

PERCEIVED CONTROL AND HEALTH-PROMOTING BEHAVIORS AS
PREDICTORS OF LIFE SATISFACTION AND WELL-BEING OUTCOMES
OF WOMEN WITH LONG-TERM SPINAL CORD INJURY

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To the Dean for Graduate Studies and Research:

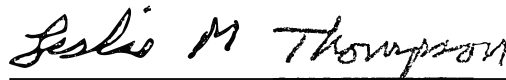
I am submitting herewith a dissertation written by Susan Kay Nunchuck entitled "Perceived Control and Health-Promoting Behaviors as Predictors of Life Satisfaction and Well-Being Outcomes of Women with Long-term Spinal Cord Injury." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Nursing.


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We have read this dissertation
and recommend its acceptance:

Accepted


Leslie M. Thompson
Dean for Graduate Studies
and Research

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DEDICATION

This dissertation is dedicated to the two most significant reasons for my survival and being. I dedicate this dissertation to my niece, Susan Scheef, who entered this world eight years ago during my chemotherapy for cancer. She has always given me a reason for being. Also, if it were not for my dog, Keeper, a constant companion these thirteen years, my life may have been one of mediocrity.

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ABSTRACT

Perceived Control and Health-Promoting Behaviors as Predictors of Life Satisfaction and Well-being Outcomes of Women with Long-term Spinal Cord Injury

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May, 1991

Forty women with long-term SCI, living in the community, were randomly selected to investigate the relationship between personal control of lifestyle and adjustment to rehabilitation. Utilizing the Nunchuck Interpersonal Human Potential Model for Nursing (NIHPM) a study was designed to demonstrate that perceived control and health-promoting behaviors could predict life satisfaction and well-being outcomes. A cross-sectional, correlational, descriptive design was utilized to identify significant physiologic and psychosocial parameters and behaviors used by long-term spinal cord injured women. Additionally, the study was designed to estimate the relationship of predictor to outcome variables.

Subjects completed a demographic data sheet, structured interview, physical examination including breast and gynecologic exam, and six self-report scales; a researcher designed Perceived Control Questionnaire, Health-promoting Lifestyle Profile, Life Satisfaction Index-A, Index of Psychological Well-being, Perceived Stress Scale, and Center for Epidemiologic Studies Depression Scale. Data were analyzed by descriptive statistics; bivariate statistics of the demographic, physiologic, and psychosocial parameters, correlates of spinal cord injury, and a multivariate

statistical model consisting of multiple regression, canonical correlations, and multiple analysis of covariance.

There were significant findings ($p < .05$) among the demographic variables of education, race, income, age, level and completeness of injury, etiology of injury, marital status, weight, and pulse. Bivariate analyses among the breast exam score and health-promoting lifestyle profile ($p < .05$) and perceived control, perceived stress and symptoms of depression were significant ($p < .01$) as related to age and race. Perceived control and health-promoting behaviors, as isolated by multivariate analyses, significantly contributed (67%) to life satisfaction and (< 40%) to psychological well-being. Due to the statistical significance of these variables as predictors of the outcome variables, their effects were held constant to evaluate the effects of age, race, and income as related to life satisfaction and well-being. The results supported the hypothesis that a significant direct relationship exists between perceived control and health-promoting behaviors as predictors of life satisfaction and well-being outcomes in women with long-term spinal cord injury irrespective of age, race, or income.

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CHAPTER 1

INTRODUCTION

The importance of personal control of attributes such as attitudes and behaviors to an individual is the single best predictor of whether or not a person is capable of adjusting to the complexity and challenges affecting life satisfaction and well-being. The relationship between behaviors that are under volitional control and responsibility for health is a subjective norm of positiveness or negativeness when catastrophic loss of movement and sensation are suddenly and irrevocably lost. The responsibility to communicate the importance of health-promoting behaviors that are gender specific in a devastating loss such as spinal cord injury is germane to nurses who assist these persons in returning to their homes and communities.

Spinal cord injury (SCI) is catastrophic. Depending on the level and completeness of the injury, the outcome often leaves the victims with lifetime disabilities affecting self, others, and their environment. Few losses are as integral to life and wellness as paralysis from SCI and its resultant permanent disability. The etiology of SCI differs somewhat for men and women, with more injuries in men resulting from motor vehicle accidents and sports injuries. Spinal cord injuries in women result more frequently from being the passenger in motor vehicles and from acts of violence (Treischman, 1988).

Women who have long-term SCI are vulnerable to factors which threaten their life satisfaction, and physical and psychological well-being. Bozzacco (1990) associated the vulnerability of women to their interactions with the environment and demonstrated the

presence of attributional behaviors which include appraisal, coping, acceptance, and competence. The devastating physiological effects reported by Brown and Griesy (1986) often over-shadow psychological effects of traumatic injury and loss of function, emotional distress, shattered body image, and dependency which may lead a woman with long-term SCI to withdraw from society. Crewe (1979) found divorce, separation, and desertion to be higher among women with SCI than among their male counterparts. Therefore, SCI represents an overwhelming attack on the behavioral patterns of a woman's life.

O'Toole and Weeks (1987) noted that the absence of sanctioned roles for women with long-term SCI may cultivate a psychological sense of invisibility, self-estrangement, and powerlessness. Bonwich (1985) and Trieschman (1988) contended that although the role strains were different for women than for men, and that although fewer women (18%) than men (82%) are afflicted by SCI, women with SCI deserve the effort to understand the long-term effects, as well as, the provision of appropriate assistance.

Contemporary rehabilitation nursing can be faulted for a preoccupation with the first year or two of the SCI woman's life, rather than being concerned with her entire post-injury life-span (Trieschman, 1988). The absence of a knowledge foundation for nursing upon which to prioritize development of needed long-term interventions is particularly unfortunate at a time when so much is known about the management of acute care of women with SCI.

The ability to extrapolate long-term outcomes from acute injury of SCI in women is unknown. The enormous individual differences in self-concept, physical affliction, outlook on the world, and family reaction are dramatically different for newly injured

woman than for those women who have lived with their injury for decades. However, according to Wright (1983), research into strategies used by women with long-term SCI has been non-existent.

A paramount goal of rehabilitation nursing should be to employ anticipatory gender specific techniques to assist women with SCI in overcoming their physical, psychological, and social limitations. The interpersonal skills that nurses employ during patient rehabilitation and their ongoing contact with current or former patients offers a unique opportunity to facilitate personal control of attitudes and health-promoting behaviors that can significantly impact life satisfaction and well-being.

Rehabilitation nurses lack the information needed to accomplish the goal of adequately preparing the newly injured woman with SCI for a future which may include sexuality and childbearing. Investigation into the long-term lifestyle attributes and behaviors of women disabled by SCI may provide the interpersonal methods that nurses could use to maximize the future life satisfaction and well-being of these women.

Problem of Study

The problem of this study was to answer the question: What is the relationship among perceived control and health-promoting behaviors as predictors of life satisfaction, and well-being outcomes of women with long-term SCI?

Rationale for Study

For years, the societal dimensions of SCI were the primary problematic concerns. Such issues according to Trieschman (1988) included custodial care, cost, prevention of new injuries, survival, medical management, and education of professionals. Individuals

with a SCI irrespective of gender make for a heterogeneous group often penalized and with few choices or freedoms. Reintegration into family, work, community, general medical services, and the social service system entails efforts to develop a self to cope with activities of daily living, loss of independence and self-worth, and loss of personal control over life events.

The paucity of research in women's health issues particularly of women with disabilities is readily apparent. Relatively no data were found to generalize to disabled women's issues or to studies that have included women with SCI. Literature was reviewed from 1970 forward resulting in very few studies and these studies were not totally focused on women with SCI of long-term duration. Trieschman (1988) stated that frequently women, especially those with SCI, are excluded from statistical analyses due to the relative ratio of 5:1 incidence of injury for men to women. The confounding data for female samples has been simply ignored or an uninteresting anomaly. The problem of analysis of the women's data alone is one of lack of ability to generalize findings with no documented previous interpretations.

Difficulty in the process of determining nursing interactions that influence a long-term disabled woman's behavior cannot be narrowly defined by assessment of groups of women dealing with the effects of acute SCI. Systematic studies of women with SCI, according to Trieschman (1988), are requisite to explicate the relevant explanatory concepts of the women's behavior. Health professionals such as nurses need to research these issues to achieve a balance when assisting these women with psychosocial, biological, and environmental influences in preparation for the return to useful lives.

Investigators should therefore evaluate the effects of SCI through clinical observation and functional outcome.

Sarason, Johnson, & Siegel (1978) found that life changes that required adaptation by the person were stressful. They indicated that persons who experienced marked degrees of life changes during significant life events were susceptible to physical and psychiatric problems in concert with a disintegrated self-concept. The ability to formulate a concept of self after SCI that is congruent with one's abilities and needs implies that the person has the physical and psychological capacity to realize life options and to make choices by weighing alternatives in accordance with short and long-term goals (Banja, 1988). Choices thereby carry consequences that are predictably satisfying or dissatisfying.

Sennott (1987) found that the difficulty of performing health practices was the major predictor of adults' intentions to engage in health behaviors related to risk reducing actions. Strickland (1979) stated that persons characterized by internal control believe that health outcomes are due to their own efforts and abilities. In contrast, persons externally controlled would expect health outcomes to be beyond personal control and due to chance or powerful others (Strickland, 1979). A link between emotions, uncertainty, and hardness may well contribute to poor health practices and thus to secondary impairments (Leiker & Hurley, 1988; Mishel & Braden, 1988; Hannah, 1988).

Potentially stressful situations that can be controlled or are perceived as being controlled tend to be interpreted as less threatening, underscoring the subjectivity and individuality of control. The potential relationship of these factors to health-promoting behaviors as predictors of the outcome of life satisfaction and well-being of women with

long-term SCI may very well dictate their health practices (Dennis, 1987). A woman's perception of affective and/or cognitive control of such medical procedures as gynecologic and breast examination may mean the difference between a traumatic situation or reaction ranging from fear, mild anxiety and embarrassment to avoidance of the examination altogether (Domar, 1985; Willard, 1984; Olsson & Gullberg, 1987).

