A Comparative Study of Chronic Illness in Health Status and Life Satisfaction

by

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Introduction

Life expectancy has increased dramatically since the nineteenth century. The primary focus of medical care has changed from infectious diseases to chronic diseases (Katz, 1987). Modern technology and medical care have improved longevity; consequently, the prevalence of chronic illness is rising. The focus of health care has been shifting from inpatient hospital care to ambulatory care (Verran, 1986). Ambulatory care will be a high priority of health care for all by the year 2000 (Mahler, 1988).

Chronic illness can be debilitating physically and psychologically. The debilitation can influence an individual's sense of life satisfaction. It would be helpful to nurses to know whether or not each chronic illness has a distinct health status profile and how these characteristics of health status impact an individual's life satisfaction. Knowledge of health status characteristics of various chronic illnesses and the inter-relationship between health status and life satisfaction could be useful to nurses as they plan care because the goal of nursing care is to assist client to reach maximal levels of health and life satisfaction.

Individuals with arthritis, chronic obstructive pulmonary disease, diabetes, and ostomy all have debilitating chronic symptoms such as pain, shortness of breath, altered serum glucose level, or permanent surgical

devices such as ostomy bags. These symptoms or devices can potentially have a great deal of impact on individuals' activities of daily living.

The purpose of this study was to compare health status across these different chronic illness groups and to describe the impact of health status on patient life satisfaction.

Literature Review

Health status will first be discussed in relation to each of the four disease processes: arthritis (rheumatoid arthritis and osteoarthritis), chronic pulmonary obstructive diseases, diabetes, and ostomy. Then, the research on combined chronic illness groups will be described.

Health Status

Health has been defined as not only the absence of infirmity and disease but also as a state of physical, mental and social well-being (Spitzer, 1987). However, very few health status profiles of the general population without chronic diseases can be found in the literature (Parkerson, Gehlbach, Wagner, James, Clapp, & Muhlbaier, 1981). Many studies have been done that describe the health status of persons with various chronic illnesses in the fields of rheumatology, oncology, nephrology, cardiology, gerontology, chronic pulmonary diseases, and diabetes. In the current study, the literature review is focused on the health status of individuals with arthritis, diabetes, chronic obstructive

pulmonary diseases (COPD), and ostomy.

Arthritis

Several studies have been done in rheumatology to measure physical and psychosocial functioning relative to illness. A 1981 study (Meenan, Yelin, Nevitt, & Epstein) described the psychosocial impact of arthritis. The sample was large (n=245) and dominated by white, married females with a mean age of 52 years and mean education of 12 years. Seven percent of the subjects were fully functional (American Rheumatism Association class I). Sixty-three percent were able to conduct normal activities despite discomfort or joint limitation (ARA class II). Twenty-eight percent were significantly limited in their usual activities or occupation (ARA class III). Two percent were totally incapacitated (ARA class IV).

Psychosocial variables such as work disability, divorce, changes in family employment, residence, and leisure activities were measured. The results revealed that work loss and income loss were common as the disease progressed. Psychosocial impacts were changes in marital, employment status, and leisure activities. Those individuals with income losses had significantly worse psychosocial outcomes.

In another study, 79 arthritic subjects were involved (Deyo, Inui, Leininger, & Overman, 1982). The sample was dominated by white males with a mean age of 57 years and 12

years mean duration of disease. The Sickness Impact Profile (SIP) was administered to measure physical and psychosocial dimensions of these subjects. Information about the American Rheumatism Association (ARA) functional class, disease duration, employment status, and education was also collected.

The results showed that physical and psychosocial dimensions were positively correlated. Compared to the general population, patients with rheumatoid arthritis were more dysfunctional in all aspects of health (physical, psychological, work, sleep and rest, household management and recreational activities). The dysfunction related to work, recreational activities, and household management was marked in these patients. Unemployed men had worse SIP scores on every dimension. Psychosocial function seemed to be better in patients with long-standing disease.

The study concluded that over time, patients may alter their functional expectations and learn to "cope" with their physical limitations. This conclusion needs to be validated with a longitudinal study.

Seventy-seven osteoarthritis patients participated in a 1986 study (DeForge & Sobal). Relationships among psychological well being, pain, and disability were investigated. Patients were followed up every two weeks for 12 weeks. A battery of assessments including the General Well Being (GWB), pain, and activities of daily living (ADL)

instruments were administered to participants at the begining and the end of study. The majority of subjects were characterized as retired and widowed white females aged 41 to 85 years. The average number of years of education was 9±3.

The results of the study showed that 47% of the patients had GWB scores that reflected moderate to severe psychological distress. Overall psychological well being scores improved significantly from the first visit to the last visit. Improvement may have been due to being less isolated. Compared to the general population, patients with osteoarthritis were more concerned about their health and bodily disorders, were more tense, were lower in spirits, did not awaken freshen and rested from sleep, and had a lower energy level.

Overall, psychological well being was inversely related to pain. Patients with less pain worried less about their health, were more cheerful, and felt more relaxed. Patients who experienced more emotional or behavioral control had less pain. Greater well being was found to be associated with less disability in performing ADL. Depression was more prevalent in older patients.

The researchers concluded that high levels of pain and disability had a negative impact on psychological well being. Individuals with more control over their behavior were less concerned about their health, had fewer anxiety

and depressive symptoms, and were better able to manage their disease.

A follow-up study (Meenan, Kazis, & Anderson, 1988) was done to examine the change in the health status of individuals with rheumatoid arthritis over five years. Two hundred and ninety-nine patients completed the follow-up. They were predominantly white females. The average disease duration was 14 years at the second administration of the instrument.

The Arthritis Impact Measurement Scales (AIMS) was administered to subjects three times over five years. The correlations between health status and age, sex, marital status, education, and disease duration were calculated.

The results showed that patients with rheumatoid arthritis had poor physical activity, poor dexterity, pain, and decreased social activity. There was a trend toward slight improvement in psychological status over a period of 5 years. There were no definite correlations between health status and variables such as sex, duration of disease, marital status, and education. Psychological status was found to be improved as persons grow older.

Researchers concluded that the health status of patients with established rheumatoid arthritis is more stable than previously thought. Patients with established rheumatoid arthritis may not be good candidates for therapeutic change in the absence of major symptoms or

obvious health status declines.

In the arthritis literature, individuals with arthritis had altered physical function in such areas as ambulation, household management, and dexterity. Psychologically, patients with arthritis experienced high levels of anxiety. Pain affected physical and psychological functioning. The loss of work and income was common as the disease progressed. The marital status, and leisure activities were also affected by the decline in physical functioning. Physical functioning was found strongly correlated with psychosocial functioning.

Chronic Obstructive Pulmonary Diseases

Few studies of health status regarding chronic obstructive pulmonary disease were found in the literature. That recognition of patients' physical and psychosocial functioning is important is widely accepted (Fross, Dirks, Kinsman, & Jones, 1980; McSweeny, Haten, Grant, Cugell, Solloday, & Timms, 1980; Prigatano, Wright, & Levin, 1984; and Greenberg, Ryan, & Boulier, 1985). At the end of the last decade, researchers began to demonstrate their interest in the relationship among such variables as physical status, emotion, behavior, social role functioning, and activities of daily living in the arena of chronic pulmonary diseases. These are the variables associated with health status in COPD.

In an earlier study (Fross, Dirks, Kinsman, & Jones,

1980), 90 subjects with asthma, one type of COPD were involved. The Minnesota Multiphasic Personality Inventory (MMPI) was administered to all subjects. Pulmonary functioning and interference (with vocational activities, social activities, and physical activities) were measured.

The results showed that a perceived level of illness was highly correlated with the panic-fear score of MMPI. Subjects with high panic-fear scores tended to report more interferences with their activities. The most interference reported was with physical activity.

One hundred and sixty subjects with chronic obstructive pulmonary disease (COPD) enrolled in the Nocturnal Oxygen Therapy Trials (McSweeny, Haton, Cugell, Soloday, & Timms, 1980). This was a male dominant sample. Ninety-eight percent were smokers. The MMPI, the Profile of Mood States (POMS), the Sickness Impact Profile (SIP), the Katz Adjustment Scale (KAS), and the Home Visit Behavior Checklist (HVBC) were administered to all subjects at admission and six months after the start of treatment. POMS and HVBC were employed at several additional points in the study.

The results revealed that major emotional disturbances included depression, generalized dissatisfaction with life and preoccupation with physical symptoms. Sleep and rest, home-management activities, employment and recreational activities were affected. The researchers suggested that the emotional effect of hypoxemia may be the results of an

inadequate supply of oxygen to the limbic system and other portions of the brain that mediate emotional behavior.

Nine hundred and eighty five patients with COPD and mild hypoxemia were involved in the IPPB (intermittent partial pressure breathing) clinical trial in a 1984 study (Prigatano, Wright, & Levin). The study was intended to investigate the nature and extent of daily life activities in COPD patients with mild hypoxemia; the difference of daily life activities between COPD patients with mild hypoxemia and greater degree of hypoxemia; and the predictors of health status, mood, and activity in patients with COPD and mild hypoxemia.

The mean age of the subjects was 60.9 years. They had a mean education of 10 years. The sample was predominately white and male. Pulmonary functioning, health status, mood, and ADL data were collected from all subjects. Twenty -five control healthy subjects and 100 subsample patients were also evaluated with MMPI and neuropsychological tests. The battery of SIP, POMS, KAS, and RLCQ (Recent Life Changes Questionnaire) were administered to all subjects.

