and respiratory failure in relation to the patient with COPD.

CHAPTER III

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

This study was conducted to determine the relative importance of stressors during mechanical ventilation as perceived by the patient with chronic obstructive lung disease. Chapter III discusses the setting, population, and research tool used to collect the data and identifies the methodology utilized for collecting and analyzing the data.

Setting

The setting for this study was a large city-county non-proprietary hospital district in the Southwestern United States. Authorized permission for conducting this study was granted by the hospital district. Conditions of agreement are outlined in Appendix A. Specific facilities within the district available to patients with chronic obstructive lung disease included out-patient chest clinics, a three-bed respiratory-intensive care unit, as well as a medical unit, with primary emphasis on pulmonary care.

Alternate Setting

An additional facility, a 365-bed investor owned hospital in the same city gave authorization (Appendix A) for patients meeting the study requirements to be interviewed. However, during the designated time period, no patients met the study criteria.

Population

The study population was composed of patients from the hospital district who met the following requirements: (1) had a primary diagnosis of chronic obstructive pulmonary disease; (2) had been intubated intratracheally; (3) had been mechanically ventilated for a period of at least four consecutive hours; and (4) had been in an intensive care unit during mechanical ventilation.

Permission to conduct this study was granted by the Human Research Review Committee of The Texas Woman's University as well as the Human Research Review Committee of The University of Texas Health Science Center at Dallas (Appendix B). In accordance with regulations of these committees, informed consent was obtained and patients were advised that they were free to withdraw from the study at any time they desired.

The population sample consisted of twenty patients. Interviews were conducted with each patient in one of four locations: in the intensive care unit; in the patient's hospital room; in the out-patient clinic; or in the patient's home. Data for the study were collected over a 13-week period from December 20, 1976 through March 21, 1977.

Tool

Preparation of Tool

The tool utilized to identify and rank order stressors as perceived by the patient with chronic obstructive pulmonary disease consisted of twenty-two questions. Questions related to situations and experiences associated with mechanical ventilation and the intensive care experience. The format of the tool consisted of an ordinal scale with ratings of stress ranging from none to severe (0-3). In addition, a demographic data sheet was used in the collection of data from the patient and his chart.

Validation of Tool

A panel of judges was consulted regarding the comprehensibility, clarity, and content validity of the tool. Members of the panel, three health care

professionals, included the head nurse of a respiratory-intensive care unit, an assistant professor in psychiatric nursing at the graduate level, and a pulmonary physician at a city-county teaching hospital. The judges evaluated twenty-four items of the tool. Agreement by two-thirds of the panel on each item denoted acceptance of the item. Minor revisions for clarity and comprehensibility were made according to judges' suggestions. Following a re-phrasing of questions to a more neutral framework, as favored by all panel members, the items were accepted without further change.

Pilot Study

Following the aforementioned revisions of the tool, a pilot study was conducted with three patients who met the established requirements. It was determined that two items of the interview seemed redundant and confusing to patients and thus were subsequently deleted from the tool. Two patients were interviewed while in the intensive care environment. The third patient was unable to participate in the study until eleven days post extubation and was interviewed in his semi-private hospital room. The revised tool used for interviewing the sample population is provided in Appendix C. Appendix D provides a sample of the demographic data sheet.

Collection of Data

The collection of data for this study involved interviewing twenty patients with chronic obstructive pulmonary disease who had previously undergone mechanical ventilation. Interviews were conducted after patients had been extubated. The time interval between extubation and interviewing ranged from .01 months to 25 months. Of the sample population, fourteen patients were interviewed in their homes; three patients were interviewed while in intensive care; one patient was interviewed in a semi-private hospital room; and two patients were interviewed in out-patient clinic.

Consent for participation in the study was obtained from patients prior to interviews. If patients were hospitalized, consent was also obtained from the subject's physician. A sample consent form is presented in Appendix E. Demographic data were obtained from the patient's chart and through the personal interview with each patient. Questions were read aloud to the patient by the interviewer. Subjects were allowed to make comments on questions in addition to rating the situation. Answers and comments were recorded on paper by the interviewer.

Patient interviews ranged in length from fifteen to sixty-five minutes. Subjects were assessed by the interviewer for any unusual respiratory distress during the interview. Two interviews utilized interpreters in that the two subjects were Spanish-Americans who did not speak English well enough to converse with the interviewer.

Treatment of Data

The statistical analysis to determine the relative importance of stressors during mechanical ventilation as perceived by the patient with chronic obstructive pulmonary disease utilized the severity index. The severity index is the sum of the score value for the category multiplied by the frequency in that category.

Frequency counts were computed on demographic data variables and the item listings of the tool. In addition, rank ordering of the stressors as perceived by the patients was completed. The Mann-Whitney U Test and the Kruskal Wallis Test were used to compare different subdivisions of the demographic data utilizing the severity index for each patient. The Pearson Correlation Coefficient was used to determine the degree of association between variables.

Summary

Chapter III has presented the procedure used in the collection and treatment of data for the purposes of identifying and rank ordering stressors during mechanical ventilation as perceived by the patient with chronic obstructive pulmonary disease. In order to identify stressors, a tool was developed and subsequently validated by a panel of judges. Using the tool, data were collected during personal interviews with patients and from the patients' charts. Analysis of the data included use of the severity index in order to determine the relative importance of stressors as perceived by the patients. The Mann-Whitney U Test and the Kruskal Wallis Test were utilized to compare different subdivisions of the demographic data. The Pearson Correlation Coefficient was used to determine the degree of association between variables.