While able-bodied women view the pelvic examination with a negative attitude, the fear and anxiety for spinal cord injured women are magnified by factors taken for granted by their able-bodied peers. Charlifue, Menter, Whiteneck, and Manley (1988) found that the transfer from wheelchair to examination table, catheter interference, bowel or bladder incontinence, range of motion, lack of vaginal lubrication, dysreflexia, and difficulty in body positioning were stated by patients as limitations to pelvic examination in women with SCI. Hallal (1982) and Rutledge (1987) found a significant relationship between frequency of breast self-exam, perception of cancer susceptibility, and self-esteem. The significance of paralysis and its impact on breast self-exam and self-perception of risk for breast cancer are relatively unknown in women with SCI.

For nurses to understand and make recommendations or structure interventions for women with long-term SCI, gender specific research is necessary. The issues, concerns, and health-promoting behaviors such as pelvic and breast examination for women with long-term SCI must be assessed. Other unexplored areas to be investigated include an evaluation of life satisfaction, and the physical and psychological well-being of these women in relation to their admitted health beliefs and practices juxtaposed with how much control they perceive to have in promoting their health status.

Conceptual Framework

The Nunchuck Interpersonal Human Potential Model for Nursing (NIHPM) will be used as the conceptual framework in this study. The NIHPM (Figure 1) is based on the physiologic, psychologic, spiritual and social well-being of the person as defined by Schorr and Rodin (1982) with integration of psychologic theories of Rotter (1990), a philosophic model by Zaner (1970), and the interactional nursing model of Travelbee (1971). The metaparadigm concepts of person, environment, health and nursing have been defined for this specific model:

1. Person: an interactional being who has a world of significance and value but a difference of concerns based on culture, individual situation, and environment that shapes behavior or its expressions in each person's context (Leonard, 1989).
2. Environment: a medium that allows the person to act in a context with the world or reciprocal relationship with other people, physical events, and situations (Wright, 1983).
3. Health: an individual's conscious state that allows the person to reflect on the self to increase their human potential or find meaning or perspective in health through illness or recovery (Moch, 1989).
4. Nursing: an interpersonal process that assists a person in the individual context to increase awareness and human potential to prevent or cope with the experience of illness and suffering and to find meaning in the experience (Travelbee, 1971).

The assumptions of the Nunchuck Interpersonal Human Potential Model for (NIHPM) Nursing are the following:

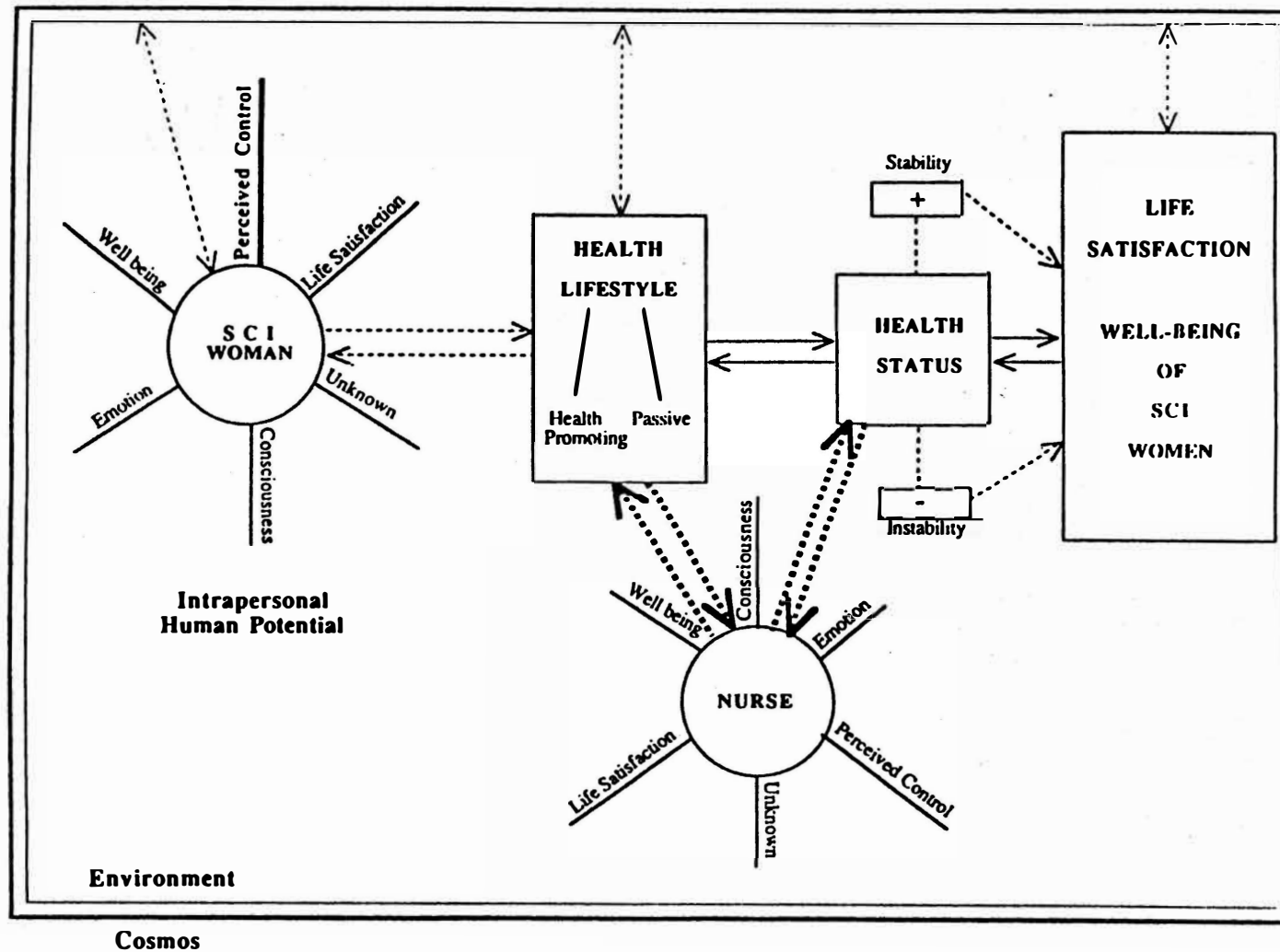


Figure 1. Nunchuck Interpersonal Human Potential Model

1. The person is in reciprocal interaction with the environment (Schorr & Rodin, 1982).
2. The person's response to and relationship with the environment is framed in physiologic, psychologic, and social control (Rotter, 1990).
3. A nurse and person are interactional beings relating interpersonally with the environment (Travelbee, 1971).
4. The ability of beings to survive is dependent upon the human potential to adapt internal and external characteristics of the person to ecologic incentives (Rotter, 1990).

Components integral to the Nunchuck Interpersonal Human Potential Model (NIHPM) include the interrelationships among the person and the environment. The response to and the ability of the person to survive in the environment is based on the degree of personal control of physiologic, psychologic and social factors.

The model incorporates two reciprocal relationships of the person with the environment: intrapersonal and interpersonal. Variables which could be deliberate and may be influential factors in the development of human potential are age, socioeconomic level, marital status, employment status, education, and ethnic origin. These variables may affect the relationship of the person's perception of self, or intrapersonal relationship, and perception of the self by others, or interpersonal relationship during interactions in the environment. The person, through a heightened awareness and conscious effort, may choose to respond to the environment under the influence of the psychosocial variables or from the ecologic survival of the being through personal relationships congruent with life goals and values (Zaner, 1970).

The intrapersonal relationship of the self can be broken out from the larger model and inspected for its contribution to the person enabling a clearer understanding of attributional characteristics and behavioral development. The essence of intrapersonal human potential is a multi-dimensional unity of six indicators. These indicators function in a singular yet integrated fashion for the survival of the person. The six indicators are identified as well-being, life satisfactions, consciousness, emotion, perceived control, and other unknown characteristics (Figure 2). The singular function of intrapersonal human potential may be interpreted as a oneness with the cosmos over a set of consequences that interrelate with human potential to create self-awareness and consciousness of the environment. The integrated function of interpersonal human potential is socialization with the cosmos over a set of consequences with multiple humans who have the potential to create stability and optimal socialization with the environment (Lefcourt, 1982).

Intrapersonal human potential relates to the potential for self-actualization at a central point in time and space. This central point moves with the ebb and flow of life events and personal interactions with the environment. These interactions occur in the search for stability. With the ability of intrapersonal human potential to focus on a central point, the essence develops from life experiences and a oneness of the spirit and body in an interaction with others in the cosmos. These interactions form the basis for intentions, actions, and responses in the behavior of the person with others.

Throughout the life-span of the person, time and space transform the interpersonal awareness and consciousness into intrapersonal oneness. The more increased the awareness and consciousness of the intrapersonal human potential, the greater the

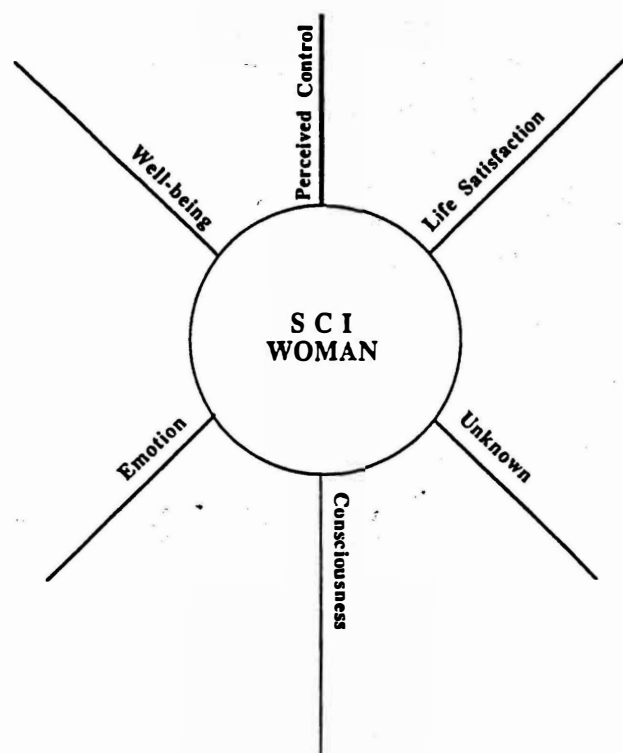


Figure 2. Intrapersonal Human Potential

person's ability to focus on the larger interpersonal awareness and consciousness and the most rudimentary feature of life itself, survival (Zaner, 1970).