The findings were: compared to controls, (1) patients with COPD and mild hypoxemia reported significantly more impaired physical and psychosocial functions except body care and movement and eating. (2) Patients with COPD and mild hypoxemia were more disturbed on the tension-anxiety, depression-dejection, anger-hostility, fatigue, and vigor

scales of the POMS. (3) Relatives reported that COPD patients were disturbed on social activity, acute psychoticism, and withdrawal-depression. (4) Patients with COPD and mild hypoxemia were notably depressed and anxious. (5) Patients with COPD and mild hypoxemia were showing subtle but definite restriction in the higher cerebral problem-solving skills. Tension-anxiety was the only predictor of both physical and psychosocial measures.

The researchers concluded that patients with COPD and mild hypoxemia had impaired physical and psychological functioning but that the impairment was minimal. Compared to COPD patients with more severe hypoxemia, patients with COPD and mild hypoxemia had much less physical limitation. However, they did have a similar level of psychosocial limitation. The level of psychosocial limitation did not relate to severity of pulmonary disease. The health status measures were related to educational level, mood state, prebronchodilator predicted FEV_1 (Forced expiratory volume in one second) and level of exercise. Many COPD patients lived in "emotional straightjackets", fearing the autonomic arousal that can accompany anger, anxiety, or depression (Greenberg, Ryan, & Boulier, 1985).

In summary, anxiety and depression were the common psychological characteristics found in the COPD literature. Individuals with COPD had not only impaired physical functioning but also such impaired social functioning as

recreational activities and employment.

Diabetes Mellitus

The research investigating health status profiles of individuals with diabetes is sparse. In the diabetes literature, there are some anecdotal notes concerning patients' psychological and social characteristics (Bergman, Akin, & Felig, 1988; Schwartz, 1988). Studies have been mainly focused on health status instrument construction.

Mazze, Lucido, and Shamoon (1984) selected 84 subjects with insulin-dependent diabetes mellitus (IDDM) for their study. Subjects were randomized into two groups: conventional therapy (1-2 injections and urine glucose test) and intensive therapy (receiving 2-4 injections and capillary blood test). The purposes of this study were to examine the presence of unique psychological and social characteristics in individuals with IDDM, the relationship between these characteristics and glycemic control, and the association of changes in psychosocial variables to the differences between treatment modalities.

The Emotional Profile Index, Taylor Manifest Anxiety Scale, Zung-Self Rated Depression Scale, and Mooney Problems Check List (PCL) were administered to subjects at entry and at 18-week intervals. Glycemic control was assessed at 6-week intervals. All subjects also maintained a logbook for performance monitoring.

The results showed that there was no difference in

physiologic (Glycemic control), social, psychologic (personality, anxiety, depression) health, and performance between two groups. There was no difference in PCL scores between patients with diabetes and PCL normal scores. Scores of anxiety and depression were found to be relatively low and nondiagnostic.

When patients were divided into good, average, and poor glycemic control, there was no difference in personality profiles and the level of glycemic control. There was a significant difference found between good and poor control for anxiety and depression. Differences between treatment modalities did not impact glycemic control, anxiety, or depression.

Researchers concluded that, compared with individuals without diabetes, individuals with type I diabetes did not manifest any significant differences in personality, anxiety, and depression. Therapy selection by random assignment or by patient choice did not make a difference in outcome measures. Degree of glycemic control may have a beneficial effect on the psychosocial status of the individuals with diabetes. The majority of individuals with diabetes seemed to be able to cope with their illness. The study results did support the association between psychosocial characteristics (anxiety, and depression) and glycemic control. As glycemic control was improved, a decreased anxiety and depression were also observed.

A small convenience sample of 25 volunteered subjects with diabetes was randomized into UCT (unchanged conventional treatment) and CSII (continueous subcutaneous insulin infusion) groups to evaluate the influence of different treatment modalities on changes in glucose homeostasis, metabolites, hormones and subjective well-being in a 1985 study (Beck-Nielsen, Richelsen, Sorensen, & Nielsen).

Hemoglobin was measured every two months. The data of serum glucose, FFA (free fatty acids), ketone bodies, lactate, insulin and growth hormone and fasting plasma concentration of IgG, triglyceride, and total cholesterol were collected at entry and 6 months. Subjective rating of well-being and complications were measured at the end of study.

The results revealed that patients who used insulin pump had better serum glucose control and lower levels of serum metabolites. The level of growth hormone, 24-hour cortisol excretion, total cholesterol, triglyceride, and IgG were not different between groups. Near normal serum glucose level was achieved in the pump group by using less insulin. Subjective rating of well-being was significantly improved in the pump group. Researchers concluded that the improved feeling of well-being in the pump group was due to the improved control, to the flexibility of time points for meals and to the better metabolic state.

One hundred and one insulin treated diabetic patients participated in a six-year longitudinal study of sexual dysfunction in a diabetic out-patient clinic (Jensen, 1986). Patients' reactions to the specific emotional issues were measured by a questionnaire derived from a previous interview and pilot study. The interview focused on crisis, somatopsychological reactions, compliance and acceptance of disease, and psychiatric evaluation.

The results showed that men used the disease as an excuse more than women to manipulate their partners in their relationship. Men more often feared that their disease might be inherited by their children. The research also found that the disease had a negative influence on men's sexual performance and satisfaction and on their self-esteem. The majority of patients commented that the disease had made them more conscious about their health, their way of living, and accepting the disease. Social dysfunction was significantly related to an existing peripheral and autonomic neuropathy in males with diabetes, but not in females. A good acceptance of the disease reduced the risk of sexual dysfunction in both sexes.

The researcher concluded that the emotional reactions in diabetes were not directly related to the physical status. Patients with diabetes perceived themselves as having more emotional problems than their partners. Acceptance of the illness will be a result of being able to

balance between the positive and negative consequences of the way of caring for oneself (Jensen, 1986).

The health status profiles of individuals with diabetes is not clear in the literature. The data thus far would suggest that descriptive studies are needed to describe health status of diabetic patients.

Ostomy

Several psychosocial issues after ostomy procedures such as body image, psychological stress reactions to loss of control, loss of body parts, altered body function and illness itself have been recorded in the nursing literature (Shipes, 1987). Altered sexual functioning also has been recognized (Shipes, 1987).

In a 1984 study (Follick, Smith, & Turk), the major purpose was to determine if biological, psychological, and social problems of ostomy patients were intercorrelated. One hundred and thirty-one subjects with an ostomy (59 males and 72 females) were involved in the study. A questionnaire including technical management, emotional, social, family/marital, sexual, and occupational adjustment was administered to all subjects.

The results showed that subjects had various technical problems such as skin irritation, irrigation, leakage,... etc. They also experienced a significant amount of stress, especially in the period immediately following surgery, and anxiety in social situations. Twenty four percent of the

subjects indicated that their families had experienced difficulties due to individual's ostomy. Fifty-one percent of the subjects reported definite changes in sexual activity since the surgery. Social support was perceived as an important factor for assisting the adjustment to the ostomy. Biological, psychological, and social components of health were found significantly interrelated.

A greater frequency of technical problems was associated with poor emotional, social, and marital/family adjustment. Emotional difficulties were highly correlated with social, marital/family, and sexual functioning. Social support was correlated with marital/family, and sexual adjustment.

Sixty-eight subjects who had undergone stoma surgery were included in a 1987 study (Thomas, Madden, & John). They had diagnoses of bowel cancer (38), inflammatory bowel disease (15), or diverticular disease (15). Physical progress, complications, coping, social functioning (occupation, housework, leisure, marriage, and sexual performance), and psychological status of these subjects were assessed 12 months after surgery.

The results showed that 22% of subjects had moderate to severe levels of anxiety and depression. Most of these patients had also shown a similar level of psychological disturbance three months after surgery regardless of the diagnosis. There was no significant difference in

psychological outcomes.

Forty percent of the subjects returned to work 12 months after surgery. Thirty-nine percent of subjects who were involved in household activities pre-operatively had severe restrictions on their ability to carry out the same tasks post-operatively. Twenty-two percent of the subjects stated that their leisure and social activities had been greatly decreased. Seventeen percent of subjects reported serious sexual disturbance.

Researchers concluded that patients with serious psychological problems were likely to have already developed the problems at an early stage in the post-operative recovery period. Such disturbance was mostly chronic and unlikely to disappear without appropriate assistance. Stoma may affect the social functioning of some patients. Job performance, housework, social and leisure activities, and sexual functioning were restricted in these patients.

As a continuation of the last study (Thomas, Madden, & John, 1987), an attempt was made to determine the factors influencing psychological outcomes of the surgery. Subjects with psychological disturbance were compared with the others not so affected.

The results indicated that subjects with previous psychiatric disturbance before surgery had a higher tendency toward suffering psychiatric illnesses post-operatively. The severity of the physical illness had no influence on

psychological outcome after surgery. Subjects with psychiatric disturbances were more likely to have serious complications with their stomas, and were more anxious and phobic.

Most of the socio-demographic factors and the severity of the illness before surgery did not predict psychological problems post-operatively. Physical symptoms and stoma complications following the operation were associated with psychological problems post-operatively.

In summary, individuals adjusted to ostomy very well in general. Altered sexual functioning was the most profoundly changed characteristic of those with ostomy. A small portion of individuals with an ostomy had psychological disturbance and difficulties in ADL and social activities. In the study of Follick et. al., biological, psychological, and social components of health were interrelated significantly.

In the ostomy literature, studies tended to focus on different variables from the other chronic illnesses previously discussed. Sexual functioning, anxiety, and occupation were measured more often in the studies than other variables such as ADL, leisure activities, and demographic variables.

Comparative Studies of Chronic Illness

In the literature, it is not clear whether all chronic illnesses share the same physical, psychological, and social characteristics. Very few comparative studies have been

done.