CHAPTER IV

ANALYSIS OF DATA

This nonexperimental descriptive research study, utilizing the interview approach, was conducted to determine the relative importance of stressors perceived by chronic obstructive pulmonary disease patients during mechanical ventilation. Chapter IV provides an analysis of the data gathered from twenty interviews. The results and interpretation of the study's findings are also presented.

Description of Sample Population

The study population consisted of twenty patients with a primary diagnosis of chronic obstructive pulmonary disease who had undergone mechanical ventilation while in an intensive care unit within the last twenty-five months. Eleven of the twenty patients (55 percent) were female and nine patients (45 percent) were male. The age of the population varied widely (Table 1), with the ages of the patients ranging from twenty-three to seventy-four. The mean age was 51.9 with 70 percent of the sample in their fourth, fifth, or sixth decade.

TABLE 1

AGE OF SAMPLE POPULATION

Age	Number	Percentage
20-29	3	15
30-39	1	5
40-49	1	5
50-59	9	45
60-69	5	25
70-79	1	5
Total	20	100

The study population was composed of twelve White patients (60 percent), six Black patients (30 percent), and two Latin patients (10 percent). Table 2 summarizes these findings.

TABLE 2

RACE OF SAMPLE POPULATION

Race	Number	Percentage
White	12	60
Black	6	30
Latin	2	10
Total	20	100

The study population consisted of four categories of marital status. Thirteen patients (65 percent) were married; three patients (15 percent) were either divorced or separated; two patients (10 percent) were single; and two patients (10 percent) were widowed.

Intubation and Mechanical Ventilation

Eleven patients (55 percent) of the sample population had been intubated and mechanically ventilated only once. Nine patients (45 percent) had been intubated more than one time. Table 3 reflects these percentages in addition to providing frequencies of previous intubations.

TABLE 3

FREQUENCY OF INTUBATIONS

Number of Intubations	Frequency	Percentage
1	11	55
2	2	10
3	6	30
8	1	5
Total	20	100

The length of each intubation ranged from 13 hours to 768 hours with a mean of 160.2 hours and a median of 49.5 hours. Thirteen of the twenty patients (65 percent) were intubated for 72 hours or less and seven patients (35 percent) were intubated 169 hours or longer. Table 4 reflects the length of intubation by frequency.

TABLE 4

HOURS OF INTUBATION

Hours	Frequency	Percentage
0-24	4	20
25-48	6	30
49-72	3	15
73-168	2	10
169-768	5	25
Total	20	100

Reintubation occurred in six patients (30 percent). Two patients (10 percent of total population) required tracheostomies due to prolonged mechanical ventilation (more than 240 hours). Three patients were unable to tolerate extubation and one patient required reintubation to replace a defective tube.

Neuromuscular Blocking Agents

During the course of intubation and mechanical ventilation, neuromuscular blocking agents, specifically Pavulon and Anectine, were used in the treatment of eight patients (40 percent). Twelve patients (60 percent) did not receive neuromuscular blocking agents.

Hospitalization

The length of hospitalization ranged from five days to forty-eight days with a mean of 17.6 days. The sample population consisted of fifteen patients (75 percent) who were hospitalized twenty-one days or less and five patients (25 percent) who were hospitalized twenty-two to forty-nine days as shown in Table 5.

TABLE 5

LENGTH OF HOSPITALIZATION

Days	Frequency	Percentage
0-7	3	15
8-14	8	40
15-21	4	20
22-49	5	25
Total	20	100

Intensive Care

The length of stay in the intensive care unit ranged from three days to forty-three days with a mean value of 10.6 days. More than one-half of the sample population (55 percent) was in the intensive care unit seven days or less. Ten percent of the population's length of stay was twenty-two days or more as reflected in Table 6.

TABLE 6

LENGTH OF STAY IN ICU

Days	Frequency	Percentage
0-7	11	55
8-14	5	25
15-21	2	10
22-49	2	10
Total	20	100

Interviews

The time between extubation and interview ranged from .01 months to 25 months as reflected in Table 7. The mean time between extubation and interview was 12.25 months.

TABLE 7

TIME BETWEEN EXTUBATION AND INTERVIEW

Months	Frequency	Percentage
0-01	3	15
2-06	2	10
7-12	4	20
13-18	6	30
19-25	5	25
Total	20	100

Descriptions of Most Unpleasant Experiences

In response to the first question, "What was the worst thing for you while having the tube in and being on the breathing machine?", several patients described a combination of experiences. Eight patients (40 percent) felt that the worst thing during intubation was being unable to talk. Moreover, three patients wondered if they would ever be able to talk again.

Seven patients (35 percent) felt that the worst experience was the choking, strangling feeling associated with having the tube in place. These patients felt that they might "go with the next breath." Three patients (15 percent) expressed fearful feelings associated with

death. One patient felt "close to death" while another felt "all life had left him."

Decreased tactile perception, having the eyes covered, and being unable to swallow were considered by four patients to be part of the worst experience. Three patients (15 percent) described themselves as "tied to the bed" and this restriction upon movement contributed to discomfort. One patient considered suctioning as the worst experience while another considered being weaned from the ventilator as the worst in that he "could not get used to breathing alone."

Question number two, "What do you think would have helped you most during this time?", permitted patients to express opinions concerning what might have been helpful during intubation and mechanical ventilation. Eleven patients (55 percent) could not think of anything which might have helped to increase comfort. Three patients (15 percent) expressed the need for more explanation and reassurance. Two patients (10 percent) described the need for more mobility while being ventilated with one patient describing how he "hated" having his arms tied to the bedrails. One patient believed a method of improved communication would have been the greatest help. The remaining responses were made by one patient who felt

that a "taste of water" would have helped and another patient who desired more privacy. "Being able to breathe better" was the only thing considered by one patient which would have helped.