The Nunchuck Interpersonal Human Potential Model for Nursing relates to the proposed study of women with long-term SCI as the framework for indication of predictors of outcome of the individual to the rehabilitation process. The ability of the

disabled woman to focus her intrapersonal human potential as she moves transitionally from injury to community over the life-span as a oneness with the environment is unknown. Potential questions from the model to be answered are: Who am I? How important are perceived control and health-promoting behaviors as predictors of life satisfaction and well-being of women with long-term SCI? What outcome may the levels of life satisfaction and well-being over the long-term adjustment or coping with their disability have on the demographic characteristics or correlates of SCI? How has perceived control affected the health-promoting behaviors of the disabled woman?

The model additionally serves as a focus to give structure to appraising the attributes of the personal control of women with long-term SCI in relation to the personal and interpersonal human potential utilized to cope with long-term disability from SCI. The way in which the disabled woman conducts her day to day activities changes over the years of injury and may serve to strengthen or denigrate the human potential of the woman. The potential for effects on health, life satisfaction, and well-being are influenced by the positiveness or negativeness of those behaviors. The model therefore serves as the expression of the human potential of women with long-term SCI and the achievement of the highest potential for life satisfaction and well-being.

The concept of person incorporates perception, communication, self-awareness and role functioning of the self and others. A person differentiates perceived from actual significance and value from interrelation of the environment and socialization with others. The resultant perceived or actual control the person exerts over a set of consequences or life experiences is based on culture, individual situations, and the environment (Rotter, 1990).

Self-aware persons throughout the life-span strive for the development of value systems and philosophy of life. Persons' perceptions of their relationship to the self and consciousness gives rise to changes in values, behaviors, and beliefs. Behavioral expressions displayed in one's actions, intentions, responses, and consequences are a process to absorb or accommodate life events that are unexpected. A person responds to consequences of unexpected events by labeling them as a catastrophe and indicates through communication to others via actions that a limited range of disturbances can be absorbed. If limits are exceeded, the normal corrective responses can no longer work. Therefore, management of human resources is dependent upon keeping options open. Failure to keep options open assures the prevention of flexibility to dynamic forces (Rotter, 1990).

The interpersonal relationships or interactions are positively or negatively influenced by the environment with resultant actual or potential problems delineated by socialization of the individuals. Physiological, psychological and social factors play a significant role in a person's ability to respond and relate to the environment. The ability to survive is dependent upon the capacity to adapt to ecologic incentives, both internal and external, and evolutionary characteristics. The ability of the individual to interact in a oneness with the environment is reflected in a hierarchical order of actual and perceived amount of control (Janisch & Waddington, 1976).

The extrapersonal relations of the person with the environment are differentiated according to fixed and variable influences external to the person. The environment has no boundaries. The cosmos serves as a foundation for the unity of spirit and body as the person interacts within an internal and external milieu. The concept of the environment is

a duality of role for the internal and external milieu. The external environment is a non-discrete entity where the fluid ebb and flow of the life-span brings the human potential into awareness and consciousness with nature, all objects, others, and life experiences.

The oneness of the body and spirit of the person within the context of interpersonal relations gives dimension to the internal and external environment milieu of the person and constitutes a model for others with the environment and cosmos (Leonard, 1989). Within the resources of the human potential the person learns to live with disturbances, variability, and uncertainty. This universal stability, one with others, in the environment potentiates the multi-dimensional unity of intrapersonal human potential indicators into the essence of the person. The ultimate goal of intrapersonal human potential for the person is stability of the internal and external milieus.

Representative behavior external to the person may be related to the dimension of influential others or luck. Lefcourt (1982) contended that persons who exhibited a perceived inability to effect their own self-determination may relate to external factors as the response to deprivation or denigration which may result in poor coping skills. The tendency of the persons to seek approval of others for their behavior may result in reinforcement of personally selected behaviors based on their consequences (Rotter, 1990). Once a response set can be derived that is mutually satisfying to the person based on environmental reinforcement, the person has a tendency to respond on the basis of behavioral style and self-concept. These behaviors could be conforming to social norms through group pressure or to contextual demands based on the person's repertoire and previous environmental reinforcement.

Because the nurse occupies a parallel existence with the person in the environment, the deliberative actions necessary to effect or maintain stability of the person ultimately affect the stability and intrapersonal human potential of the nurse. The NIHPM, as used for this study, demonstrates interpersonal relations as requisite to the person-nurse relationship. Deliberative actions by the nurse can only be effective if the human potential indicators of the person are measured to ascertain aspects of the state of stability. Such measurements result in multidimensional information which can be used by the nurse to determine responses and actions to the consequences of uncertainty and instability during ever-changing environmental forces.

The nurse interacting with the person at risk of instability is demonstrating the essence of nursing for this study. The dynamics of the opportunity to interact with the person enable the nurse and person to establish a trust relationship (Travelbee, 1971). During the process of interaction, the nurse utilizes a specified body of knowledge, as well as the results of the measurement of human potential indicators, to determine the perceived or actual risk to the person's stability. This interactional process for the purpose of assisting the person to cope or find meaning in the instability of the person by the nurse is unique and characterizes the subjective and objective assessment phase of the nursing process (Travelbee, 1971).

Any deliberative actions or interventions required by persons during instability are derived through a problem-solving method of conflict resolution toward a state of wellness and returned stability. Nursing interventions may be physiological, psychological, social, or in the form of values clarification for the person as negotiated

through interactions with the person. The goal of the interaction is a harmony of the person within the environment.

Ascertaining the direction of faulty health beliefs and practices and significance of the risk to stability and human potential is the primary interactional process of nursing. The art of communication of the nurse with the person influences positive health beliefs and practices based on nursing's scientific body of knowledge. The nurse's opportunity for interpersonal relations for the purpose of interaction and communication within the context of the person's health beliefs and practices as influenced by interaction with the environment implies that the nurse can nullify risk for the promotion of human potential.

The Nunchuck Interpersonal Human Potential Model serves as a conceptual basis for the proposed study and its relationship to the conceptual nursing model of Travelbee (1971) epiphenomenalizes the interpersonal aspect of nursing of women with long-term SCI. In this study, the variables that will be measured are perceived control, life satisfaction, and well-being. The personal control of attitudes and behaviors will be positioned as a predictor for life satisfaction and well-being as outcomes of adjustment of women to long-term SCI. The interpersonal interacting of the disabled woman and a nurse in the post-SCI environment in the search for perceived control of personal attributes and stability of health-promoting behaviors clearly brings the relevance of the model and the definition of nursing into focus. The nurse's interpersonal interaction with the woman with long-term SCI in the proposed study will result in the measurement of the attribute of personal control and health-promoting behaviors, physiologic, psychologic, social, and gynecologic and breast indices for the purpose of determining the overall life satisfaction and well-being outcomes as predicted by previously stated parameters.

Assumptions

The following assumptions were made for this study:

1. Stability of health responses (to SCI) is dependent on one's ability to accommodate change and find meaning in the experience (Travelbee, 1971).
2. State of health is dynamic (Travelbee, 1971).
3. Perceived and actual control of health status result not from a random event but from the interaction of events and forces that define, shape, size and characterize the person (Janisch & Waddington, 1976).
4. Human coping under life circumstances involves reciprocal relationships with a capacity to control actions potentially determined by perceptions of personal control and perceptions of control by actions (Janisch & Waddington, 1976).

Hypothesis

The following hypothesis was explored in this study:

There is a direct relationship among perceived control and health-promoting behaviors as predictors of life satisfaction and well-being outcomes of women with long-term SCI.

Definitions of Terms

For the purpose of this study, the following terms were defined:

1. Breast Dysfunction is any physiological deviation from the normal for the individual female breast tissue, glands or musculature (Terbizian & Schneeweiss, 1983). For the purpose of this study, breast dysfunction was defined as a total score on the physical assessment form (Appendix C) with regard to the presence

or absence and severity of breast tissue inflammation. pain, nodules, nipple discharge, lymph nodal chain status and muscle status.

2. Gynecologic Dysfunction is any sexual, reproductive, or physiological deviation from the normal for the individual female reproductive organs (Terbizian & Schneeweiss, 1983). For the purpose of this study, gynecologic dysfunction was defined as a total score on the physical assessment form (Appendix C) with regard to the presence or absence and severity of any irregularity in the menses, change in vaginal discharge, perineal skin breakdown, birth control difficulty, precancerous conditions of cervix and uterus, dysmenorrhea, and uterine and vaginal infections.
3. Health Promoting-Behaviors are the direct outcome of multidimensional perceptions and actions a person initiates to maintain or promote self-actualization, personal fulfillment, and wellness (Walker, Sechrist, & Pender, 1987). For the purpose of this study, health promoting-behaviors were defined as a score (Appendix E) on the Health-Promoting Life-Style Profile (HPLP) (Walker, Sechrist, & Pender, 1987).
4. Life Satisfaction is the maintenance of one's self-esteem, coping ability and mastery over life's circumstances (Neugarten, Havinghurst & Tobin, 1964). For the purpose of this study, life satisfaction was measured as a score on the Life Satisfaction Index-A (LSIA) which is intended to measure subjective satisfaction with life after SCI (Appendix D).
5. Perceived Control is the ability to regulate or influence intended outcomes through selective behaviors in order to obtain desirable consequences (Baron & Rodin, 1979). For the purpose of this study, perceived control was operationally defined

as the belief of persons that they have at their disposal a response set which influences the circumstances and consequences of life events (Rotter, 1991). The Perceived Control Questionnaire (PCQ) (Appendix D) yielded a total control score intended to measure one's perception of control in the affective domain (Nunchuck, 1988).

6. Well-being Outcome is a state in which the person has normal and adequate physiological and psychological capacities to participate fully in social activities and to fulfill social obligations (Parsons, 1964). For the purpose of this study, well-being outcomes were measured by an adjusted mean score for each of the following physiologic and psychologic parameters. The Center for Epidemiologic Studies Depression Scale (CES-D) (Appendix H) measured symptoms of depression in the sample at-large. A score on the Index of Psychological Well-being (IPWB) (Appendix J) measured mental health behaviors. A score on the Perceived Stress Scale (PSS) (Appendix F) reflected the degree to which the disabled woman found her life in the past 30 days unpredictable, uncontrollable or overloading. Scores determined from the different physical parameters collected on the physical assessment form (height, weight, range of motion, breast dysfunction and gynecologic dysfunction data) (Appendix C) was used to represent the woman's state of physical health on one particular examination. The physician index was a subjective score based on the opinion of a single physician interpretation of the physical exam results, breast and gynecologic evaluation, other physiologic collateral parameters collected for the larger study, and the composite psychological well-being indices.