Mason, Weener, Gertman, and Meenan (1983) compared health status of rheumatoid arthritis (RA) patients with five other chronic diseases-- hypertension, cancer, diabetes, cardiac disease, and pulmonary disease by using Arthritis Impact Measurement Scales (AIMS). The 67-item AIMS questionnaire was administered to 170 RA, 45 diabetic, 20 pulmonary, 38 cardiac, 29 hypertensive, and 20 cancer patients. The data were collected on 11 health status measures: Mobility, Physical Activity, Dexterity, Household Activity, Activities of Daily Living, Shortness of Breath, Anxiety, Depression, Social Activity, Pain, and General Health Perceptions. The subjects were characterized as a 55-year-old high school graduate married white female. The majority of the subjects were employed.

The results of this research revealed that except for ADL, other subscales of AIMS were reliable for testing health status of chronic illness groups other than arthritic patients (Cronbach's alpha= 0.67-0.92). The health status of the six disease groups were dissimilar. Pulmonary patients had the worst scores in Mobility and ADL rankings. RA ranked lowest in the Physical Activity measure while breast cancer patients ranked highest. RA differed significantly from all other diseases in Dexterity and Pain. Pulmonary disease also differed significantly from other diseases in Shortness of Breath. The findings also displayed the ranks of disease

from worst to best health status as: RA, pulmonary disease, diabetes, cardiac disease, breast cancer, and hypertension.

Subscales of Depression and Anxiety showed no significant differences between specific diseases once the adjustment for sociodemograghic factors had been made statistically. Researchers suggested that the effects of chronic disease on psychological health were more similar across a range of chronic illness.

Another comparative study investigated global psychological patterns in patients with various chronic illnesses (Cassileth, Lusk, Strouse, Miller, Brown, Cross, & Tenaglia; 1984). Subjects of diabetes arthritis, depression, cancer, renal disease, and dermatologic disorders were selected from an outpatient specialty clinic of a university hospital. Seven hundred and fifty-eight eligible patients participated in the study. A self-report questionnaire, the Rand Mental Health Index, was administered to all subjects.

The results showed that the mental health scores for the patients with arthritis, diabetes, cancer, renal disease, and dermatological disorders were better than those of the patients with depression. No group of patients except depressed patients differed significantly from the general public or from any other group on all six psychological variables (anxiety, depression, positive affect, emotional ties, loss of control, and global mental health).

Patients whose illness had been diagnosed for 3 months

or less had greater anxiety, depression, loss of control, and poorer global mental health than those whose illness had been diagnosed for a longer period of time. Follow-up patients, who had completed their courses of therapy, had a better psychological status than those under active treatment. Symptomatic or bedridden cancer patients had significantly poorer mental health scores than those with cancer who were capable of normal activity. The researchers concluded that the severity rather than type of disability was associated with psychological distress among patients with chronic illnesses.

In these comparative studies, it was obvious that there seemed to be no difference in the psychological status of various chronic illnesses, although physical functioning differs in various groups of chronic illnesses. In the study of Mason, Weener, Gertman, and Meenan (1983), overall health status was measured by AIMS, which is arthritis specific. Small sample size made generalizability of the study results difficult. In the study of Cassileth, et.al.(1984), only the mental health of various chronic illness was compared. There are an insufficient number of research studies to conclude that there are differences in all aspects of health status among individuals with chronic illnesses. In summary of health status of persons with chronic illness, the activities of daily living are limited to a certain extent, in various chronic illnesses. Research reports have

repeatedly revealed such characteristics as anxiety and depression in chronic illness.

Physical and psychosocial health are intertwined. The health outcome of an individual has resulted in inter-correlation of these variables of health status. But it is not clear in the literature whether the impact of physical health on psychological health is the same in all chronic illness.

Life Satisfaction

Life satisfaction has been studied previously in the gerontology field. Very few studies of individual life satisfaction are found in the literature of the general population of chronic illness. Those few studies have been done in the field of osteoarthritis but not in other chronic illnesses included in this research project. The research work related to life satisfaction in gerontology will be discussed in the following section.

In early gerontological research, subjective health ratings were found to be strongly correlated with life satisfaction (Palmore & Luikart, 1972; Spreitzer & Snyder, 1974; Palmore & Kivett, 1977). Socioeconomic status and social activity were also found to be correlated with life satisfaction significantly (Spreitzer & Snyder, 1974; Palmore & Kivett, 1977).

Fifty-one elderly individuals from Southern England

were involved in a 1976 study (Knapp, 1976). The variables of retirement, current activity and social participation, and well-being were investigated by interviews.

The Life satisfaction Index-A was used to measure four dimensions of life satisfaction-mood, zest, congruence, and positive self-concept. The results showed that gender, emotional contact with friends and relatives, and age appeared to be significant predictors of each subcomponent of life satisfaction. Health was highly correlated with life satisfaction. An individual's mood tone was negatively related to the length of time since retirement from full-time employment and positively related to associations and organization, and social function. The less mobile an individual, the lower the expressed zest for life and expressed congruence between desired and achieved goals. The number of contacts with friends and kin was significantly related to each dimension of life satisfaction.

The Life satisfaction of disabled elderly people was studied over a 12- month period following discharge from medical rehabilitation (Osberg, McGinnis, DeJong, & Seward, 1987). Ninety-seven people over 60 years of age participated in the study. The relationships between variables such as health status, income, age, and marital status and life satisfaction were studied.

Health status was measured by the Barthel Index that is a measurement of physical functioning and activities of

daily living. Life satisfaction was measured by subject rating of satisfaction of each variable stated above. The results showed that age (among men only), functional capacity, and activity were the best predictors of life satisfaction.

The researchers concluded that health and functional capacity were indicators of life satisfaction because the sample was highly disabled. These indicators would not be sensitive to the measurement of life satisfaction of young and physically able individuals. Income was not a discriminating indicator of life satisfaction for the study sample because of homogeneity in sample. Subjects were in a higher socioeconomic status.

Willits and Crider (1988) conducted a study to assess the relationship of subjective health rating to overall life satisfaction and to various domains of well-being, including evaluation of community, job, and marital satisfaction. The study also attempted to determine if the association between health and personal satisfaction in these domains differed depending on the individual's gender, educational level, family income, marital status, number of relatives in the area, number of friends nearby, or frequency of leisure activities.

One thousand six hundred and fifty subjects in their early 50's (706 females and 944 males) returned the completed questionnaires describing their current feelings

of life satisfaction and subjective evaluation of their social environment. Single-item life satisfaction and perceived health were used to evaluate various life situations. Community, job, and marital satisfaction were also explored. Data on gender, education, family income, number of relatives in the area, number of friends in the area, frequency of leisure activities, and marital status were also collected.

The results showed that more income, friends, and leisure activities were associated with increased health rating. The strongest correlation was between health and leisure activities. Correlation between health and income was significant also. Subjective health rating was the best single predictor of overall life satisfaction and job satisfaction. The number of friends was reported as a predictor of community satisfaction. Health rating and the number of friends related to overall life satisfaction, job, community, and marital satisfaction significantly. Family income related to overall life satisfaction, job, and community satisfaction.

The study supported the presence of a relationship between health rating and overall life satisfaction for middle-aged individuals. The actual causal relationship between life satisfaction and health status was not studied, but the researchers suggested that the causal relationship may go in both directions: good health may lead to increased

life satisfaction and feelings of life satisfaction may result in enhanced health ratings.

Life Satisfaction and Chronic Illness

Health status and life satisfaction of chronically ill elderly persons were described in a 1988 study (Pearlman & Uhlmann, 1988). One hundred and twenty-six elderly patients with five common chronic illnesses- arthritis, diabetes, ischemic heart disease, pulmonary disease, and cancer- participated in the study.

Health status, memory, mood, physical health, functional ability, interpersonal relationships, psychological well-being, life satisfaction, participating in religious activities, environmental comforts, and physical comfort were investigated. Life satisfaction was measured by an instrument including dimensions of depression, health, memory, anxiety, finances, residence, and interpersonal relationship.

Results of the study showed that patient ratings of life satisfaction across chronic illness were not statistically different. Medical care, surgical care, and interpersonal experiences were frequently mentioned events improving life satisfaction. Poor health was the most frequently identified variable decreasing life satisfaction. Patients reported similar perception of health status and function across all chronic illnesses. Health was rated

between "good" and "fair". Disability was the only function found different among chronic diseases. Diabetes patients reported the least limitations in their activities, whereas ischemic heart disease patients reported the most.

Health ratings and life satisfaction were strongly correlated for chronic pulmonary and diabetes patients. For diabetic patients, life satisfaction was also strongly associated with financial, social, intellectual, and psychological factors. Correlation between interpersonal relationships and life satisfaction was strong in cancer patients. In overall correlations, life satisfaction correlated with patients' perceptions of their health, interpersonal relationships, and finances.

Researchers concluded that generalizability of the results may be poor because of the small sample size. The lack of difference in patient life satisfaction rating across chronic disease may be due to individuals having more than one chronic disease and insensitivity of the measurement scale.

Laborde and Power (1985) assessed life satisfaction in osteoarthritis patients and explored relationships between life satisfaction and health perception, health locus of control, and illness related factors such as duration of illness, number of joints involved, and pain associated with arthritis. One hundred and sixty elderly people with osteoarthritis participated in the study. These individuals'

life satisfaction of the past (5 years ago), present, and anticipated future (5 years later) was also assessed.