Stressors Perceived by Patients

Questions three through twenty-two provided opportunity for patients to rate stressors associated with intubation, mechanical ventilation, and the intensive care unit. Table 8 provides patient ratings of stressors as well as the severity index scores for each question. The rank of the stressor is also given with the rank of 1 representing the most stressful while 15 represents the least stressful. Ties in rankings occurred in five rankings.

"Trouble with talking and somehow making others to understand what you wanted or needed" was considered to be the most stressful situation by the sample population. Sixteen patients (80 percent) rated it either moderately or severely stressful. Patients also described other methods for communicating as alteratives for talking. Nine patients (45 percent) described writing notes as the best form of communication while six patients (30 percent) considered "pointing to objects" as the best form. Two patients (10 percent) felt that nurses

TABLE 8

RATING, SEVERITY INDEX AND RANK OF STRESSORS

Question	0	1	2	3	Severity Index	Rank
#8: Trouble in talking and somehow making others to understand what you wanted or needed	1 (5%)	3 (15%)	8 (40%)	8 (40%)	43	1
#6: Having the tube in	5 (25%)	2 (10%)	6 (30%)	7 (35%)	35	2
#22: Wondering if the staff really understood how it feels not being able to get your breath	4 (20%)	4 (20%)	6 (30%)	6 (30%)	34	3
#13: Being suctioned	7 (35%)	4 (20%)	8 (40%)	1 (5%)	23	4
#18: Wishing you could have slept better	9 (45%)	3 (15%)	4 (20%)	4 (20%)	23	4
#21: Worrying that this might happen again to you	12 (60%)	1 (5%)	0 (0%)	7 (35%)	22	5
#7: Being in pain because of the tube	9 (45%)	5 (25%)	2 (10%)	4 (20%)	21	6
#9: Wondering how long the tube would be in	10 (50%)	5 (25%)	3 (15%)	2 (10%)	17	7
#10: Wondering if you would be able to talk after the tube was taken out	13 (65%)	1 (5%)	2 (10%)	4 (20%)	17	7
#20: Wishing that there were more peace and quiet to relax	14 (70%)	0 (0%)	2 (10%)	4 (20%)	16	8
#17: Wishing your family did not have to see you this way	12 (60%)	3 (15%)	4 (20%)	1 (5%)	14	9
#11: Worrying that someone might not know when you needed help since you could not talk	14 (70%)	2 (10%)	1 (5%)	3 (15%)	13	10
#4: Change in drinking habits because of tube	13 (65%)	4 (20%)	1 (5%)	2 (10%)	12	11
#12: Wanting to stay on the breathing machine	14 (70%)	1 (5%)	5 (25%)	0 (0%)	11	12
#19: Wishing you could have been with your family more of the time	14 (70%)	3 (15%)	3 (15%)	0 (0%)	9	13
#14: Not knowing if you could breathe without the machine	14 (70%)	3 (15%)	3 (15%)	0 (0%)	9	13
#16: Wanting to talk to someone about God	16 (80%)	2 (10%)	2 (10%)	0 (0%)	6	14
#3: Change in eating habits because of tube	16 (80%)	3 (15%)	0 (0%)	1 (5%)	6	14
#5: Things happening to you (procedures or treatments) which you were not prepared for	16 (80%)	3 (15%)	1 (5%)	0 (0%)	5	15
#15: Worrying that the staff might not know what to do for you if the machine stopped working	18 (90%)	0 (0%)	1 (5%)	1 (5%)	5	15

provided constant attention by asking questions; thus, these patients communicated best by shaking their heads in response to questions. Two other patients (10 percent) depended on the nurses to read their lips as the most successful method of communication. Another patient felt he communicated best by talking when he held his tracheostomy tube closed.

Most patients expressed frustration in not being able to tell the nurses what they wanted or needed. One patient wrote notes during his prolonged course in the intensive care unit. However, it was only after he was extubated that he saw some of his note writing and realized why the nurses could not read the notes: they were illegible and he was also unable to read them. Despite these frustrations, several patients regarded "being unable to talk" as only a mild stressor in that the nurses were constantly taking care of them without being asked.

The second ranked stressor, "having the tube in," was rated by five patients (25 percent) as nonstressful. However, thirteen patients (65) percent) regarded the tube as being moderately or severely stressful. Several patients attributed the discomfort of the tube to a sore and burning throat. Several patients "hated" the tube while the tube made two other patients "nervous."

Question twenty-two, "wondering if the staff really understood how it feels not being able to get your breath," ranked as the number three stressor. Twelve patients (60 percent) rated it as moderately or severely stressful. Many patients expressed feelings that although nurses and staff members provided them good care, the staff did not understand the extent of the breathing problem. One patient expressed the opinion that most nurses understood how it feels not being able to get your breath, but some did not act like they cared.

Questions thirteen and eighteen tied for fourth rank. Question thirteen, "being suctioned," was considered by twelve patients (60 percent) to be mildly or moderately stressful with only one patient considering it severely stressful. Most patients considered suctioning as necessary and helpful although it stung and left a burning sensation. Three patients (15 percent) thought suctioning brought about nausea while one patient did not understand the procedure in that he could not see what was happening due to eye covering. Two patients felt that suctioning made them very nervous and irritable. Another patient thought she would "pass out" due to shortness of breath when she was suctioned.

Question eighteen, "wishing you could have slept better," was rated by eleven patients (55 percent) as either mildly, moderately, or severely stressful. Most of these eleven patients felt that their sleep was unnecessarily interrupted for treatments and medications. Noise from other patients also caused patients to either awaken or to be unable to sleep. Continuous lighting was also frequently mentioned as a cause of sleep loss. One patient who was in the intensive care unit for 36 days described sleep interruptions as a "continuous stream." Moreover, this patient described much of the time in ICU as "dream-like" and expressed difficulty in determining which situations were real and which were unreal.