Limitations

The following limitations were identified for this study:

1. Responses to the CES-D, PSS, LSIA, IPWB, PCQ, and the HPLP Questionnaire were self-reported and susceptible to general response bias that might influence self-awareness, acknowledgment and reporting of answers (Newcomb & Bentler, 1987).
2. Generalizations of the data beyond the sample were not possible due to the use of a cross-sectional, correlational design which allowed for measurement only at one point in time and did not attempt to control the situation being studied (Waltz & Bausell, 1981).

Summary

The proposed study was designed to investigate the relationship among perceived control and health-promoting behaviors as predictors of life satisfaction and well-being outcomes of women with long-term SCI. The rationale for the study and conceptual framework using the Nunchuck Interpersonal Human Potential Model (Nunchuck, 1988) was developed from the psychologic, philosophic, and phenomenologic concept (Zaner, 1970; Travelbee, 1971; and Rotter, 1990) in concert with Schorr and Rodin's concepts of helping relationships. Assumptions for this study were derived from the conceptual framework and discussed. One central hypothesis was stated for investigation. Limitations appropriate to the study were identified and discussed.

CHAPTER 2

REVIEW OF LITERATURE

Adjustment to Spinal Cord Injury (SCI) as an evaluation process should begin at the instant of injury. An individual who has incurred a primary disability such as SCI is generally catapulted into physiologic, psychologic, social, and spiritual imbalance by insult to the spinal cord (SC) and associated body systems. Control in a woman's life is virtually nonexistent in the early days of injury as survival is the primary goal of medical and nursing service intervention. A disabled person's ability to perceive control during the life-span is dependent on intrapersonal resources and interpersonal relationships in an ever-changing environment. The results of such interaction with the environment during the acute adjustment to SCI can be the difference between survival or demise. This review of literature is attentive to aspects of SCI as they relate specifically to women who have sustained SCI. Additionally, the relationship of attributes and behaviors in the role adjustment and coping with SCI are discussed. Finally, the issues of life satisfaction and well-being as related to women with SC disabilities are considered.

Spinal Cord Injury

Success with SCI rehabilitation depends on personal resource utilization and mobilizing energy to put one's life back together again. The physical sequelae of SCI may produce incomplete or complete impairment of motor and/or sensory functioning that may be temporary or permanent. Treischman (1988) reviewed situations of the neuromuscular

physiology of incomplete lesions of the SC in which certain patterns of motor and/or sensory functions below the level of injury were left intact. Whereas, a complete lesion of the SC is associated with a total loss of motor and/or sensory function below the level of injury.

Injuries to the cervical region of the neck result in quadriplegia and level of impairment greater as the lesion rises caudally to the brain stem. High cervical spine lesions above C3 in the cervical spine often result in ventilator dependency or death. The functional level of a quadriplegic woman usually results in the necessity for moderate to complete assistance with activities of daily living (ADL) and personal hygiene. Paraplegia according to Treischman (1988) is the direct result of injuries to the thoracolumbar or sacral levels of the SC. Paralysis in the lower extremities does allow for use of upper extremities for ADL, balance, and truncal stability. The greater control in independence of movement by the lower extremities makes ambulation possible for the few exceptionally injured.

The loss of sensation of touch, temperature, pain, and position have significant implications for the disabled woman. Self-awareness of pressure on skin areas, bladder and bowel incontinence, labor with a baby, menstrual irregularity, vaginal and bladder infections, handling a newborn infant, inability to perform self-breast exam, and lack of information about sexuality including reproduction and gynecologic health are areas germane to women disabled with SCI (Treischman, 1988).

Skin Alterations

According to Marge (1988) an individual who incurs a primary disability such as SCI remains vulnerable to additional disabilities. Relieving and redistributing pressure on

shin areas prevents one of the most important complications over the life-span post-injury. Pressure areas with concomitant exacerbation to decubitus ulceration develop subsequent to unrelieved capillary pressure at the cellular level sufficient to interrupt proper circulation to the tissues causing tissue hypoxia over bony prominences (Adelstein, 1988). Prevention is easier than treatment. Treatment can be costly and lengthy disrupting ADL and potential hospitalization and surgery. Adelstein (1988) stated that microscopic changes occur within 30 minutes. The critical interval being 1-2 hours before pathologic changes occur.

Genitourinary Alterations

Symptomatic infection of the genitourinary system is one of the principle secondary impairments of the SCI woman, due largely to recurrent catheterization (Sugarman, Brown, & Misher, 1982). Johnson (1980) described neurogenic bladder as occurring in nearly all SCI patients who experience partial or complete, temporary or permanent loss of control over bladder function. Sugarman, et al (1982) in examining individuals with chronic, indwelling catheters were bacteriuric with multiple microbes. Intermittent catheterization was associated with a decreased infection rate compared with indwelling catheters, however, infection remained a problem and until recently a leading cause of mortality with long-term SCI (Sugarman, et al, 1982).

Pulmonary Alterations

Pulmonary complications account for the major percentage of early deaths in acute traumatic quadriplegia. Depending on the level and completeness of injury, complications of acute injury, impaired diaphragmatic and/or intercostal respiratory musculature can compromise respiratory efficiency and increase the possibility of pulmonary infection or

pneumonia (Adelstein, 1988). Measurement of vital capacity as an index of ventilatory efficiency for stabilized patients post-injury is an important index of physical functioning since there is an age related progressive decline in respiratory capacity in persons with SCI (Wild, 1985).

Cardiovascular Alterations

Persons with SCI according to Sugarman (1985), and Adelstein (1988) are at increased risk post-injury for autonomic dysreflexia, deep vein thrombosis, and orthostatic hypotension. Autonomic dysreflexia involving sudden rises in blood pressure, bradycardia, and headache, as well as, sweating may be triggered reflexively by stimuli from bladder or bowel distension. Additionally, physical inactivity and dependent positioning of the extremities in persons with spinal cord lesions above T6 can cause autonomic dysreflexia as a result of compromise of the autonomic nervous system. Sympathetic outflow occurring between T1 and L2 in quadriplegics and high level paraplegics maybe severely impaired, depending on completeness of injury, hence, hypotension and status of blood flow places the person at significant risk of cardiovascular compromise and/or mortality from pulmonary embolus (Sugarman, 1985).

Neuromuscular and Skeletal Alterations

Spasticity may interfere with residual voluntary muscle control with ADL. Incomplete injuries according to Dimitryivic & Fogonel (1985) are characteristic of the type of lesion associated with spasticity that may in itself be disabling. Heterotopic ossification, new cancellous bone in soft tissues, may occur below the level of injury primarily around the hips, knees, shoulders, and elbows. While the condition is insidious, asymptomatic decrease in range of motion in joints and potential of

development of extravazation of the heterotopic bone into blood vessels can lead to calcification or thrombosis with resultant morbidity (Guttman, 1976).

Chronic Pain

In complete SCI the trauma that results in damage to the spinal cord and surrounding tissues usually causes pain at the level of injury and anesthesia below the level of injury (Burke, 1973). Injuries resulting from violent acts such as gunshot wounds according to Treischman (1988) lead to pain at the point of entry and the tract of the bullet due to scar tissue formation for unknown lengths of time. The victim suffers both physically and psychologically from pain, long- term paralysis, and victimization.

The Female with a Disability

Living with a disability such as SCI is a dynamic process that begins at the time of injury and continues throughout the life-span of the person. Treischman (1988) stated that no endpoint such as "rehabilitated" or "adjusted" exists. Individuals disabled by SCI live with the disability in their own environment continuously to make it more functional and satisfying. The paucity of research findings published regarding women disabled with SCI documenting long-term adjustment, personal impact, and estimation of health-related attitudes and behaviors underline the significance of investigating these issues. Treischman (1988) noted that presently nothing is known regarding a gender difference in long-term adjustment to SCI, how women cope with the intrapersonal frustration of SCI, the status of their health, or functional level of productivity in society.

Daily (1979) stated that the role of the disabled woman reflects the traditional attitude toward women as a whole. He contends that conflict arises when women in roles

of wife, mother, employed spouse, and/or homemaker is disrupted by the loss of independence, personal appearance, attitude toward and perception of loss of functional perceived role by society.

A woman's perception of disability is the key to perhaps accepting SCI. Wright (1983) stated, "issues of coping and adjusting to a disability can not be validly considered without examining the reality of the person and their environment." (pg. 89) She continued that issues of coping and adjusting to the disability are a valid concern by the injured person until resolved and can help or hinder progress toward rehabilitation goals to return the person to their environment. The broad scope of issues according to Wright (1985) deal with the perception of the self and others, life satisfaction, disturbances of interpersonal relations, value changes, modifying attitudes and behaviors, and coping or succumbing to the problems of living with the disability.

A critical issue relevant to the role of women in society, especially disabled women, is germane to research efforts. Treischman (1988) found no reported study that documented coping of the disabled woman or whether adjustment and at what level of accomplishment reintegration into their environment affected personal functioning. Accordingly, the author intimated that there was little research interest in women with SCI by the research community due to the low male to female injury ratio (5:1). As a result, the perception of patient needs, what's educationally important to resocialization, type of clinic services to be offered, and future directions for research are unknown to prepare a disabled woman for the life-span.

Daily (1979) asserted that disabled women generally are perceived as helpless, nonsexual, dependent, passive, and nonassertive which may account for their being ignored for vocational rehabilitation and intimate interpersonal relationships. Further

implications by Daily (1979) that societal inconsistencies in treatment of disabled women and the role of physical attractiveness may lead to a woman's spouse being penalized by his peers or employer which disenfranchises the woman's ability to enhance her mate's status. This conflict relegates the disabled female to nonperson status inflicting a greater impact on the woman's long-term outcome than on the male counterpart.

Brown and Griesy (1986) stated that women following SCI add disenfranchisement to marital relations and systems of social support. Marriage as a status for disabled women was found to be 39% less than for able-bodied women and 56% less than for SCI disabled men. Factors discussed as being directly responsible for these differences were the financial burden of medical costs for a disabled woman, reduced attractiveness, and financial destitution of the single SCI woman which reduces opportunities to meet or attract men who may overlook the disability for the woman's inner beauty and strengths.