Life satisfaction was measured by Cantril's Self-Anchoring Striving Scale (SASS). Health control orientation was assessed by the Health Locus of Control. Health perception was measured by a technique similar to Cantril's SASS. Such illness-related factors as duration of illness, extent of disease involvement, and pain were measured by years of illness, number of joints involved, and McGill Pain Questionnaire respectively.

The results showed that past and present life satisfaction were viewed more favorably by the subjects than future life satisfaction. There were no significant differences on health perceptions among subjects. Subjects rated their life satisfaction as good. Health beliefs were externally oriented. There were also no significant differences among subjects for illness-related factors.

Present life satisfaction was found to be significantly associated with better health perception, internal health locus of control, and less joint pain. Present life satisfaction decreased for the externally controlled persons.

Researchers concluded that nurses need to keep a present orientation in mind in planning health care goals. Realistic assurance in providing for future needs is also provided at the same time.

In the gerontological research, life satisfaction is an important attribute of an elderly's life. There are very few research studies of life satisfaction found in the study groups of this research project.

Summary

In summary, the health status of chronic illness has been explored in the fields of arthritis, chronic obstructive pulmonary disease, diabetes, and ostomy to different extent. The majority findings of characteristics in this regard were anxiety, depression, limitation in ADL, and a strong correlation between physical and psychological health. A large portion of individuals with ostomy had sexual dysfunction. There have been few comparison studies done to determine whether all chronic illnesses share similar characteristics of health status when a single instrument is used.

In the studies of health status discussed above, different health variables were measured in each study. The term health status was not clearly defined in these studies. Health status profiles of individuals with chronic illnesses discussed above were not clear in the literature. Different instruments were used to measure health status. Sampling methods were different among studies. In the arthritis literature, subjects were predominately females. In the COPD literature, males were dominant subjects used in the studies.

In the current project, a common health status instrument, the Duke-UNC Health Profile (Parkerson, Gehlbach, Wagner, James, Clapp, & Muhlbaier, 1981), will be used to make variables such as physical, psychological, and social functioning comparable across various chronic illness groups.

Studies of life satisfaction were restricted to the gerontological field. Life satisfaction of individuals with chronic illness at large was not known in the literature. Life satisfaction was found significantly correlated with subjective health ratings in the gerontological field. Inconsistent results were found in the relationship between life satisfaction and demographic variables.

There is insufficient data to determine whether the level of life satisfaction is influencing or influenced by aspects of health status. It is not known whether individuals with different chronic illnesses perceive life satisfaction differently.

Conceptual Framework

A human ecological model (Shaver, 1985) and Neugarten's life satisfaction theory (Neugarten, Havighurst, & Tobin, 1969) have been adopted to guide this research project. Nursing is concerned with human responses to compromised or potentially compromised health status. Health status is viewed as the interactive effects of host, personal behavior, and environmental factors and is defined as the

effectiveness of the individual interacting with the external environment physically and socially (Figure 1). The indicators of each factor are described in the model.

Insert Figure 1 about here

Life satisfaction of an individual is regarded as being at the positive end of the continuum of psychological well-being to the extent that the person: A) takes pleasure from the round of activities that constitutes every day life; B) regards life as meaningful and accepts resolutely that which life has been; C) feels successful in achieving major goals; D) holds a positive image of self; and E) maintains happy and optimistic attitudes and mood (Neugarten, Havighurst, & Tobin, 1961). These five compartments of life satisfaction were operationalized as : Zest (vs. apathy); Resolution and fortitude; Congruence between desired and achieved goals; Positive self-concept; and Mood tone respectively by Neugarten et. al. (1961).

An individual's health consists of three factors--physical, psychological, and social health. These factors interact with each other and comprise one's sense of health. From the literature review, an individual's health status is interrelated to life satisfaction.

In this research project, the variables of physical, psychological, and social health status will be evaluated to

determine an individual's overall health status. The indicators of each variable are listed in the model. Theoretically, physical, psychological, and social health status are inter-correlated and each variable may impact an individual's life satisfaction.

Research Question

This study was done to answer the following questions: (1) Is there a difference in health status among people with different chronic illnesses? (2) What is the level of life satisfaction among the chronic illness groups? (3) What is the relationship between the health status and life satisfaction?

Methods

Design

This study is a descriptive comparative study using data collected for a study of quality of life in persons with chronic illness.

Sample and setting

Two hundred and thirty six individuals were included in this study. Subjects between the age of 20 and 83 (mean age 62) with chronic diabetes, osteo-arthritis, chronic obstructive pulmonary disease, and ostomy were interviewed by telephone and answered mailed questionnaires.

The sample included 40% male and 60 % female. The majority of these individuals was white (95.8%) and married

(57.9%). The mean years of illness was 15. Sixty percent of the sample had an education level of high school graduate to college. A majority (89.4%) of individuals were non-professionals and had a mean yearly income of $15,000-20,000.

The sample consisted of four diagnostic groups: COPD (n=60), diabetic mellitus (n=59), osteoarthritis (n=56), and ostomy (n=61). The characteristics of each group are described in Table 1.

Insert Table 1 about here

Protection of Human Subjects

Subjects' confidentiality was protected by assigning each subject a code number. Informed verbal consent was obtained by telephone prior to data collection.

Instruments

The DUKE-UNC Health Profile (DUHP): The DUHP (Appendix A) is designed as a health status instrument suitable both for research and clinical assessment in the primary setting (Parkerson, Gehlbach, Wagner, James, Clapp, & Muhlbaier, 1981). This instrument is comprised of four dimensions: symptom status, physical function, emotional function, and social function.

Symptoms are an expression of dysfunction within the body and mind. Physical function includes disability days,

ambulation, and use of the upper and lower extremities. Emotional function is measured by self-esteem, defined as a liking and respect for oneself and the belief in one's ability to get along with other people. Social function is measured by role performance which is assessed in four areas: self-care, ability to function in the work place or at home, interactions with people and participation in community and social events.

The DUHP consists of 63 items. Each item has a range of values from 0-2 or 0-4 depending on the length of its scale. Scores of each of the four dimension are calculated by summing the raw item values and dividing by the maximum sum for that dimension. Scores can range from 0 to 1. Higher scores indicate better function; lower scores, poorer function.

The internal consistency of the emotional scale was 0.85. Reproducibility and scalability in the Guttman scalogram analysis of the physical function were 0.98 and 0.89 respectively. Reproducibility and scalability for social function were 0.93 and 0.71 respectively. Overall stability for the symptom status was indicated by a correlation of 0.68. The convergent and discriminative validity testing was performed. Correlations between DUHP and Sickness Impact Profile, Zung Depression Scale, and Tennessee Self Concept Scale were calculated. The significant correlations in the predicted directions

supported the validity of DUHP.

Life Satisfaction Index-Z (LSI-Z): LSI-Z (Appendix B) is a self-report instrument derived from Life Satisfaction Ratings (LSR) (Wood, Wylie, & Sheafer, 1969). The LSI-Z contains five components of life satisfaction: zest vs. apathy, resolution and fortitude, congruence between desired and achieved goals, positive self-concept, and mood tone.

LSI-Z consists of 13 statement items which are rated on five-point response: strongly agree to strongly disagree by respondents. The possible range of score was 13 to 65 (Himmelfarb & Murrell, 1983). A significant correlation of 0.57 was found between LSR and LSI-Z (Wood, Wylie, & Sheafor, 1969). The Kuder-Richardson Formula 20 coefficient alpha for LSI-Z was 0.79.

Although the LSI-Z was recommended for use with rural aged populations, particularly males, Burckhardt (1982) made a slight modification in wording to make the instrument useful to wider age range by adding "so far" in some statements. For example, "I've gotten pretty much what I expected out of life so far". Internal consistency reliability testing indicated Cronbach's alpha of about 0.78 in several studies of persons with chronic illnesses.

Data Collection Procedures

The DUHP and LSI-Z scores, and demographic variables were obtained from data collected by Burckhardt for a larger study of quality of life (Burckhardt, Woods, Schultz, &

Ziebarth, 1989).

Data Analysis

The means and ranges of the demographic variables of all groups with chronic illness were tabulated to describe the sample. Each dimensional score of DUHP was calculated for all groups.

ANOVA was used to answer question 1. The means of LSI-Z were calculated for all groups to answer question 2. Pearson correlations were performed to answer question 3.

Results

The mean scores and standard deviations of the DUKE-UNC Health Status Profile Subscales, symptoms, social, physical, and emotional functioning for the entire sample were 0.908 (0.130), 0.667 (0.244), 0.587 (0.203), and 0.660 (0.201) respectively. The remaining results of the study will be presented by research question.

Is there a difference in health status among people with different chronic illnesses?

Physical functioning: Subjects with ostomy had highest mean scores on physical functioning. Subjects with diabetes and osteoarthritis scored lower, and those with chronic obstructive pulmonary diseases scored lowest. With 3 and 233 degrees of freedom, an F of 45.776 was significant at the level of 0.001 (Table 2-1).

Insert Table 2-1 about here

The results of Newman Keuls post-hoc procedure showed that subjects with ostomy had significantly higher scores on physical functioning than all of the other three groups. Subjects with OA and DM had scores significantly lower than subjects with ostomy. Subjects with COPD had the lowest physical functioning of all groups. All the differences were significant (Table 2-2).

Insert Table 2-2 about here

An analysis of the individual items showed that all subjects with chronic illnesses had a lot of trouble with running activities such as running for one and five miles. Subjects with ostomy had little trouble running a length of football field while subjects with other chronic illness groups could not carry out these activities.

Emotional functioning: Subjects with an ostomy had the highest mean scores on emotional functioning. Subjects with DM and OA had lower scores and those with COPD had the lowest scores. With 3 and 233 degrees of freedom, an F of 21.686 was significant at the level of 0.001 (Table 3-1).