Question twenty-one, "worrying that this might happen again to you" ranked fifth. Although twelve patients (60 percent) rated the situation nonstressful, seven patients (35 percent) rated it severely stressful. Of these seven patients, all had great concern that if it happened again, it might mean death. However, one patient who stated he worried about it happening again, felt he worried less in knowing he would go back to ICU.

Question seven, "being in pain because of the tube," ranked sixth. Eleven patients (55 percent) rated it mildly, moderately, or severely stressful while 45 percent did not

consider it stressful. Most patients who considered it stressful specified that the pain originated from sore throats, mouths, and noses.

Questions nine and ten tied for seventh rank. Question nine, "wondering how long the tube would be in" was considered by ten patients (50 percent) as mildly, moderately, or severely stressful. Several patients who considered it stressful also worried that their voices would never return to normal. Several patients felt that if they had been told approximately the length of time of intubation that their worry would have lessened. One patient expressed anger when he was not extubated at the time the physician had specified. However, the other ten patients (50 percent) did not regard the situation as stressful and most of these patients hardly "gave it a thought."

Question ten, "wondering if you would be able to talk after the tube was taken out" was not considered stressful by thirteen patients (65 percent). However, as previously noted, four patients (20 percent) considered it very stressful and expressed concern that permanent damage to the "voice box" may have occurred.

Question twenty, "wishing that there were more peace and quiet to relax" was ranked eighth with fourteen

patients (70 percent) considering it nonstressful. However, four patients (20 percent) considered it severely stressful and described noise and lack of privacy as major problems. One patient felt that the major interference to peace and quiet was close proximity to other critically ill patients who underwent treatments and procedures. One patient became emotionally "attached" to another patient while in ICU and expressed grief when the patient died.

Although twelve patients (60 percent) did not rate question seventeen as stressful, eight patients (40 percent) rated "wishing your family did not have to see you this way" either mildly, moderately, or severely stressful. Most patients who rated it stressful did not want parents and loved ones to "worry" about them.

Question eleven, "worrying that someone might not know when you needed help since you could not talk" was not considered stressful by fourteen patients (70 percent). These patients expressed trust in the nurses, usually describing the nurses as "always there." However, six patients (30 percent) considered it either mildly, moderately, or severely stressful. One patient who received a neuromuscular agent considered it very stressful in that he thought no one could hear him. Since

his eyes had been covered to ensure lubrication and protection, he could not see the nurses and thereby worried "all the time" that they would not know when he needed help.

Question four ranked eleventh with seven patients (35 percent) rating it mildly, moderately, or severely stressful. "Change in drinking habits because of the tube" was considered stressful since these patients usually consumed high intakes of water on a daily basis. Two patients expressed a "need" to taste the water instead of receiving it through tubes.

Question twelve, "wanting to stay on the breathing machine," ranked as twelfth with six patients (30 percent) considering it stressful. One patient who had been ventilated for 768 hours considered it stressful in that it was very hard to "give up" the machine. However, fourteen patients (70 percent) were glad to "get rid" of the machine and several patients thought they would have been better off without the machine.

Questions nineteen and fourteen tied for thirteenth in the rank ordering. Question nineteen, "wishing you could have been with your family more of the time," was considered by fourteen patients (70 percent) to be nonstressful. Most of these patients described time with

family as adequate and gave no other comments. The six patients (30 percent) who considered it mildly or moderately stressful generally wanted more privacy and time with family members.

Question fourteen, "not knowing if you could breathe without the machine," was considered nonstressful by fourteen patients (70 percent) with these patients expressing a desire to be "off" of the machine. However, six patients (30 percent) considered it mildly or moderately stressful and one patient described himself as "unsure" and wanted to make certain that the nurse would put him back on the machine if he needed it.

Questions three and sixteen tied for rank fourteen. Question sixteen, "wanting to talk to someone about God," was not considered to be stressful by sixteen patients (80 percent). Several patients indicated that they had a definite understanding with God which had provided strength during the time of intubation. One patient commented that he and God had "settled" long ago and thus "wanting to talk to someone about God" was not stressful. However, four patients (20 percent) described it as being mildly or moderately stressful. Two of these patients expressed a need for prayer and one patient

expressed the need to speak with a chaplain. Several patients wept when responding to the question.

Question three, "change in eating habits because of the tube," also ranked fourteenth. Sixteen patients (80 percent) did not consider it stressful, indicating that they did not care about eating during this time. Several patients indicated that they had not given food much thought. Three patients (15 percent) considered it only mildly stressful. One patient considered it severely stressful and indicated that he became very hungry as his condition improved.

Questions five and fifteen both ranked as fifteenth. Question five, "things happening to you (procedures or treatments) which you were not prepared for," was considered by sixteen patients (80 percent) to be nonstressful. Many patients described how nurses explained procedures prior to doing them. Four patients (20 percent) considered it to be mildly or moderately stressful, but none considered it severely stressful. One patient indicated that the intubation was a "complete surprise" and one patient did not understand the purpose of the tube.

The last question, "worrying that the staff might not know what to do for you if the machine stopped working," was considered to be nonstressful by eighteen

patients (90 percent). Most patients expressed trust and confidence in the nurses and doctors. Several patients commented that they thought the staff would know what to do, but most patients had not "given it any thought." Only two patients (10 percent) considered it stressful with one patient "living in fear" of everything associated with the breathing machine.