Nosek, Parker, & Larsen (1979) reported that from their work to the contrary of previous studies disabled women were more socially independent than SCI men and would exhibit more psychologically independence as well. Woodrich and Patterson (1983) showed that disabled women scored higher on acceptance of disability tests than their male counterparts, and scored lower in psychological distress on personality inventory tests (Thompson and Dexter, 1980) and maintained a better state of health practices (Pinkerton and Griffin, 1983). Interest profiles completed by women with SCI according to Rohe and Athelstan (1982) were somewhat similar to SCI males. They found women had a realistic orientation indicated as a desire to relate and participate in physically oriented activities. Also, the women scored higher on investigative, social, and academic orientations and expressed interests in data management occupations. Preferences for

structured environments and unambiguity were reported high requirements for employment as opposed to jobs requiring intense interpersonal activities.

Deegan and Brooks (1985) and Fine and Asch (1988) have detailed the minority status created by disabled women. A dual status of being a woman and disabled are particularly important when social welfare benefits are an issue as with women receiving less financial income than their male counterparts (Kutza, 1985). Danek and Lawrence (1985) studied 3,399 disabled women who were referred to the Florida State Vocational Rehabilitation Department. They found the women to be older, more educated, and on greater amounts of public assistance than disabled men. Also, regardless of educational background the occupation reported most frequently by the women was homemaking, clerical, or sales positions. A conclusion of their work was that issues exist vocationally for disabled women and that policies and procedural discriminate in employment and limited the number of productive roles for disabled women through stereotypical attitudes and placement practices.

Conflicts have arisen in the literature between disabled women's stated interests, intellectual abilities, and research findings of vocational studies show a definite need for clarification of the disabled woman's role. William's (1987) summed the experience of the woman and housewife to be an ambiguity of role and one in which no particular personality, intellectual level, or set of interests were critical for role performance. Suitability or training were generally not recognized as requirements for role performance or personal satisfaction. Nathanson (1980) described the work role for a woman as being the linkage between the individual and society with the positiveness of a gainful position increasing self-esteem and accomplishment. Housewifery on the contrary is seen by society as devalued and socially isolating, and less beneficial physically and emotionally to

the woman. Role expectations, environmental qualities, role burdens related to occupation, family responsibility, and capability (physical and mental) have distinctive impacts on a disabled woman's ability to cope and adapt to disability and function in society. Imbalances to social role and subsequent inequity of power, equality of pay, and control of position or status can additionally have the potential to adversely affect a disabled woman's health and as a result affect coping and adjustment throughout the life-span (Rodin and Ickovics, 1990).

Disabled Women's Health Care Problems

Reproductive Functioning

The majority of the research that has been done on women with SCI has dealt with reproductive functioning. On the other hand, the secondary impairments and disabilities that can potentially impact all women with SCI have been investigated either marginally or not reported. Since the focus of this study is the long-term impact of SCI on women, the effect of the disability on reproductive function will be considered.

Studies have demonstrated that SCI does not affect a woman's fertility, her ability to deliver a healthy baby, or her ability to breastfeed her infant. Studies indicated that the most common complications of pregnancy were precipitate delivery, preterm labor, autonomic dysreflexia, anemia, and urinary tract infection. Also, women with SCI were more likely to receive labor induction and cesarean section delivery (Charlifue, Menter, & Whiteneck, 1984, 1987; Robertson, 1972; Guttman, 1976; Turk, Turk, & Assejev, 1983; Gallen & Paeslack, 1972; Verduyn, 1986; Mendius, 1989).

Sexuality

Sexual functioning is a major concern for the SCI person. Sexuality is viewed a source of self-esteem for both traditional and nontraditional women. Sexuality is certainly not precluded because a woman incurs an SCI (Bonwich, 1985). However, SCI does result in a variety of sexuality issues and physical and psychological problems. Leyson (1982), Bedbrook (1985), and Stolov and Clowers (1981) have documented altered sexual response in women with SCI as a result of physiological changes associated with the injury. Leyson's findings (1982) using a vaginal probe pressure transducer, indicated that vasoactive changes may not occur, vaginal pressure contractions may be absent, and mucosal drying may occur due to lack of vaginal lubrication.

Another problem associated with sexuality in women with SCI is the risk of urinary tract infection with vaginal intercourse (Bedbrook, 1985). The introduction of bacteria from the male partner, pressure on indwelling catheters, and possible irritation by commercial lubricants and spermicides have all been implicated as causing UTI in women with SCI. The use of commercial vaginal lubricants that are not water soluble or irritation from intercourse can result in Bartholin's gland cysts. Also, a common treatment of vaginal dryness in post-menopausal women is estrogen creme. This medication is contraindicated in women with SCI due to the potential for thrombus formation (Bedbrook, 1985)

A major factor that resulted in sexual inhibition in some women with SCI was fear of bladder or bowel accidents during sexual relations (Fitting, Salisbury, Davies, & Mayclin, 1978; Weinberg, 1982). Leakage around the catheter can also be a problem with intercourse and masturbation. The tendency to avoid sexual relations because of these problems is not without implications. Weiss and Diamond (1966) suggested that when

disabled persons avoid consideration of their sexuality, they also tend to avoid realistic acceptance of their disability.

Fitting et al. (1978) in their study of 24 women with SCI found evidence of decreased genital sensation, decreased frequency of orgasm, and decreased frequency of sexual relations, as well as, an increased emphasis on sex and a fear that sexual relations would not occur again. Weinberg (1982) reported five problems related to sexuality in persons with SCI: impaired body image, decreased self-esteem, problems with gender identification, difficulty with sexual decisions, and sexual experiences that were different from those of able-bodied persons.

According to Brown, Connors and Stern (1985), disabled lesbians were rarely seen as having a choice about their sexuality. Instead, they were viewed as having to take "second best" due to their disability or as having relationships that would become asexual. Bonwich (1985) reported that all the women she studied were heterosexual pre-injury and most were sexually active. Following injury, several women became homosexual, one woman became bisexual, and all women reported becoming generally less sexual.

Contraception

Birth control can be a major problem for women with SCI. Oral contraceptives and Depo-Provera injections are contraindicated due to the increases risk of thromboembolic disorders. Intra-uterine devices (IUD) are problematic in that they could result in asymptomatic pelvic inflammatory disease or uterine perforation which could progress into infertility and/or sepsis. Also, IUD'S usually cause increased menstrual flow which can be a significant problem for the SCI woman who depends on an attendant for pad and/or tampax changes during her menses. Condoms may tear on the catheter, and a

diaphragm can cause additional pressure on the bladder resulting in urinary tract infections, and bladder accidents during intercourse. For women who depend on an attendant for personal care, the insertion of a diaphragm prior to intercourse leads to scheduling of sexual relations limiting the excitement of the act. Also, the pelvic muscles become weakened in many women with SCI resulting in the diaphragm easily dislodging. Spermicides may cause vaginal irritation, vaginitis, or urinary tract infections (Weinberg, 1982; Finger, 1985; Fitting et al., 1978; Bedbrook, 1985). The cervical cap may be a viable option for women with SCI as it can be placed in the morning by a personal care attendant and removed 24-48 hours later (Griffith-Kenney, 1985). Despite problems associated with contraceptives, Charlifue et al. (1987) reported in their study of 231 women with SCI that the IUD was the most frequently used birth control method, followed by condoms and oral contraceptives.

Gynecologic Dysfunction

Fifty-three percent of the sample in the study by Charlifue et al. (1987) reported a change in the amount of vaginal discharge post-injury, with 81% reporting that it had become profuse. As a result, over 55% of the subjects reported using feminine hygiene products such as douches, powder, sprays and creams to control the discharge. Excessive vaginal discharge increases the risk of skin breakdown and/or urinary tract infection, while the use of feminine hygiene products may cause vaginitis. A major etiologic factor of vaginal discharge is vaginitis secondary to the frequent use of antiseptic solutions for intermittent catheterization (Zejdlik, 1983). These solutions alter the vaginal pH and destroy the lactobacillus which is a naturally occurring protective mechanism against vaginitis. Vaginitis can descend to the urethra and cause urinary tract infection. In

addition, the woman with recurrent vaginitis can be at risk for cervicitis and abnormal pap smears (Bedbrook, 1983).

The incomplete or complete loss of sensation increases the likelihood of inflammation in the genital region. Infections may go undetected for long periods of time. Gynecological disorders may include simple colpitis with vaginal discharge, as well as asymptomatic acute and chronic inflammation of the cervix, uterus, fallopian tubes, and ovaries (Terbizan and Schneeweiss, 1983). Charlifue et al. (1987) encountered 12 SCI women with self-reported gynecological problems that included benign or malignant tumors, dysmenorrhea, and uterine infections. Also 30 women in the sample had had hysterectomies or tubal ligations for birth control or therapeutic reasons.

In a study of 132 women with SCI, Terbizan and Schneeweiss (1983) found that 51% of the women required treatment for gynecologic disorders, while 25% were asymptomatic. They noted that the loss of sensibility increased the risk of gynecological disorders that otherwise would have been easily prevented or treated. Other gynecologic disorders found were an increased prevalence of vaginal prolapse, cystocele and rectocele, secondary to weakened pelvic muscles (Terbizan & Schneeweiss, 1983; Weinberg, 1982). These conditions are generally considered uncommon in the pre-menopausal, able-bodied population and can negatively impact bowel and bladder functioning. This would place the woman with SCI at risk for urinary tract infections, constipation, and autonomic dysreflexia. The treatment for these conditions is surgical repair, depending on the severity of the problem. Any kind of operative procedure places the SCI woman at risk for significant surgical morbidity. Estrogen creme has been traditionally prescribed as therapy for these conditions post-menopausally. In SCI women, this therapy is contraindicated due to the increased risks of thromboembolic conditions. Also, pessaries

have been traditionally used as conservative treatment for pelvic relaxation.

Unfortunately, women with SCI are not candidates for the therapy due to weakened pelvic muscles causing displacement of the pessary.

Zejdlik (1983) discussed the problems of excoriation of the external genitalia in women with SCI secondary to frequent use of antiseptic solutions for intermittent catheterization and pressure from indwelling catheters against the labia. Virtually no literature was found on effects of menopause in women with SCI. Traditional treatments with hormone replacement therapy would be contraindicated, even though these women are at increased risk for osteoporosis.

Terbizan and Schneeweiss (1983) were adamant regarding routine gynecologic examinations for women with SCI. The examinations should include breast examinations as these women are as susceptible as able-bodied women to breast cancer. SCI women may be at increased risk for breast cancer as they are more likely to be nulliparas as a result of their injury and marital status. Also, they may not have the ability to perform breast self-examinations (SBE). In a pilot study of SBE in 78 women, Henning (1983) found that 44% of the women were able to perform standard SBE. 48% could perform SBE using a modified technique, and only 7% could not perform SBE and depended on others to perform the examination contradicting Terbizan and Schneeweiss (1983) and necessitating need for further investigation.