Insert Table 3-1 about here

Newman Keuls post-hoc procedure showed that subjects with ostomy scored significantly higher on emotional function than the diabetes and COPD groups. They did not differ significantly from the OA subjects. Subjects with OA and DM scored significantly higher than those with COPD. The scores of subjects with OA and DM did not differ significantly from each other (Table 3-2).

Insert Table 3-2 about here

An analysis of the individual items showed that subjects with COPD tended to describe themselves as failing at everything they try to do, giving up easily, and not as smart as most people. Subjects with OA and ostomy felt only somewhat satisfied with their sexual relationships. Subjects with DM considered themselves somewhat healthy.

Social functioning: Subjects with ostomy also had the highest mean scores on social functioning. Subjects with DM and OA had lower scores and those with COPD had lowest scores. With 3 and 235 degrees of freedom, an F of 13.836 was significant at the level of 0.001 (Table 4-1).

Insert Table 4-1 about here

The results of the Newman Keuls post-hoc procedure showed that subjects with ostomy scored significantly higher than all of the other three groups. Subjects with OA and DM scored significantly higher than those with COPD. The scores of subjects with DM and OA did not differ significantly from each other (Table 4-2).

Insert Table 4-2 about here

Subjects with COPD and DM hardly participate in social activities. Although the same item (participate in social activities) was scored lowest among subjects with OA and ostomy, those subjects could participate in social activities some of the time (1-4 days in a week).

Symptom status: Subjects with ostomy had the highest mean scores on symptom status. Subjects with COPD had lower scores and those with DM and OA had lowest scores. With 3 and 232 degrees of freedom, an F of 11.611 was significant at the level of 0.001 (Table 5-1).

Insert Table 5-1 about here

The results of Newman Keuls post-hoc procedure showed

that subjects with ostomy scored significantly higher than all of the other three groups. In other words, they had the fewest symptoms. Subjects with COPD scored significantly higher than those with DM and OA. The scores of subjects with DM and OA did not differ significantly from each other (Table 5-2).

Insert Table 5-2 about here

Subjects with COPD had a lot of trouble with breathing. Pain was mentioned most often among subjects with OA. Subjects with DM had some trouble with pain and getting tired easily. Subjects with ostomy had some trouble with pain and sexual performance.

In summary, subjects with ostomy had significantly higher levels of physical, emotional, and social functioning. They also had the least number of symptoms. Subjects with DM and OA had significantly higher levels of physical, emotional, and social functioning than those with COPD. Subjects with COPD had fewer symptoms than those with DM and OA. Subjects with DM had a better level of physical functioning than those with OA. The levels of emotional and social functioning and symptom status were not found to be different between DM and OA groups.

By comparing the items with lowest scores in DUKE-UNC subscales among chronic illnesses groups, each chronic

illness had its own characteristics. Subjects with COPD had a lot of trouble with their breathing and physical activities such as running. They hardly participated in social activities. They tended to see themselves as failures. Subjects with DM had some trouble with pain and getting tired easily. They also had a lot of trouble with running activities and participating in social activities. Emotionally, they considered themselves somewhat healthy. Subjects with OA had a lot of difficulties in running activities and pain. Emotionally, they were somewhat satisfied with their sexual relationship. They did participate in some social activities. Subjects with ostomy were concerned with their sexual performance. Physically, they were able to do more activities than subjects in other chronic illnesses groups. Emotionally, they were somewhat satisfied with their sexual relationship. Socially, they did participate in some social activities.

What is the level of life satisfaction among the chronic illness groups?

Subjects with ostomy had the highest mean scores on life satisfaction. Subjects with OA had lower scores and those with DM and COPD had lowest scores. With 3 and 232 degrees of freedom, an F of 10.639 was significant at the level of 0.001 (Table 6-1).

Insert Table 6-1 about here

In comparing life satisfaction among these groups, the Newman Keuls post-hoc tests showed that subjects with ostomy had the highest level of life satisfaction of the four groups; the results were statistically significant. Subjects with OA had a significantly higher level of life satisfaction than those with DM and COPD. The scores of subjects with DM and COPD did not differ significantly from each other (Table 6-2).

Insert Table 6-2 about here

What is the relationship between the DUKE-UNC Health Profile subscales and Life Satisfaction?

The correlations between LSIZ and four DUKE-UNC subscales: symptom status and social, physical, and emotional functioning were 0.46, 0.42, 0.49, and 0.61 respectively with a significant level of 0.001. Life satisfaction scores from all four groups were positively related to four DUKE-UNC subscales. The correlations were statistically significant ($p< 0.01-0.05$) except for the correlation between life satisfaction and the physical subscale in the ostomy group ($r= 0.247$, $p= 0.055$) (Table 7).

Insert Table 7 about here

Calculation of correlation among four health variables: symptom, social, physical, and emotional were also performed for the entire sample. Correlation between social and physical, physical and emotional, and emotional and social functions were 0.55, 0.54, and 0.40 respectively with a significant level of 0.001.

In summary, subjects with ostomy had the highest scores in all DUKE-UNC subscales. Subjects with COPD had the lowest scores in physical, emotional, and social subscales. Subjects with DM and OA had the lowest scores (most symptoms) in symptom status.

In general, the items such as running activity and participating social activities scored lowest in physical and social function subscales among all subjects. It was characteristic that subjects with COPD described themselves as failing at everything they try to do, giving up easily, and not as smart as most people, while other subjects perceived themselves somewhat healthy.

The level of life satisfaction was positively correlated with all DUKE-UNC subscales. Each chronic illness group perceived the level of life satisfaction differently.

Discussion

Subjects with ostomy in this study tended to have significantly better social, physical, and emotional functioning than ones with osteoarthritis, diabetes, and COPD. The difference in emotional and social functioning and symptom status between subjects with OA and DM were not statistically significant. Subjects with DM had better physical functioning than those with OA. Subjects with COPD had significantly reduced social, physical, and emotional functioning.

Physical mobility was impaired by such symptoms of the chronic illnesses as pain or shortness of breath in individuals with osteo-arthritis and COPD respectively. Therefore, it may be difficult for those persons to attend social activities. On the contrary, symptoms of illnesses in individuals with ostomy and uncomplicated diabetes can be managed by surgery or medication. These individuals do not suffer from impairment of mobility and social isolation. Once complications develop in diabetic individuals, their mobility may be compromised. They may be more subject to social isolation.

In the study of Meenan, Yelin, Nevitt, and Epstein (1981), the results indicated that individuals with different chronic illness did not share the same health status. For example, individuals with pulmonary disease scored lowest in the tests of shortness of breath, mobility,

and activities of daily living. Persons with rheumatoid arthritis scored lowest in physical activity, dexterity, and pain categories. The study rated health status from the worst to the best in an order of rheumatoid arthritis, pulmonary diseases, diabetes, cardiac disease, breast cancer, and hypertension. The results from the present study seem to be consistent with the above study. Individuals with arthritis and COPD had worse health status scores.

Emotional functioning was found to be different among people with different chronic illnesses in this study. In two previous studies, there were no differences found in psychological variables among people with different chronic illnesses (Cassileth, Lusk, Strouse, Miller, Brown, Cross, & Tenaglia, 1984; Meenan, Yelin, Nevitt, & Epstein, 1981). The differences in results may be due to different indicators measured in studies. Self-esteem was the indicator of emotional function in this study. Depression and anxiety were the indicators of psychological health status in other studies.

The selection of self-esteem as the indicator of emotional function is based on the presumed importance of ego strength to emotional well-being (Parkerson, Gehlbach, Wagner, James, Clapp, & Muhlbaier, 1981). Low self-esteem developed from an impaired ego is a characteristic of depression (Haber, Leach, Schudy, & Sideleau, 1978). If an individual with a chronic illness had an adequate level of

self-esteem, he/she may be able to adapt more readily to the stresses generated from the chronic illness. Therefore, symptoms such as depression and anxiety may not be observed and self-esteem may be a more sensitive indicator of a person's emotional functioning. The further research is needed to explore the relationship between self-esteem and depression. It is also not known how self-esteem mediates the stresses generated from chronic illness.

In this study, subjects with COPD described themselves as failing at everything they do, giving up easily, and not as smart as most people. These descriptive attributes are the theme of low self-esteem. People with COPD are often told by the health professionals that their behavior such as smoking is the cause of the disease. A person will wonder about his/her ability of overcome the disease if the message is conveyed repetitively. Further study is needed to find out whether there is correlation between patients' perception of themselves and professionals' methods of patient care.

The social function subscale was found to be different among chronic illness groups statistically in this study. The range of the means and standard deviations varied greatly. For example, the range of the score for COPD was 0.24-0.82. Although the results were found significant statistically, it is not useful clinically due to the large variation of the scores. The items of the instrument may need to be more specific. Each patient's social function

needs to be thoroughly assessed individually for future care planning.

It is interesting to find that subjects with COPD to have the worst physical, emotional, and social functions and also have less symptoms in this study. The severity of the symptoms rather than the numbers of symptoms may have more impact on these individuals' health.

The mean scores of DUKE-UNC subscales of this study were similar to a 1985 study (Benson, Bletscher, Holt, King, & Schuman, unpublished master research project) and were lower than the scores of the general public (Parkerson, Gehlbach, Wagner, James, Clapp, & Muhlbater, 1981). (Table 8). Compared to general public, persons with chronic illnesses were less healthy in all aspects of health. Therefore, thorough assessment of an individual's health is indicated clinically.