Statistical Findings

Stress scores were determined for each patient by adding up their ratings for each question. The Mann-Whitney U Test and the Kruskal-Wallis One-Way Analysis of Variance were used to compare responses among different subdivisions of the population. Comparisons were made for sex, race, and marital status.

When the responses to stressors of the male and female populations were compared, no significant difference was found between the two groups. The responses of different races were compared using the Kruskal-Wallis One-Way Analysis of Variance. When responses of Blacks, Whites, and Latins were compared, Whites had significantly higher stress scores than Blacks at the .05 level of significance. Using the Kruskal-Wallis One-Way Analysis of variance, no significant difference between marital status was found.

Variables Associated with Intubation and Ventilation

Responses to stressors from different groups of patients were compared utilizing the Mann-Whitney ∪ Test. No significant difference was found between responses of patients who were reintubated and patients who were not reintubated. Comparison was also made between responses of patients who had been intubated only once and responses of patients who had been intubated more than once. No significant difference existed. Responses of patients who received neuromuscular blocking agents were compared with responses of patients not receiving agents with no significant difference being found between groups.

To determine if stress scores were related to other variables, Pearson correlation coefficients were calculated. No statistically significant relation existed between stress scores and the time between extubation and interview. There were no significant relationships found between stress scores and length of time in ICU or hours of intubation. No significant correlation was found between stress scores and age of patients. However, significant positive correlations were found between age and hours of intubation, age and length of hospitalization, and age and length of stay in ICU in that the duration

of intubation, hospitalization, and stay in ICU was longer for older patients.

Summary

Data were analyzed to determine the relative importance of stressors perceived by COPD patients during mechanical ventilation. The sample population was 55 percent female and had a mean age of 51.9. Nine patients (45 percent) had been intubated more than one time. Reintubation occurred in 30 percent of the population and the median time intubated was 49.5 hours. Neuromuscular blocking agents were used during mechanical ventilation in 40 percent of the sample. The mean time in ICU was 10.6 days, with more than one-half of the sample in ICU seven days or less. The mean time between extubation and interview was 12.25 months.

The most common unpleasant experience as described by patients was being unable to talk because of the tube. This unpleasant experience also ranked first in terms of stress as measured by the severity index. Nineteen other stressors were rank-ordered, according to severity scores. Examples of patients' perceptions of stressors were cited.

No significant differences in responses were found taking sex, age, or marital status into account. However, Whites had significantly higher stress scores

than Blacks. No significant difference was found between responses of patients who were reintubated and those who were not. There was no significant difference in responses of patients who had been intubated only once compared to those who had been intubated more than once. Neither was there significant difference in responses of patients who received neuromuscular blocking agents compared to those who did not. The variables of length of stay in ICU, hours of intubation, and time between extubation and interview were not significantly related to stress scores.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

This study was conducted to determine the relative importance of stressors during mechanical ventilation. Chapter V presents a summary of the study, conclusions, implications, and suggestions for further study.

Summary

This nonexperimental descriptive research study was conducted to determine the relative importance of stressors perceived by chronic obstructive pulmonary disease (COPD) patients during mechanical ventilation. The purposes of the study were to identify and rank order stressors perceived by COPD patients during mechanical ventilation.

Convenience sampling was used in the collection of data. The sample population consisted of twenty patients who had a primary diagnosis of COPD who had been intratracheally intubated and mechanically ventilated for a period of at least four hours while in an intensive care unit. Utilizing the interview approach, data were collected after patients had been extubated. Patients

assigned stress ratings to situations associated with intubation, mechanical ventilation, and intensive care. Subsequently, stress scores were determined for each patient.

Analyses of data demonstrated that there were no significant differences in responses for sex, age, or marital status. However, Whites had significantly higher stress scores than Blacks. Stress scores of COPD patients were not related to previous intubations, reintubation, hours of intubation, use of neuromuscular blocking agents during mechanical ventilation, length of stay in ICU, length of hospitalization, or time between extubation and interview.

Patients' descriptions of their most unpleasant experiences during mechanical ventilation included being unable to talk because of the tube, fears associated with death, and sensory restrictions. Rank ordering of stressors according to severity indexes determined that the number one ranked stressor was the patient's inability to talk and make others understand his wants and needs because of the tube. Other stressors described and rated by COPD patients were related to discomforts and situations associated with intubation, mechanical ventilation, and the intensive care environment.

Conclusions

Based on the findings of this study, the following conclusions were made:

1. COPD patients' perceptions of stressors during mechanical ventilation, as measured by stress scores, were unrelated to sex, age, or marital status although stress scroes of Whites were significantly higher than scores of Blacks
2. Stress scores of COPD patients were unrelated to the following variables:
   a. previous intubations
   b. reintubation
   c. hours of intubation and ventilation
   d. use of neuromuscular blocking agents
   e. length of time in ICU
   f. length of hospitalization
   g. time between extubation and interview
3. Patients' descriptions of their most unpleasant experiences during mechanical ventilation involved
   a. temporary loss of developmentally achieved functions and sensory processes: privation to talk, see, feel, swallow, or move about
   b. fears associated with choking, strangling, and death

c. experiences associated with weaning from the ventilator

d. suctioning

4. The most severe stressor, as rank ordered according to the severity index, was temporary loss of ability to talk and communicate needs

5. Other stressors were related to discomforts and situations associated with intubation, breathing, mechanical ventilation, sleep and rest distrubances, emotional concerns, spiritual needs, privation of drinking and eating, and procedures and treatments performed by staff members

6. Common beliefs relating to COPD patients' needs during mechanical ventilation were validated, including patients' needs for

   a. alternative methods of communication while intubated

   b. explanation of procedures and situations associated with intubation and mechanical ventilation

   c. reassurance

   d. protection from noise and sleep disturbances

   e. privacy

   f. mobility

Implications

The findings of this study provide several implications for nurses caring for COPD patients while in an intensive care unit. One important implication is the need for nurses to recognize intubation and mechanical ventilation as potentially stressful for all COPD patients. Moreover, it should be recognized that the intensity of the stress perceived by patients may not be related to previous intubations, reintubations, hours of ventilation, use of neuromuscular blocking agents, or length of time in ICU, but rather to the individual patient's psychological and physiological responses to stress. Therefore, all patients should be considered as individuals who are undergoing a stressful experience and measures should be taken to decrease the impact of potential stressors.