Menstruation

Secondary amenorrhea following SCI is common in approximately 50-60% of injured women (Charlifue et al., 1987). The majority of women resume menstruation at approximately six months post-injury. Reame (1982) and Axel (1982) found that once

menstruation resumes, menstrual patterns occur as before injury regardless of the level of injury or loss of sensation. Additionally, Reame (1982) found that prior problems with dysmenorrhea and premenstrual syndrome remained the same for paraplegics women, but that women with cervical spine injuries may have difficulty in identification of symptoms.

In the study by Charlifue et al. (1987), 75% of the women reported using tampons for menstrual flow control and 46% using external pads. Slightly more than 19% of the sample reported the following problems related to menstrual protection: discomfort due to position, inability to determine if placement was adequate for absorption, and problems with catheter and urinary management. Hakim-Elahi (1982) found that SCI women who wore tampons had an increased risk of urinary tract infections due to the contaminated string and pressure on the bladder. On the other hand, women without SCI who switched to pads at night were at less risk of urinary tract infections during menstruation (Reame, 1982).

Women with SCI who utilize tampons are at risk for Toxic Shock Syndrome (TSS) if they do not change their tampons frequently as are women generally. The likelihood that SCI women utilize super absorbent tampons places them at significant risk for TSS due to the need for added protection or from decreased sensation to recognize the symptoms of TSS, and dependence on attendants for personal care. Therefore, immobility and loss of independence over the most personal of care is often what places the woman with SCI at risk for TSS. No studies have been reported that describe specific types of menstrual protection used by women with SCI. If they use super absorbent tampons, they are placed at additional risk in the presence of vaginal dryness and trauma to the vaginal walls (micro-ulcerations) with tampon insertion and withdrawal. Lastly,

catheter leakage secondary to tampon usage, as well as menstrual blood flow when using pads can increase the risk of skin breakdown (Zejdlik, 1983).

Pregnancy

Despite the many problems associated with menstruation in SCI women, they perceive menstruation as a sign of "normalcy" and "fertility" (Speroff, Glass, & Kase, 1978; Ivey & Bardick, 1968). Axel (1979) studied 39 women with SCI and found that amenorrhea resulted in anxiety as to when normal female function would return. This desire was voiced not so much as a wish to become pregnant; rather, the woman with SCI desired the knowledge that they have the option to become pregnant if they so chose to do so. Sugarman (1985) reviewed many of the complications of SCI in women, but the most difficult one to combat was the loss of suprasegmental vasomotor control which can result in postural hypotension. Pregnant women with SCI are at an increased risk for postural hypotension due to orthostatic blood pressure changes that are normal with pregnancy as a result of increased blood volume, increased cardiac output, and increased pressure on the blood vessels by the gravid uterus.

Pressure sores can develop as a result of the third trimester heaviness of the gravid uterus and immobility if frequent weight shifts are not practiced (Sugarman, 1985). Increases in urinary leakage and vaginal discharge during the later stages of pregnancy contribute to the skin breakdown if frequent efforts to keep the perineum dry are not undertaken. Increases in fetal iron needs during pregnancy, and any efforts to decrease iron intake during pregnancy to prevent constipation places the woman with SCI at significant risk for pressure sores (Sugarman, 1985).

Injury related metabolic and endocrine changes affect the sympathetic nervous system, create abnormalities in the distribution of body fluid volumes, and create loss of skeletal muscle mass (Claus-Walker & Halstead, 1982). In addition, significant reductions in basal metabolic rate and energy expenditures were found for women with SCI. Difficulty with stamina is encountered with physical disability at higher levels of injury limits the range of upper extremity mobility (Lee, 1985; Baroriak, 1983) Glucose intolerance reported by Duckworth (1980) also can cause significantly higher insulin levels in resistant individuals. These differences in metabolic and endocrine impairments coupled with autonomic dysreflexia makes reproduction, pregnancy, and labor and delivery a challenge for some women with SCI and impossible for others.

Predictors and Outcome Variables

In the past decade, the focus in rehabilitation of women with SCI has shifted from the training of health caretakers and improving availability of services to interest in long-term adaptation. Interest in the demands of adaptation to change over the life-span of the disabled female in relation to intrapersonal resources and to adjustments of rehabilitation for evaluating the role played by these components in long-term outcome to injury has just recently been identified as germane to SCI research. The contribution of studying these components for nursing would elucidate predictors that would assist the nurse's effectiveness in assisting the woman to adapt and cope with the physical, psychological, and social changes associated with disability from SCI. The effectiveness with which a woman with SCI copes with disability is affected by both personal and environmental factors.

Perceived Control

Seeman (1989) developed a model of positive health in which aspects of the person, environment, and interpersonal relationships serve as a human-system framework. The empirical basis for this model was a comprehensive integration of multiple cognitive and behavioral theories which could be combined into this developmental process model. In this model a person was viewed as having differential response patterns associated with defense reactions which were necessary to achieve active coping when facing aversive stimulation. Vigilance reactions were viewed as necessary when active coping responses were not available when facing aversive situations. Sensation, perception, memory, and thought were ongoing processes that integrated each individual's cognitive-perceptual set of responses that eventually evolved into cognitive style and control. Interpersonal relationships were developed according to Seeman, from the quality of interpersonal interaction and physical health, career patterns, and outcomes of human growth and development socially. The person-environment matrix was developed from Lewin's field theory which has served as the conceptual basis for rehabilitation theory and adaptation and disability concepts.

Lewin's (1939) formula for field theory was $B = f[P,E] = f[L,S]$ which was translated to mean behavior was a joint function of the person and the environment as it existed for him in his life space. Seeman (1989) stated that person-environmental control transactions may have direct effects on health. A person can use decisions and choices to enhance one's well-being in their life space by their sense of personal autonomy and responsibility. Therefore, the more active a person is involved in active decision-making about themselves and their environment the better the health ratings, morale, and more control which translates into a higher functioning of the individual.

Wright (1983) discussed adaptation to disability as occurring when persons enlarge their scope of values, subordinate physique, contain the disability effect spread, and emphasize asset values rather than comparative values of others. He discussed that disabled persons may develop negative attitudes post-injury due to interactional strain, rejection or embarrassment of intimacy and/or generalized rejection, authoritarian virtuousness, distress identification of the self and others, and imputed functional limitations which devalue the disabled person coping with their environment.

Rotter (1966, 1990) developed the classic theory of internal and external control and the expectancies associated with behavioral reinforcement, or locus of control. He stressed individual differences in reinforced behavior as a predictable event which forced control research from motivation toward expectancy. The theory of internal versus external control refers to the degree to which individuals expect a reinforcement of their behavior to have a predictable effect contingent on the degree to which it was reinforced or upon personal characteristics or the outcome of unpredictable fate, chance or luck. Rotter defined perceived control as a generalized expectancy for internal versus the external control of reinforcement. This conceptualization concerns the likelihood of success or the generalized expectancy of internal versus external control of reinforcement as a causal analysis of success and failure.

Lefcourt (1982) an associate of Rotter furthered the concept of perceived control in relation to coping behavior. He suggests that perceived control could moderate the impact of potentially stressful experiences. Results of his research have elucidated the behavioral patterns of subjects who never relinquished responsibility for themselves in the recovery process giving much conceptual development to the process of survival. Also, findings indicated internally oriented persons were less stressed and depressed but more

cooperative than externally oriented persons which could imply that internals were more actively involved in the struggle for survival than externals. Physiologically this concept translated into internals having higher reported health status and physiological indices.

Other researchers in the area of perceived control (Roessler, 1978) and behavior linked the concept with learned helplessness. Weisz (1979) discussed the theoretical perspective to be produced as a result of successive failures and by feedback attributing failure to uncontrollable cases. He emphasized that behavior could be learned over time and attributed to persons who repeatedly failed to affect the outcomes that they desire. Kofta (1980) added the dimension of freedom of choice and autonomous regulation of personal control. He proliferated the notion that a person's freedom of choice among alternative lines of action was a prerequisite of internal control awareness of one's needs and desires. Kofta theorized that persons could contrast two types of psychological states one, in which the person passively receives the external influences of the environment and the other, in which the person actively influences his environment.

Rothbaum, Weisz, and Snyder (1982) and Levitt, Clark, Rotton, and Findley (1987) attempted to change the direction in behavioral research. They suggested that attributions and the behavior they represent may often reflect an unknown type of perceived control. They postulated that people attempt to control others by controlling their environment, and also by changing themselves to align with their environment. This concept they argued was a relevant for the study of person's who have severe limitations and better illustrates predictive control which describes the behavioral limits that a person demonstrates in disappointment at failure of tasks that have been adjusted for the disability alleviating the need for reinforcement of expectancies.

Morganti, Nehrke, Hulicka, and Cataldo (1988) studied the relationship of life-span differences in life satisfaction, self-concept, and locus of control. Findings of 450 men and women respondents aged 14 to 80 years indicated that age and gender affect the main interaction effects in statistical analysis throughout the life-span and are to be considered moderating variables that had to be statistically controlled. Age was reflected as the main effect on the control measure. Lower levels of self-concept and life satisfaction were correlated with a more external orientation as portrayed by the adolescents and young adults. However, those internally controlled displayed significant levels of life satisfaction and positive self-concept. Homer and Kahle (1988) postulated an additional equation to perceived control in that by adding personal values attitudes and behavior could be internally or externally influenced. Their idea was to interject evaluating values objectively rather than by judgements. This position yielded an interesting factor analysis which incorporated self- fulfillment, sense of belonging and accomplishment, self- respect, security, and warm interpersonal relationships as major factors. Bryant (1989) presented a four-factor model of perceived control which incorporated avoiding, coping, obtaining and savoring as evidence that people evaluate their control over events and feelings separately with respect to both positive and negative experiences. Their confirmatory analyses demonstrated that subjects try to avoid negative outcomes, cope if they have to with negative outcomes, obtain positive outcomes when possible, and savor positive outcomes. Further analyses directed the results to indicate that beliefs about obtaining and savoring which were more positive behaviors were strongly correlated with measure of subjective well-being and may promote perceived control.

Litt (1988) studied perceived control and self-efficacy as cognitive mediators of pain tolerance. The study of 102 female undergraduate students evaluated whether self-

efficacy was a causal determinant of behavior change or as a correlate of change and how perceptions of control and self-efficacy interact to determine choice behavior, persistence, and impact of aversive events. Results indicated that self-efficacy was related to causal determinants of behavior when the subjects were faced with aversive stimuli. Also, findings showed self-efficacy separable from control when overall performance at tasks were met by conditions of high self-efficacy and control.