Insert Table 8 about here

The results of level of life satisfaction in this study were not consistent with the results of a 1988 study (Pearlman & Uhlmann). In the latter study, patients' ratings of life satisfaction across chronic illness were not statistically different. Elderly persons (> 65 years old) were subjects used in the study of Pearlman and Uhlmann (1988). Older individuals may evaluate their levels of life

satisfaction differently. They may have adapted to their state of chronic illness through time. Adaptation processes may be an important variable which influences subjective perception of life satisfaction (Deyo, Inui, Leininger, & Overman, 1982). Further research studies are needed to confirm this explanation.

In this study, individuals with higher physical, social, and emotional functions had higher levels of life satisfaction such as those with ostomy. Subjects with COPD tended to have the worst health status and lowest level of life satisfaction. Although adaptation processes may alter those individuals' perception of life satisfaction in the later period of their lives regardless professionals' assistance, it is still health professionals' responsibility to assure smooth transition during the adaptation processes.

In summary, individuals with chronic illnesses do not share the same health status profile. Physical, emotional, and social health are inter-related. These levels of functioning are also positively related to person's level of life satisfaction.

The strength of this study is the measurement of subjective perceived levels of health status and life satisfaction. It is more meaningful to structure the care plan according to perceived needs of patients rather than professionals' opinions. The care will be more effective. There are a few limitations to this study. The health status

and the level of satisfaction of individuals without chronic illnesses were not studied for comparison. Generalizability of the results was small because subjects were selected from one health care facility.

Conclusion

Nursing assessment regarding individuals' physical, social, and emotional functioning is needed to formulate nursing care activities to meet each individual's needs. From this study, individuals with different chronic illnesses had different health status. With thorough nursing assessment, an appropriate nursing care plan can be designed to meet each individual's needs.

Life satisfaction of these individuals is less regarded in the literature. Caring is the core of nursing philosophy. It is vital to be aware of the needs of people with chronic illness physically and psychologically. The goal of achieving the highest level of life satisfaction may be possible with well-planned nursing care.

It is vital to understand the influence of health status upon individual's perceived level of life satisfaction. For example, health professionals are able to provide the most sophisticated treatment modalities to those with chronic illnesses. This may stabilize the disease processes but these people could still not be satisfied with their lives. The knowledge of health status and life satisfaction could influence clinicians to assess patients' needs more

thoroughly and to care for those with chronic illnesses with humanistic touch.

Further studies are needed to identify how each health variable impacts life satisfaction in each group of chronic illness and how each aspect of life satisfaction impacts each health variable. Effective nursing interventions to promote individuals' physical, emotional, and social health and the level of life satisfaction need to be identified.

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Table 1

Demographic Data

	Groups (%)				
	Total Sample	COPD	DM	OA	Ostomy
Gender					
Male	40.4	48.3	40.0	20.3	52.5
Female	59.6	51.7	60.0	79.7	47.5
Ethnic Bacground					
White	95.8	98.3	90.0	94.9	100.0
Other	4.2	1.7	10.0	5.1	-
Marital Status					
Married	57.9	45.0	45.0	67.8	73.8
Separated	2.1		3.3	1.7	3.3
Divorced	12.9	23.3	15.0	8.5	4.9
Widowed	22.9	30.0	26.7	22.0	13.1
Never married	4.2	1.7	10.0	-	4.9
Employment Status					
Retired	47.9	80.0	35.0	32.2	44.3
Disabled	15.8	15.0	21.7	22.0	4.9
Others	35.1	5.0	43.3	45.8	50.8
Occupation					
Domestic	9.5	no	11.7	15.5	1.6
Operative	6.7	data	5.0	3.5	11.5
Service	8.4		15.0	6.9	3.3
Protective	3.4		1.7	5.2	3.3
Skilled labor	7.8		10.0	6.9	6.6
Clerical/Sales	30.7		3.3	31.0	37.7
Managerial/prop	15.7		21.7	13.8	11.5
Semiprofessional	7.3		6.7	6.9	8.2
Professional	10.6		5.0	10.3	16.4
Level of Education					
Pro-Grad School	11.3	1.7	5.0	22.0	16.4
College Graduate	10.0	15.0	8.3	5.0	11.5
1-4 yrs college	24.6	26.7	25.0	22.0	24.6
High School Grad	35.0	43.3	25.0	32.0	39.3
Grade 10-11	6.3	6.7	10.0	8.5	-
Grade 7-9	11.3	6.7	23.3	6.8	8.2
< 7 yrs. ed.	1.7	-	3.3	3.4	-
Family Yearly Income					
< $ 5,000	13.6	1.7	27.6	25.0	1.6
$5,000-10,000	22.6	35.0	32.8	10.7	11.5
$10,001-15,000	11.9	28.3	5.2	8.9	4.9
$15,001-20,000	11.0	16.7	13.8	3.6	9.8
$20,001-25,000	11.0	15.0	3.5	5.4	19.7
$25,001-40,000	15.7	3.3	6.9	26.8	26.2
$40,001-65,000	9.8	-	8.6	10.7	19.7
> $65,000	4.3	-	1.7	8.9	6.6

Table 2-1

Summary of ANOVA between chronic illness groups and physical function subscale

Groups	M	SD
1. OA	0.5694	0.1584
2. Ostomy	0.7532	0.1012
3. Diabetes	0.6204	0.1659
4. COPD	0.4120	0.2084

Source	df	SS	MS	F	p
Between Subj.	239	9.8860			
G (Group)	3	3.6366	1.2122	45.776	0.0000
Sunbj. w G.	236	6.2494	0.0265		

Note. M=Mean; SD= Standard deviation; df= degrees of freedom; SS=Sum of squares; MS= Mean sum of squares; OA= Osteo-arthritis; DM=Diabetes Me;;itus; COPD= Chronic obstructive pulmonary diseases.

Table 3-1

Summary of ANOVA Between Chronic Illness Groups And Emotional Function Subscale

Groups	M	SD
1. OA	0.7419	0.1302
2. Ostomy	0.7834	0.1086
3. DM	0.7258	0.1483
4. COPD	0.6098	0.1040

Source	df	SS	MS	F	p
Between Subjects	236	4.5664			
Between Groups	3	0.9967	0.3322	21.686	0.0000
Subj. w Groups	233	3.5697	0.0153		

Note. M= Mean; SD= Standard deviation; OA= Osteo-arthritis; DM= Diabetes Mellitus; COPD= Chronic obstructive pulmonary diseases; df=degrees of freedom; SS= Sum of squares; MS= Mean sum of squares; w= within.

Table 3-2

Newman Keuls Post-hoc Tests For Emotional Function Subscale

Group Comparison	p-value
1<2	n.s.
1>3	n.s.
1>4	0.01
2>3	0.05
2>4	0.01
3>4	0.01

Note. 1= Osteo-arthritis; 2= Ostomy; 3= Diabetes amellitus; 4= Chronic obstructed pulmonary diseases; n.s.= nos-significant.

Table 4-1

Summary of ANOVA Between Chronic Illness Groups and Social Function Subscale

Groups	M	SD
1. OA	0.6661	0.2106
2. Ostomy	0.8000	0.1804
3. DM	0.6683	0.2014
4. COPD	0.5333	0.2964

Source	df	SS	MS	F	p
Between Subjects	238	14.2126			
Between Groups	3	2.1335	0.7112	13.836	0.0000
Subj. W Groups	235	12.0791	0.0514		

Note. M= Mean; SD= Standard Deviation; df= degrees of freedom; SS= Sum of squares; MS= Mean sum of squares; OA= osteo-rthritis; DM= Diabetes Mellitus; COPD= Chronic obstructed pulmonary diseases.

Table 4-2

Newman Keuls Post-hoc Tests For Social Function Subscale

Group Comparisons	p-value
1<2	0.01
1<3	n.s.
1>4	0.01
2>3	0.01
2>4	0.01
3>4	0.01

Note. 1= Osteo-arthritis; 2= Ostomy; 3= Diabetes Mellitus; 4= Chronic obstructed pulmonary diseases; n.s.= nonsignificant.

Table 5-1

Summary of ANOVA Between Chronic Illness Groups and Symptom Status Subscale

Groups	M	SD
1. OA	0.7633	0.1223
2. Ostomy	0.8761	0.0957
3. DM	0.7644	0.1547
4. COPD	0.8218	0.1077

Source	df	SS	MS	F	p
Between Subjects	235	3.9723			
Between Groups	3	0.5186	0.1729	11.611	0.0000
Subj. w Groups	232	3.4537	0.0149		

Note. M= Mean; SD= Standard deviation; df= degrees of freedom; SS= Sum of squares; MS= Mean sum of squares; OA= Osteoarthritis; DM= Diabetes Mellitus; COPD= Chronic obstructive pulmonary diseases.

Table 5-2

Newman Keuls Post-hoc Tests For Symptom Status Subscale

Group Comparisons	p-value
1<2	0.01
1<3	n.s.
1<4	0.05
2>3	0.01
2>4	0.05
3<4	0.05

Note. 1= Osteo-arthritis; 2= Ostomy; 3= Diabetes Mellitus; 4= Chronic obstructed pulmonary diseases. n.s.= non-significant.

Table 6-1

Summary of ANOVA Between Chronic Illness Groups and Life Satisfaction

Groups	M	SD
1. OA	45.6577	9.3341
2. Ostomy	49.4657	7.7795
3. DM	42.5551	8.8239
4. COPD	41.7667	7.3378

Source	df	SS	MS	F	p
Between Subjects	235	18333.0078			
Between Groups	3	2217.1116	739.0372	10.639	0.0000
Subj. w Groups	232	16115.8965	69.4651		

Note. M= Mean; SD= Standard deviation; df= degrees of freedom; SS= Sum of squares; MS= Mean sum of squares; OA= Osteo-arthritis; DM= Diabetes Mellitus; COPD= Chronic obstructed pulmonary diseases.