Thus, the implication for nurses is the need for providing interventions to decrease the intensity of stressors. Particularly, an alternative method of communication for intubated patients should be established and used consistently by the staff. Explanation of the purpose, limitations, possible duration, associated procedures, and potential aftereffects of intubation should be provided to the patient, as well as an explanation of

effects of neuromuscular blocking agents when used. Appropriate interventions should be instituted to decrease disturbances in sleep and rest periods as well as to increase patients' mobility by imposing fewer restrictions on body movement when possible. Proper techniques should be employed when suctioning patients to decrease impact of potential stressors. Also important are provisions for patients to have more privacy with less contact with critically ill patients.

Another implication of the study's findings points out the importance of explanation and reassurance to patients. Although several patients suggested the need for more explanation and reassurance, many patients felt that the nurses were "always there." This should serve as a reinforcement for the importance of explanation and reassurance. Moreover, several patients were comforted in knowing that the nurse was there and "knew what to do." This is supported by the last two rank orderings in that patients expressed trust and confidence in the nurses and often received explanations by the nurse.

These implications hold considerable application not only for nurses in intensive care and respiratory intensive care units, but also for nurse educators and nurse administrators. Nurse educators have a responsibility

to assist nursing students to demonstrate understanding of potential stressors associated with intubation and mechanical ventilation. Students should also be instructed in ways in which stressors can be reduced.

Nurses in administration and management must recognize the extensive needs of intubated patients. Moreover, staffing must reflect this realization in terms of adequate nursing care time in order that patients' needs can be met. Planning of intensive care areas should also reflect concern for patients' privacy and unnecessary contact with other critically ill patients. The nurse in administration must take initiative in pursuing these goals.

Finally, these implications have important application for those persons in the allied health occupation of respiratory therapy. Since many institutions have therapists who work extensively with patients who are on mechanical ventilation, it is important that therapists recognize intubation and mechanical ventilation as stressful experiences and endeavor to reduce stressors by working with nurses and other staff members to achieve this goal.

Recommendations

Based on the conclusions and implications of this study, the recommendations are:

1. That a similar study be conducted using a larger sample size from a different setting and geographical location
2. That a similar study be conducted comparing ratings of COPD patients with ratings of patients with other disease states or entities
3. That a study be conducted to compare responses of two independent groups with findings of this study to be utilized in an experimental group's care

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APPENDIX A

TEXAS WOMAN'S UNIVERSITY
COLLEGE OF NURSING
DENTON, TEXAS

DALLAS CENTER
1810 Inwood Road
Dallas, Texas

HOUSTON CENTER
1130 M.D. Anderson Blvd.
Houston, Texas 77025

AGENCY PERMISSION FOR CONDUCTING STUDY*

THE Dallas County Hospital District (Parkland Memorial Hospital)

GRANTS TO Emily Larson Merrill

a student enrolled in a program of nursing leading to a Master's Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem:

Stressors perceived by chronic obstructive pulmonary disease patients during mechanical ventilation.

The conditions mutually agreed upon are as follows:

1. The agency (may) (~~may not~~) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (may) (~~may not~~) be identified in the final report.
3. The agency (~~wants~~) (does not want) a conference with the student when the report is completed.
4. The agency is (willing) (~~unwilling~~) to allow the completed report to be circulated through interlibrary loan.
5. Other: _____

Date December 15, 1976

Signature of Agency Personnel

Emily Larson Merrill
Signature of student

Signature of Faculty Advisor

*Fill out and sign three copies to be distributed as follows: Original - Student; first copy -- agency; second copy -- T.W.U. College of Nursing.

TEXAS WOMAN'S UNIVERSITY
COLLEGE OF NURSING
DENTON, TEXAS

DALLAS CENTER
1810 Inwood Road
Dallas, Texas 75235

HOUSTON CENTER
1130 M.D. Anderson Blvd.
Houston, Texas 77025

AGENCY PERMISSION FOR CONDUCTING STUDY*

THE Medical City Dallas Hospital, Dallas, Texas

GRANTS TO Emily Larson Merrill R.N.

a student enrolled in a program of nursing leading to a Master's Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem:

STRESSORS PERCEIVED BY CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS DURING MECHANICAL VENTILATION

The conditions mutually agreed upon are as follows:

1. The agency (may) (~~may not~~) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (may) (~~may not~~) be identified in the final report.
3. The agency (wants) (~~does not want~~) a conference with the student when the report is completed.
4. The agency is (willing) (~~unwilling~~) to allow the completed report to be circulated through interlibrary loan.
5. Other: _____

Date 2-4-77

Marlene E. Hess
Signature of Agency Personnel

Emily Larson Merrill R.N.
Signature of student

Judith K. Jones
Signature of Faculty Advisor

*Fill out and sign three copies to be distributed as follows: Original -- Student; first copy -- agency; second copy -- T.W.U. College of Nursing.