Weigel, Wertlieb, and Feldstein (1989) analyzed 154 school-aged children for perceptions of control, competence, and influences on stress-behavior symptoms. Findings showed that perceived control was a strong positive moderator of school performance competence, and stress-illness reactions when the children attempted to take control and bring order out of chaotic experiences. Tetrick and Larocco (1987) presented a causal multivariate approach to understand the relationships of understanding, prediction, and control as modifiers of relationships between perceived stress, satisfaction, and psychological well-being. This study was undertaken with 206 health-care professionals to examine the variable effects in work related conditions. Results showed understanding and control had significant moderating effects on the relationship between perceived stress and satisfaction. All three variables had direct relationships with perceived stress, however, control had a significant correlation with satisfaction. None of the variables were directly correlated with psychological well-being.

Schultz and Decker (1985) examined 100 SCI persons, which included 10 women, in a study of long-term adjustment to physical disability which evaluated the role of social support, perceived control, and self-blame. Their results were different than Tetrick and La Rocco. They found a significant direct relationship between perceived control and well-being. Additionally, self-blame was not correlated with the other

variables and suggested that important differences between coping successfully immediately with SCI were different from coping successfully long-term coping with SCI. Chwalisz, Diener, and Gallagher (1988) found similar results for subjective well-being correlations with feedback of emotional experiences in SCI persons when compared to able-bodied control subjects which indicated successful coping with disability.

Buckelew, Baumstark, and Frank (1990) studied adjustment to SCI in 57 persons, which included 10 women, by investigating specific coping strategies associated with psychological outcome. Ways of Coping and Multidimensional Health Locus of Control Scales (Wallaston & Wallaston, 1987) were used. High distress subjects reported significantly higher wish-fulfilling fantasy, emotional expressions, self-blame, and threat minimization as a coping strategy. Self-blame strategy was significantly correlated with psychological distress regardless of age, time since onset of injury, or level of injury. Sholomskas, Steil, and Plummer (1990) replicated Bulman and Wortman's (1977) study of SCI persons which found self-blame as functional for victim's adjustment to negative life events. The replication results were consistent with Bulman and Wortman, as well as, Schultz and Decker (1985), Sarason, Johnson, and Siegel (1978), Heinemann, Bulka, and Smetak (1988), and Silver (1982). The results indicated internally controlled persons accepted responsibility for the accident and were coping adequate with their disability. Externally controlled persons blamed their accidents on others. All authors concluded perceived control was operative as a moderating influence in the attribution-coping relationship. Neither study found perceived control related to self-blame.

Ferington (1986) studied a convenience sample of 104 institutionalized SCI males. The study evaluated perceived control, locus of control, depression, and interpersonal relations. A significant inverse relationship was found to exist between perceived control

and depression, level of injury, age, and number of days in confinement. Affleck, Tennen, Pfeiffer, and Fifield (1985) found similar results in 92 patients (61 women and 31 men) with rheumatoid arthritis indicating that the greater the perceived control the greater the predictability the health status. Two additional studies had the same conclusion regarding control and the attributional lives of patients.

Dennis (1987) and Bordieri, Comninel, and Drehmer (1989) applied attributional theory to patient perceptions of control with illness. Findings indicated that when cognitive control was operative greater decision making based on lifestyle implications was possible regarding a patient's adjustment and coping to serious illness and disability. Rose (1990) postulated that women had inner strength germinal to nursing research regarding healthy functioning persons. She stated that nursing research is charged with generating new knowledge of health-seeking behaviors that enhance quality of life. Her findings in a qualitative study of 9 women indicated that a void existed in the knowledge of healthy functioning of able-bodied women and their social contextual factors.

Hanson and Franklin (1976) found that women with SCI felt that physical limitations seemed to be the most salient consequences of the injury, a fact that is not surprising since the limitation is dependent on the level and completeness of injury. Women according to Hanson and Franklin (1976) experienced several limitations in major areas of their life. Limitations discussed were the physical, social, socially-oriented barriers, and psychological restrictions which prevented full community participation, and an inability of the self and society to support role strains brought about by the injury and its impact on the family.

According to Weinberg (1976), Miller (1970), and Tilly and Viney (1969), disabled women perceive themselves and are perceived by others more negatively than

disabled men. Self-concept research has found that a negative self-concept was less related to one's level of ability/disability than to one's gender (Weinberg, 1976). According to Fine and Asch (1985), disabled women were more likely to identify themselves as "disabled" than disabled men. The disabled male possesses a relatively positive self image and is more likely to identify himself as "male" rather than as "disabled" (Weinberg, 1976; Daily, 1979; O'Toole & Weeks, 1978).

Women, in general, are more externally controlled, perceive themselves relative to external information, and are interdependent and relationship oriented (Peck, 1986). According to Fine and Asch (1985), rolelessness among disabled women may induce high dependency on external forces for self-definition. As already mentioned, disabled women are vulnerable to internalizing society's perception of them as disabled. In this perspective, the disabled woman is perceived as a disability-determined entity. Lifestyle, sexual preference, and personal decisions are viewed as consequences of the disability rather than of choices (Fine & Asch, 1985). The latter warn that if disabled women subscribe to the notion of discrimination, and view all outcomes as externally controlled, a sense of helplessness can evolve.

According to Deegan and Brooks (1985), passivity was associated with women and with disability. For disabled women this finding could mean a double dose of dependency resulting in exceedingly low expectations of achievement (Deegan & Brooks, 1985). Bonwich (1985) in a study of women with SCI found that women with role reorganization became more internally controlled. This finding would seem valid in that the goals of rehabilitation point directly to independence. Women with SCI whose self-concept was deeply rooted in the traditional female role and dependency had significant

conflict with the challenge of independence and during rehabilitation (Deegan & Brooks, 1985).

Health-Promoting Behaviors

Pender (1987) defined health-promoting behaviors as being directed toward increasing actualization of health potential and increasing the level of well-being of persons in their society. Health-promoting behaviors were considered by Pender to be those activities or actions taken deliberately to expand positive health potential throughout the life-span.

An individual's motivation toward positive health potential is determined according to Pender (1987) through one of two types of bases for health behaviors. Actualizing tendencies were expressed in individual needs to extent that positive personal facilities were necessary for the person to grow with challenge while limiting levels of anxiety or distress. Stabilizing tendencies were expressed as protective maneuvers, or homeokinetic mechanisms during constant internal and external fluctuations of the person as a response to destabilization with resultant states of distress or negative tension. Health-promoting behaviors, therefore, according to Pender (1987) would be demonstrated through one of these tendencies as integral to the individual's lifestyle. Expressions of these tendencies were demonstrated by the person through the desire for personal growth or human potential, quality of life, and motivation to change health-detrimental behaviors. Mock (1989) advanced the concept of health within illness as an event that can expand human potential as the person becomes aware of the meaning or message within the illness and which can create change within the person.

Seeman (1989) stated that a model of positive health is based on a comprehensive framework that encompasses all of an individual's behavioral subsystems (biochemical, physiological, perceptual, cognitive, and interpersonal) while permitting higher integration of adaptive strengths and coping as a means of preventing psychopathology and enhancing prospects for effectiveness during the life-span. Brody (1973) postulated that multidimensional health properly functions when each component of a human system was intact and hierarchially functioning with appropriate feedback. He furthered health as a state of harmonious and dynamic equilibrium. Both authors directed their discussions to state that health was comprehensive and transactional in character. The implications of both health models demonstrate that contingencies for reenforcement of behavior are necessary when feedback is encountered that can effect regulation of interpersonal transactions or intrapersonal systems of the individual.

Jeffrey (1989) discussed three types of risk to health behaviors. First, absolute risk was expressed as the risk a person faces of succumbing to a disease over time. Relative risk was the ratio of chance that a person if exposed to a disease will acquire the disease as opposed to those who are not in contact with the disease. Population attributable risk was the number of excess cases of a disease in a population attributed to particular risk factors. Jeffrey stated that seemingly voluntary actions of persons to inform the population at risk to hazardous practices are often frustrating. He furthered that even those persons who do change their behaviors actively are unsuccessful at halting the progress of the disease due to immediacy and long-term adherence presenting overwhelming challenges for the length of the individuals life. Jeffrey stated that unrealistic optimism biases personal decision making in favor of taking greater risks and defend them on a variety of rational grounds.

Hannah (1988) investigated the relationship between psychological hardiness and health behaviors. He found in a study of 96 university undergraduates in a psychology class that health behaviors were unrelated to an individual's hardiness (commitment, control, challenge) in relation to health consequences. Results indicated hardiness was related to health concern demonstrating that persons who were committed, in a state of personal control, and regarded a challenge to health consequences were more concerned about their health than nonhardy persons.

Miller, Brody, and Summerton (1988) explored individual differences in health-seeking behaviors and health status in 118 patients in a primary care clinic in the northeastern U.S. They found that when an individual was threatened with aversive health events that the information processing of behavior varied. High monitoring behaviors were seen in persons who sought out information about threats to their health. Low monitor behaviors were seen in persons distracted from or who blunt information about their health status. Findings showed that high monitors over-utilized health care facilities, demanded tests more frequently, and saw physicians more frequently for less severe health problems than low monitors. The authors discovered that low monitors preferred to take a passive role in their responsibility for health and left the decisions for the physicians indicating that coping style was not indicative of need for control in health behaviors. Miller (1987) found in her previous studies that control and health behaviors were two separate constructs when uncertainty of health status was over or under estimated by individuals at risk.

Quadrel and Lau (1989) tested two field experiments to evaluate the effect of information on health-promotional knowledge and health behaviors. The first experiment examined the extent that health locus of control beliefs were related to individual

differences in health knowledge following distribution of a booklet to 879 college freshmen. The results of this study showed that persons considered internals who were high on the value of health demonstrated greater health knowledge three months after testing than did those persons considered externals. The second experiment examined the role of health locus of control and beliefs as they interacted with "control" messages to change behavior in breast self-examination (SBE) of the women students. Interaction among the health beliefs and the control language of SBE promotion message and a neutral reminder to subsequently perform SBE as a practice resulted in the persons who were internals more significantly responding to the treatment than persons considered externals. The overall finding of this study demonstrated that gender and the value placed on health were the primary contributors to control in the experiments. The finding in the first study showed the difference was greater for men than women.