Table 6-2

Newman Keuls Post-hoc Tests For Level of Life Satisfaction

Group Comparisons	p-value
1<2	0.05
1>3	0.05
1>4	0.05
2>3	0.01
2>4	0.01
3>4	n.s.

Note. 1= Osteoarthritis; 2= Ostomy; 3= Diabetes Mellitus; 4= Chronic obstructed pulmonary diseases; n.s.= nonsignificant.

Table 7

Correlations between Life Satisfaction and Health Status Subscales in Chronic Illness Groups

Diagnostic Groups	Health Status Subscales			
	Sym	Soc	Phy	Emo
OA	0.567**	0.453**	0.480**	0.713**
Ostomy	0.395**	0.349**	0.247	0.407*
DM	0.343**	0.261*	0.294*	0.403*
COPD	0.535**	0.363**	0.626**	0.803**
TS	0.4633**	0.4175**	0.4863**	0.6056**

* p< 0.05, two-tailed.

** p< 0.01, two-tailed.

Note. OA= Osteoarthritis; DM= Diabetes Mellirus; COPD= Chronic obstructive pulmonary diseases; TS= Total sample; Sym= Symptom; Soc= Social; Phy= Physical; Emo= Emotional.

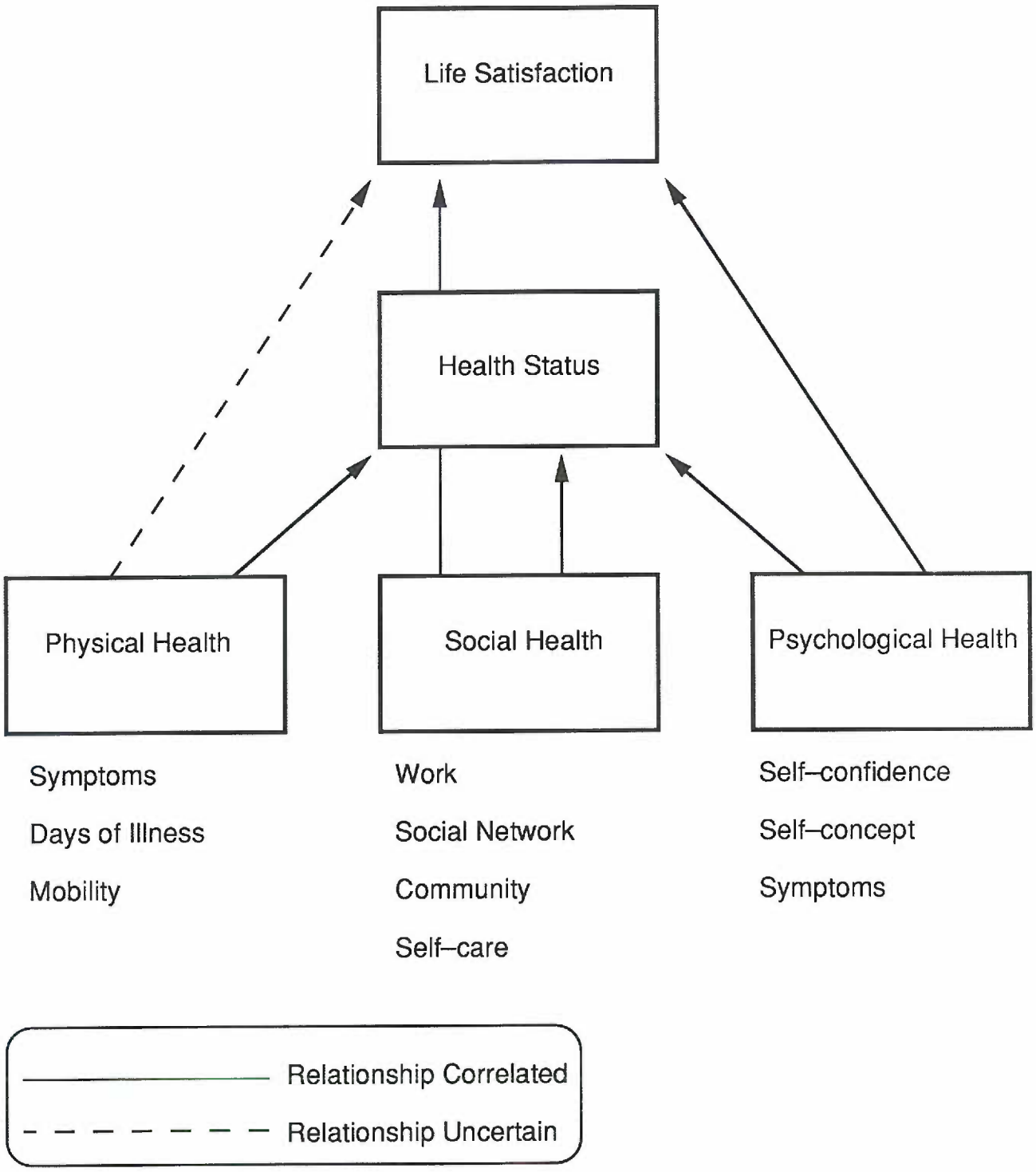
Table 8

Comparisons of DUKE-UNC Subscales Mean Scores Among Studies

Authors	Sym.	Phy.	Emot.	Soc.	n
Parkerson, et.al.	0.84	0.72	0.77	0.74	395
Benson, el.al.	0.77	0.53	0.60	0.69	76
Willeford	0.81	0.59	0.66	0.67	238

Note. Sym.= Symptom status; Phy.= Physical function; Emot.= Emotional function; Soc.= Social function; n= Numbers of subjects in the study.

Figure 1. Conceptual Framework



An Abstract Of The Thesis Of

Carol S. Willeford

For the MASTER OF NURSING

Date of Receiving this Degree: June 8, 1990

Title: A Comparative Study of Chronic Illness in Health

Stat[redacted]

Approved: _____

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

This study was to describe and compare the health status and the level of life satisfaction among five chronic illness groups (Ostomy, Diabetes Mellitus, Chronic Obstructive Pulmonary Disease, and Osteo-arthritis).

This volunteer convience sample (n=236) was tested with the DUHP and LSI-Z. The results showed that the mean score of each chronic illness group was significantly different from other chronic illness groups. The levels of life satisfaction were significantly different among chronic illness groups.

Appendix A

DUKE-UNC Health Profile

Duke-UNC Health Profile

Instructions: 72

Here are a number of questions about your health and feelings. Please read each question carefully and check (✓) your best answer. You should answer the questions in your own way. There are no right or wrong answers.

DURING THE PAST WEEK: How much trouble have you had with:

	None	Some	A Lot
1) Eyesight			
2) Hearing			
3) Talking			
4) Tasting food			
5) Appetite			
6) Chewing food			
7) Swallowing			
8) Breathing			
9) Sleeping			
10) Moving your bowels			
11) Passing water/urinating			
12) Headache			
13) Hurting or aching in any part of your body			
14) Itching in any part of your body			
15) Indigestion			
16) Fever			
17) Getting tired easily			
18) Fainting			
19) Poor memory			
20) Weakness in any part of your body			
21) Feeling depressed or sad			
22) Nervousness			

DURING THE PAST MONTH how much trouble have you had with:

	None	Some	A Lot
23) Undesired weight loss			
24) Undesired weight gain			
25) Unusual bleeding			
26) Sexual performance (Having sex)			

DURING THE PAST WEEK how often did you:

	Not at All	1-4 Days	5-7 Days
27) Do your usual work (either inside or outside the home)	_____	_____	_____
28) Get your work done as carefully and accurately as usual ...	_____	_____	_____
29) Socialize with other people (talk or visit with friends or relatives)	_____	_____	_____
30) Take part in social, religious or recreation activities (meetings, church, movies, sports, parties)	_____	_____	_____
31) Care for yourself (bathe, dress, feed yourself)	_____	_____	_____

DURING THE PAST WEEK:

	None	1-4 Days	5-7 Days
32) How many days did you stay *in your home* because of sickness, injury or health problems?	_____	_____	_____
33) How many days were you *in bed* most of the day because of sickness, injury or health problems?	_____	_____	_____

TODAY would you have any physical trouble or difficulty:

	None	Some	A Lot
34) Peeling an apple	_____	_____	_____
35) Combing your hair	_____	_____	_____
36) Walking to the bathroom	_____	_____	_____
37) Walking up a flight of stairs	_____	_____	_____
38) Running the length of a football field	_____	_____	_____
39) Running a mile	_____	_____	_____
40) Running 5 miles	_____	_____	_____

Instructions:

Here are some statements you could use to describe how you feel about yourself. Please read each statement carefully and place a check (✓) in the blank that best fits how the statement describes you.

Here is an example:

	Yes, describes me exactly	Somewhat describes me	No, doesn't describe me at all
I like T.V. soap operas		✓	

(If you put a check where we have, it means that liking T.V. soap operas describes you more than "somewhat" but not "exactly".)

Answer each item as best you can. There are NO right or wrong answers.