GMIS - 110

APPENDIX B

TEXAS WOMAN'S UNIVERSITY
RESEARCH INSTITUTE
DENTON, TEXAS 76204

BONE METABOLISM LABORATORY
BOX 23540, TWU STATION
PHONE (817) 387-5305

November 14, 1976

Ms. Emily Larson Merrill
Texas Woman's University
Dallas Center
Dallas, Texas

Dear Ms. Merrill:

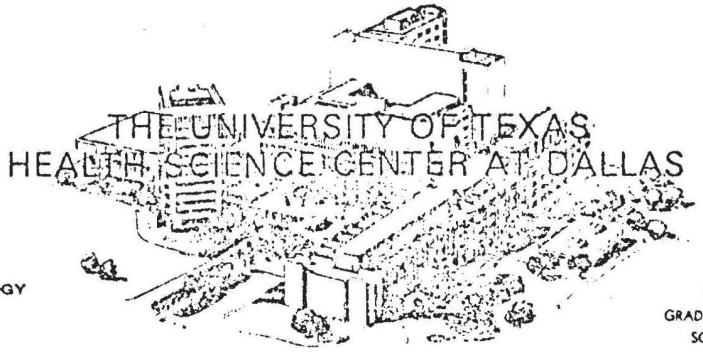
The Human Research Review Committee has reviewed and approved your program plan, "Stressors perceived by chronic obsturctive pulmonary disease patients during mechanical ventilation".

Sincerely yours,

George P. Vose, Chairman
Human Research Review Committee

cc Dr. Bridges
Ms. Goosen

APPENDIX B



DEPARTMENT OF PHARMACOLOGY

SOUTHWESTERN MEDICAL SCHOOL
GRADUATE SCHOOL OF BIOMEDICAL SCIENCES
SCHOOL OF ALLIED HEALTH SCIENCES

November 24, 1976

Ms. Emily Larson Merrill
Department of Nursing

Dear Ms. Merrill:

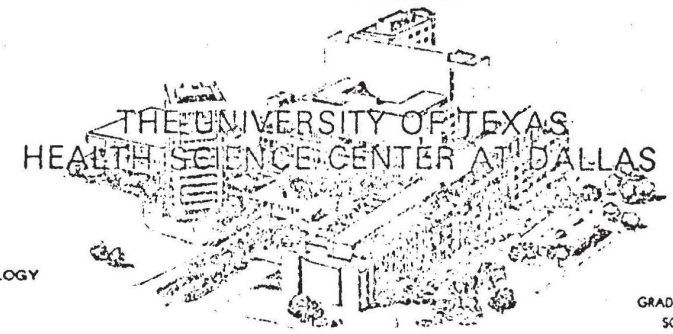
A subcommittee of the Human Research Review Committee has made a preliminary review of your study entitled "Stressors perceived by chronic obstructive pulmonary disease patients during mechanical ventilation" and it appears to meet our requirements in regard to protection of the individual's rights, experimental design, informed consent, etc. The full committee will meet on Monday, December 13, to review your request, at which time approval by the Committee is anticipated. Following that review, you will receive written notification of our action.

Sincerely,

A. Goth M.D.

Andres Goth, M.D.
Chairman
Human Research Review Committee

APPENDIX B



DEPARTMENT OF PHARMACOLOGY

SOUTHWESTERN MEDICAL SCHOOL
GRADUATE SCHOOL OF BIOMEDICAL SCIENCES
SCHOOL OF ALLIED HEALTH SCIENCES

December 13, 1976

Ms. Emily Larson Merrill
Department of Nursing

Dear Ms. Merrill:

The Human Research Review Committee has approved your request for a study entitled "Stressors perceived by chronic obstructive pulmonary disease patients during mechanical ventilation".

The Committee asked me to remind you that both the University and the Department of Health, Education and Welfare regulations require that written consents must be obtained from all human subjects in your studies. These consent forms must be kept on file for a period of three years past completion or discontinuation of the study and will no doubt be subject to inspection in the future.

Furthermore, we have been directed to review any change in research procedure that you might find necessary. In other words, should your project change, another review by the Committee is required, according to DHEW regulations.

Sincerely,

A. Goth, M.D.

Andres Goth, M.D.
Chairman
Human Research Review Committee

APPENDIX C

ID #_____

TOOL FOR IDENTIFYING STRESSORS DURING MECHANICAL VENTILATION IN ICU

1. What was the worst thing for you while having the tube in and being on the breathing machine?_____

_____

2. What do you think would have helped you most during this time?_____

_____

The following questions will be read orally to each patient. He will be asked: (1) Did this situation bother you?, and (2) If so, how much "stress" did it cause you during the time of being intubated and on the breathing machine? The following rating scale will be used, with the patient assigning a rating to each question. The actual marking will be done by the interviewer.

Scale:
0: no stress
1: mild stress (some, a little)
2: moderate stress (some, a lot)
3: severe stress

	0 1 2 3
3. Change in eating habits because of the tube	_____
4. Change in drinking habits because of the tube	_____
5. Things happening to you (procedures or treatments which you were not prepared for	_____
6. Having the tube in	_____
7. Being in pain because of the tube	_____

ID#_____

		0	1	2	3
8.	Trouble in talking and somehow making others to understand what you wanted or needed				
9.	Wondering how long the tube would be in				
10.	Wondering if you would be able to talk after the tube was taken out				
11.	Worrying that someone might not know when you needed help since you could not talk				
12.	Wanting to stay on the breathing machine				
13.	Being suctioned				
14.	Not knowing if you could breathe without the machine				
15.	Worrying that the staff might not know what to do for you if the machine stopped working				
16.	Wanting to talk to someone about God				
17.	Wishing your family did not have to see you this way				
18.	Wishing you could have slept better				
19.	Wishing you could have been with your family more of the time				
20.	Wishing that there were more peace and quiet to relax				
21.	Worrying that this might happen again to you				
22.	Wondering if the staff really understood how it feels not being able to get your breath				

APPENDIX D

TOOL FOR COLLECTION OF DEMOGRAPHIC DATA

1. Patient I.D.#_____
2. Primary Diagnosis_____
3. Other Diagnoses_____
4. Age_____5. Sex_____6.Race_____7.Marital Status__
8. # of previous times on mechanical ventilation_____

Present Hospitalization:

9. Date and time admitted_____to where_____
10. Date and time of intubation_____
11. Date and time of extubation_____
12. Date and time of interview_____
13. # of hours on mechanical ventilation_____
14. # of hours with intubation_____
15. Most effective method of communication as perceived by patient_____
16. Other methods utilized by patient while intubated for communication_____
17. Specific or unusual circumstances during mechanical ventilation_____
18. Other incidental data_____

_____

APPENDIX E

TEXAS WOMAN'S UNIVERSITY

(Form B-- Oral presentation to subject)

Consent to Act as a Subject for Research and Investigation:

I have received an oral description of this study, including a fair explanation of the procedures and their purpose, any associated discomforts or risks, and a description of the possible benefits. An offer has been made to me to answer all questions about the study. I understand that my name will not be used in any release of the data and that I am free to withdraw at any time.

Signature _____ Date _____

Witness _____ Date _____

Certification by Person Explaining the Study:

This is to certify that I have fully informed and explained to the above named person a description of the listed elements of informed consent.

Signature _____ Date _____

Position _____

Witness _____ Date _____

APPENDIX F

RAW DATA

ID	AGE	RACE	S	MS	PI	PV	HRS	RI	NBA	H	ICU	TB	SS
1	67	2	1	2	1	0	456	1	1	29	21	13	10
2	24	1	2	2	2	2	22	2	2	7	3	22	17
3	24	2	1	1	1	0	13	2	2	10	3	22	15
4	61	2	2	4	1	0	589	1	2	48	43	11	5
5	59	1	1	2	2	7	39	1	2	9	4	19	23
6	66	1	2	2	2	2	480	1	2	24	20	3	10
7	74	1	2	2	1	0	768	1	2	41	36	12	12
8	55	2	2	2	1	0	61	2	2	19	8	18	5
9	62	1	2	3	1	0	23	2	2	11	9	14	44
10	51	2	1	2	1	0	51	2	1	13	5	.05	7
11	32	1	1	3	1	0	131	2	1	13	9	8	32
12	23	2	2	1	2	2	40	2	1	11	5	17	15
13	57	3	1	2	2	2	35	2	1	20	4	13	27
14	64	1	1	2	1	0	55	2	2	5	3	9	15
15	53	1	2	3	2	1	48	2	1	10	4	13	9
16	59	3	2	2	2	2	36	2	2	9	4	22	9
17	40	1	1	2	2	1	19	2	2	7	4	4	24
18	52	1	2	2	1	0	43	2	1	6	6	.05	16
19	59	1	1	2	1	0	121	1	1	11	11	.01	31
20	57	1	2	4	2	2	174	2	2	19	11	25	15

Raw data code:
ID: identification number
AGE: years
RACE: 1=white; 2=black; 3=Latin
S=SEX: 1=male; 2=female
MS:marital status: 1=single;
2=married
3=divorced, separated
4=widowed
PI: previously intubated:1=no
2=yes
PV:previous intubations:number
HRS: hours of intubation
RI: reintubation: 1=yes; 2=no
NBA:use of neuromuscular blocking agents: 1=yes; 2=no
H:hospitalized: number of days
ICU: number of days
TB: time between extubation and interview: number of months
SS:stress score: the individual's ratings added together

APPENDIX F

RAW DATA
Ratings of Stressors

—	Questions																			
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
ID and Ratings:																				
1	0	0	0	0	0	3	0	0	0	2	0	2	0	0	0	0	0	0	0	3
2	0	0	0	3	1	2	0	0	1	0	2	0	0	0	0	2	2	0	3	1
3	0	1	0	3	0	2	1	0	0	0	0	0	0	0	2	1	0	2	1	2
4	0	0	0	0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0	1
5	1	2	0	3	2	3	2	3	0	0	2	1	0	0	0	0	1	0	0	3
6	0	0	0	0	0	2	0	0	0	0	1	1	0	1	0	0	0	0	3	2
7	1	1	0	0	0	2	0	0	0	2	0	0	0	0	0	3	0	3	0	0
8	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2
9	3	3	1	2	3	3	2	2	3	0	3	1	2	2	2	3	0	3	3	3
10	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	2	2	0	0	0
11	0	0	2	3	3	3	1	3	3	2	0	2	0	0	1	2	1	0	3	3
12	0	0	0	2	1	2	1	2	0	0	2	0	0	0	2	0	0	3	0	0
13	0	0	1	1	0	3	2	3	3	2	0	2	0	0	1	3	0	3	0	3
14	0	1	0	2	1	3	1	0	0	0	0	0	0	0	1	2	0	2	0	2
15	0	0	0	0	1	2	0	0	0	0	2	0	0	2	0	0	0	0	0	2
16	0	0	0	2	1	1	0	1	0	1	2	0	0	0	0	0	0	0	0	1
17	1	3	1	3	0	2	0	0	0	2	2	0	0	0	2	1	1	0	3	3
18	0	0	0	3	3	3	0	0	0	0	2	0	0	1	0	1	0	0	3	0
19	0	0	0	3	3	3	3	3	2	0	1	0	3	0	3	3	0	0	3	1
20	0	1	0	2	2	2	3	0	1	0	0	0	0	0	0	0	2	0	0	2