	Yes, describes me exactly	Somewhat describes me	No, doesn't describe me at all
41) I am a pleasant person			
42) I don't feel useful			
43) I get on well with people of the opposite sex ..			
44) My family doesn't understand me			
45) I like who I am			
46) I feel hopeful about the future			
47) I try to look my best			
48) I am a clumsy person			
49) I have difficulty making decisions			
50) I like meeting new people			
51) I'm not an easy person to get along with			
52) I'm a failure at everything I try to do			
53) I'm basically a healthy person			
54) I wish I had more sex appeal			
55) I give up too easily			
56) I like the way I look			
57) I'm not as smart as most people			
58) I have difficulty concentrating			
59) I'm satisfied with my sexual relationships			
60) I am happy with my family relationships			
61) I don't treat other people well			
62) I am comfortable being around people			
63) I can take care of myself in most situations			

INSTRUCTIONS FOR ADMINISTRATION AND SCORING DUKE-UNC HEALTH PROFILE

Purpose and Nature of the Instrument

The measurement of health is important in studying human response to physical and psychosocial environmental factors and in assessing the impact of medical care interventions. While other measures of health status exist and have had limited use among health care researchers, there has been a need for an instrument suitable both for research and for ongoing clinical assessment which is brief, simply administered, and easily comprehended by a broad cross section of patients in the primary care setting. The Duke-UNC Health Profile (DUHP) was developed to meet this need. It is intended for adults aged 18 years or older, is self-administered for those with at least a ninth grade education or otherwise easily interviewer-administered, and can be scored by hand or machine.

Its 63 self-descriptive items cover the following major dimensions of health: symptom status (26 items); physical function measured by disability days, ambulation and use of upper extremities (9 items); emotional self-esteem including personal, physical and social self (23 items); and social role performance comprising self-care, ability to function in the work place or at home, interactions with people and participation in community and social events (5 items). Completion time is 10 minutes (self-administered) or 20 to 30 minutes (interviewer-administered).*

Guidelines for Administration

Self-administration:

1. The questionnaire should be completed within a stated encounter or doctor visit.
2. There should be no discussion of any of the items with anyone, including family members.
3. To ensure completeness of data, reinforce the importance of responding to every item and check for any missing items when the respondent has finished the questionnaire.

Interviewer-administration:

1. Administration by interviewer is indicated for those participants with less than ninth grade education, and/or with a writing or visual impairment.
2. The entire questionnaire, including instructions and items, must be read exactly as written.

A standardized explanation of the instrument by the administrator to the respondent should be developed by each investigator or provider using the DUHP. It should be appropriate for the particular setting in which it is being used.

Calculation of Dimension Scores

Each item has a range of values from 0 to 2 or 0 to 4 depending on the length of its scale. Each of the four dimension scores, i.e., symptom status, physical, emotional, and social function, is a proportion from 0 to 1 and is calculated by summing the raw item values within each dimension and dividing by the maximum sum for that dimension. Higher scores indicate better function; lower scores, poorer function.

> **Example:** If 5 symptoms are checked as "some trouble" and the remaining 21 are "no trouble," the raw symptom sum is $(5 \times 1) + (21 \times 2)$ or 47; the symptom status dimension score is 47 divided by the maximum symptom sum, 52, or 0.90.

Missing data: Despite precautions to ensure that all the items are answered, respondents may still omit items. The scoring procedure to follow for missing items is to use a substitute value for each item omitted. This substitute value is a dimension-specific mean, a whole number, which is computed by summing the values of the items checked within a given dimension and dividing by the number of items checked. If the tenth decimal place is greater than or equal to 5, the mean is rounded to the next whole number.

> **Example:** Two of the 26 symptom status items were not checked by the respondent. The sum of the values for the remaining 24 items which were checked equals 36. The mean substitute value then would be $36 \div 24 = 1.5$. When this value, rounded to 2, is substituted for each of the missing values, the raw score for the dimension becomes $36 + 2 + 2 = 40$. This is divided by the maximum sum for the symptom status dimension to give the final score, 0.77 ($40 \div 52 = 0.77$).

See the following pages for the values assigned for scoring. (Transparent overlays are furnished to facilitate scoring.)

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*For development of the instrument and its psychometric properties, see: Parkerson G R Jr, Gehlbach S H, Wagner E H, James S A, Clapp N E, Muhlbaier L H: The Duke—UNC Health Profile: An Adult Health Status Instrument for Primary Care. *Medical Care* 19:806-828, 1981.

Duke-UNC Health Profile

Instructions:

Here are a number of questions about your health and feelings. Please read each question carefully and check (✓) your best answer. You should answer the questions in your own way. There are no right or wrong answers.

SYMPTOMS—TOTAL SUM: 52

DURING THE PAST WEEK: How much trouble have you had with:

	None	Some	A Lot
1) Eyesight	2	1	0
2) Hearing	2	1	0
3) Talking	2	1	0
4) Tasting food	2	1	0
5) Appetite	2	1	0
6) Chewing food	2	1	0
7) Swallowing	2	1	0
8) Breathing	2	1	0
9) Sleeping	2	1	0
10) Moving your bowels	2	1	0
11) Passing water/urinating	2	1	0
12) Headache	2	1	0
13) Hurting or aching in any part of your body	2	1	0
14) Itching in any part of your body	2	1	0
15) Indigestion	2	1	0
16) Fever	2	1	0
17) Getting tired easily	2	1	0
18) Fainting	2	1	0
19) Poor memory	2	1	0
20) Weakness in any part of your body	2	1	0
21) Feeling depressed or sad	2	1	0
22) Nervousness	2	1	0

DURING THE PAST MONTH how much trouble have you had with:

	None	Some	A Lot
23) Undesired weight loss	2	1	0
24) Undesired weight gain	2	1	0
25) Unusual bleeding	2	1	0
26) Sexual performance (Having sex)	2	1	0

SOCIAL—TOTAL SUM: 10

DURING THE PAST WEEK how often did you:

	Not at All	1-4 Days	5-7 Days
27) Do your usual work (either inside or outside the home)	0	1	2
28) Get your work done as carefully and accurately as usual ...	0	1	2
29) Socialize with other people (talk or visit with friends or relatives)	0	1	2
30) Take part in social, religious or recreation activities (meetings, church, movies, sports, parties)	0	1	2
31) Care for yourself (bathe, dress, feed yourself)	0	1	2

PHYSICAL—TOTAL SUM: 18

DURING THE PAST WEEK:

	None	1-4 Days	5-7 Days
32) How many days did you stay *in your home* because of sickness, injury or health problems?	2	1	0
33) How many days were you *in bed* most of the day because of sickness, injury or health problems?	2	1	0

TODAY would you have any physical trouble or difficulty:

	None	Some	A Lot
34) Peeling an apple	2	1	0
35) Combing your hair	2	1	0
36) Walking to the bathroom	2	1	0
37) Walking up a flight of stairs	2	1	0
38) Running the length of a football field	2	1	0
39) Running a mile	2	1	0
40) Running 5 miles	2	1	0

Instructions:

Here are some statements you could use to describe how you feel about yourself. Please read each statement carefully and place a check (✓) in the blank that best fits how the statement describes you.

Here is an example:

	Yes, describes me exactly	Somewhat describes me	No, doesn't describe me at all
I like T.V. soap operas		✓	

(If you put a check where we have, it means that liking T.V. soap operas describes you more than "somewhat" but not "exactly".)

Answer each item as best you can. There are NO right or wrong answers.

EMOTIONAL—TOTAL SUM: 92

	Yes, describes me exactly		Somewhat describes me		No, doesn't describe me at all
41) I am a pleasant person	4	3	2	1	0
42) I don't feel useful	0	1	2	3	4
43) I get on well with people of the opposite sex ..	4	3	2	1	0
44) My family doesn't understand me	0	1	2	3	4
45) I like who I am	4	3	2	1	0
46) I feel hopeful about the future	4	3	2	1	0
47) I try to look my best	4	3	2	1	0
48) I am a clumsy person	0	1	2	3	4
49) I have difficulty making decisions	0	1	2	3	4
50) I like meeting new people	4	3	2	1	0
51) I'm not an easy person to get along with	0	1	2	3	4
52) I'm a failure at everything I try to do	0	1	2	3	4
53) I'm basically a healthy person	4	3	2	1	0
54) I wish I had more sex appeal	0	1	2	3	4
55) I give up too easily	0	1	2	3	4
56) I like the way I look	4	3	2	1	0
57) I'm not as smart as most people	0	1	2	3	4
58) I have difficulty concentrating	0	1	2	3	4
59) I'm satisfied with my sexual relationships	4	3	2	1	0
60) I am happy with my family relationships	4	3	2	1	0
61) I don't treat other people well	0	1	2	3	4
62) I am comfortable being around people	4	3	2	1	0
63) I can take care of myself in most situations	4	3	2	1	0

Appendix B

Life Satisfaction Index--Z

INSTRUCTIONS: Here are some statements about life in general that people feel differently about. After reading the statement, please circle the number that best matches your level of agreement or disagreement with each statement.

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1. As I grow older, things seem better than I thought they would be.	1	2	3	4	5
2. I have gotten more of the breaks in life so far than most of the people I know.	1	2	3	4	5
3. This is the dreariest time of my life.	1	2	3	4	5
4. I am just as happy as when I was younger.	1	2	3	4	5
5. These are the best years of my life.	1	2	3	4	5
6. Most of the things I do are boring or monotonous.	1	2	3	4	5
7. The things I do are as interesting to me as they ever were.	1	2	3	4	5
8. As I look back on my life so far, I am fairly well satisfied.	1	2	3	4	5
9. I have made plans for things I'll be doing a month or a year from now.	1	2	3	4	5
10. When I think back over my life so far, I haven't gotten most of the important things I wanted.	1	2	3	4	5
11. Compared to other people, I get down in the dumps too often.	1	2	3	4	5
12. I've gotten pretty much what I expect out of life so far.	1	2	3	4	5
13. In spite of what people say, the lot of the average person is getting worse, not better.	1	2	3	4	5