The measurement of health within nursing has a central conceptual theme. Investigations within the discipline to measure this concept has fostered little agreement about its meaning (Reynolds, 1988). Reynolds stated that the health when measured in nursing has been reported in studies as both independent and dependent variables. Measures central to nursing have investigated health beliefs, health locus of control, health professional, health problems, and health needs of patients. The focus of this study was specifically limited to health-promoting behaviors.

Braden (1990) in a study of the self-help model with a convenience sample of 396 men and women with a diagnosis of rheumatoid arthritis or arthritis related symptoms found that dependency (24%) and uncertainty (40%) explained the greatest variance in the prediction of those who sought self-help. Also, those persons who scored higher in self-help strongly related to higher quality of life ratings. Prohhaska, Funch, and Blesch

(1990) in 254 patients diagnosed with cancer of the colon or rectum reviewed symptom perception and illness behaviors. Results of the study showed age was unrelated to symptom perception and illness behaviors which included delay to seek treatment. However, findings indicated age did significantly affect the demonstrations of illness behaviors.

Leiker and Hailey (1988) in 202 undergraduate young adults who were studied by inventory of their health behaviors that those whose scores indicated the poorest health habits also had the highest hostility scores. The authors compared this finding with other studies that demonstrated that over time these individuals in interaction with their environment develop a "why bother" attitude and that this finding may be a link of toward hostility and the development of poor health habits.

Persons who have suffered a SCI must undergo extensive rehabilitation that may alter the self-concept of their disability and thus may be a major contributor to an individual's approach to a lifestyle (Koehler, 1989). Her study using a convenience sample of 175 SCI disabled persons, which included 20 women, showed that regardless of the gender, patient inpatient or outpatient status, and time since injury that the level of injury was the only variable significant in the alteration of one's self concept. These findings were significantly correlated with a nurse's rating of patient's success/failure at their current stage of rehabilitation. Those patients who were rated higher in successful rehabilitation also scored higher in self-concept, but had lower levels of injury. The discussion emphasized the importance of the nurse-patient relationship in which the nurse must assist the patient to adjust to a significantly altered lifestyle created by the injury. The findings indicated that basic personality type in rehabilitation settings can facilitate or hinder the person toward or from successful rehabilitation. Stanton (1988) stated that

since nurses are a critical component of the patient-education process that many other mechanisms are operative in nurse- patient relationships when education of the patient is required during an illness. She cautioned that the most significant influence of compliance during the education of a patient was the insurance of congruence between the patient and nurse educator.

Waters (1987) stated in a study using a convenience sample of 24 SCI individuals how a SCI person perceived his learning needs during rehabilitation may have profound effects on his motivation to learn and practice behaviors necessary for successful rehabilitation from injury. The results of the study were similar to Koehler (1989) in that nurses underestimated the learning needs of the quadriplegic patient. Patients regardless of the level of injury were very specific in a hierarchical rating of their learning needs. The study identified the significance of assessing the learning needs of SCI patients with respect to level of injury. Water and Koehler (1989) both cautioned against nurses underestimating the level of injury as a determinant of patient needs.

Warms (1987) compared the source and content of health care received by individuals with SCI and health care services desired. The impetus for the study was the notion that SCI complications may be a result of the interaction of the disability management and general health habits and/or lifestyle of the person. In the study using a convenience sample of 81 SCI persons (59 men and 6 women) it was revealed that topics discussed and services received were related to the client's disability rather than their health habits and lifestyle. Subjects who had identified a desire for specific health promotion services were found to have been provided no information at all in relation to desires for exercise and fitness information, stress management techniques, and nutritional counseling. Becker, Stuifbergen, Ingalsbe, and Sands (1989) studied 135 disabled

persons with respect to health-promoting behaviors using the Pender Health-Promoting Lifestyle Questionnaire. Results revealed that 73% of the sample referred to health as the ability to function at their desired level rather than the absence of illness. Also, high adaptive levels of functioning significantly correlated with the self-efficacy scale, age, and low scores as the barriers to health promotion. These findings and the results of the previous studies by Waters (1987), Warms (1987) and Koehler (1989) that persons with disabilities should not be underestimated in their learning needs, self assessment, or desires for health-promoting behaviors toward successful rehabilitation a change in their lifestyle.

Life Satisfaction

Three approaches to life satisfaction have been found in the literature (Flanagan, 1982). One conceptual approach was to consider life satisfaction in relation to demographic, experiential, and interactional variables; another approach evaluated personality variables in relation to the social environment, and lastly, to evaluate life satisfaction as a function of goal directed behavior. Twenty years of life satisfaction research has evolved a multifaceted, abstract concept which has been viewed as a reflection of quality of life (Palmore & Luikart, 1972; Flanagan, 1982).

Malm, May, & Dencher (1981) explained that life satisfaction's use as an outcome measure of a rehabilitation program's effectiveness, allows reconceptualization of quality of life in a wider context in which an individual's idiosyncratic needs can be met. Malm et al. (1981) described a model that represented an individual's personal factors as a range of life experiences that when combined with the person's social environment over a set of life domains serve as a composite of the person.

Mehnert, Krauss, Nadler, & Boyd (1990) studied a model of life satisfaction that considered "social life feelings". Schuessler (1982) described a similar model in which a person's attributional processes reflected the quality of social circumstances by attitudes, opinions, values, frame of reference, frame of mind, and outlook on life. The model was designed to portray the individual's sentiments about a person's place in the social world. Emmons (1986) added the person's negativity or positiveness as an additional dimension on the affective model of life satisfaction. From this perspective Mehnert, et al, (1990) examined the life satisfaction of 675 individuals with disabling conditions focusing on physical limitations, economic considerations, and social factors. The study was conducted with a nationally stratified sample from a telephone interview. The results of the study indicated that in disabling conditions age, age at onset of disability, type of condition, severity of condition, employment status, income, and marital status significantly affected life satisfaction as an outcome.

Other researchers have identified similar correlations. Flanagan (1982) in a study of 500 men and 500 women found that children, work, knowledge of self, and spouse were most frequently cited besides health as indicative of quality of life. Multiple studies relate age and life satisfaction with George, Okun, & Landerman (1985) clearly demonstrating that age moderates the impact of a number of life variables on life satisfaction. They showed that a person's subjective rating of health is correlated with life satisfaction across the life-span and its influence increases with age, especially in those over the age of 60 as the single most important predictor of life satisfaction. Conversely, their findings indicated that importance of education declined with age, but marital status increased in importance after the age of 60 years.

Greater corroboration of Mehnert et al's (1990) findings of a variety of variables associated with life satisfaction were found in the literature. Marriage, employment, health, income, job satisfaction, education, participation in leisure activities, significance of social support, and social interaction were all discussed as significantly related to life satisfaction (George et al, 1985; Larson, 1978; Riddick, 1985). Less desirable linkages have been demonstrated by Emmons (1986) in establishing personality traits such as sociability, self-esteem, and personal activities in a reproducible relationship to life satisfaction. As a result, life satisfaction when linked to personal strivings, or goal attainment as a desire to achieve specific events in everyday life appears to be clearer in its relationship when a person perceives their strivings as important or valued as a measure of personal success at that moment in time independent of past attainment.

Since few studies focused specifically on life satisfaction among disabled individuals, especially women, the recent study by Mehnert et al (1990) was clear in its perspective that life satisfaction is not significantly lower in the disabled individual relative to the general population. The problem apparently is that nondisabled researchers approach the disabled from an unobjective viewpoint leading to misinterpretation of the disabled and how their life satisfaction is as rich as the nondisabled.

Yerba and Baum (1986) and Cameron, Titus, Kostin, and Kostin (1973) found that contrary to Fine and Asch (1988) no differences in life satisfaction were found between those persons with spinal cord injuries and their friends with no disabilities or individuals with varied other disabling conditions and matched controls. Wacker, Harper, Powell, and Healy (1983) corroborated similar findings in persons with long-term disabilities some 20 years from the onset of disability in former patients of a tertiary care facility for persons with severe and multiple handicaps. By nondisabled standards these

person's life outcomes left much to be desired. However, high levels of life satisfaction for living conditions (96%), social activities (82%), and educational retraining (75%) were discovered.

Weinberg (1984) also found, but with a different approach in disabled persons, that life satisfaction was high. Twenty-two persons with a variety of disabilities injured before the age of 10 and eight persons disabled late in life were interviewed as to whether or not they would volunteer if offered an operation to cure their disability. Of those injured early in life and refusing the procedure, the most common explanation was that they would no longer be the same person. Of those persons injured later in life, the answers indicated that their life situation would dictate rather than their personal quest for a cure their acceptance or refusal of the procedure. This study clearly demonstrated that age at onset of disability affected life satisfaction as a function of life goal attainment by those who only limited their optimal functional ability to the limits of the disability, avoided negativity, and avoided dependency on the disabled identity. Weinberg and Sterrit (1986) confirmed that in the main, higher life satisfaction was attained by those who differentiated between living with disabling conditions, being disabled, and in relationships with others who view the disabled as they view themselves. Fine and Asch (1988) cautioned that behavioral responses by the disabled to life satisfaction research can be colored by the person's behavioral and social dysfunctions as they relate to interrelationships of personal capacity, environmental demands, and interactional ability.

Substantial evidence which suggests that social support has a direct and beneficial influence on psychological well-being and health outcomes in relation to life satisfaction has been reported by Abbey and Andrews (1985) and Ganster, Fusilier, & Mayes (1986). Schultz and Decker (1985) suggested that social support was crucial in adjustment to SCI

which enables the disabled person to make physical, social, and cognitive changes to injury. In this study a person's support was identified as instrumental - financial, transportation, and activities of daily living; cognitive - communication of information for the person to negotiate with their world; affective- as a positive attitude, receipt of belonging and being loved and respected, and the appropriateness of goals, beliefs, and values. The study's results demonstrated that a support network for SCI persons was minimal (mean=2.3, mode=1) which indicated that loss of their support network would have significant implications on the life satisfaction of these individuals. Also, highly correlated with life satisfaction were the perception of control and absence of depression. Similar findings of importance of social support and perception of control and the relationship to life satisfaction have been cited by Lane, Lautenschlager, Sloan, & Varca (1989) and Sagy, Antonovsky, & Adler (1990).

Well-being

Emmons (1986) proposed a study with the premise that possessing and progressing toward meaningful life goals was a prerequisite for subjective well-being. The relationship between the personal goal strivings and components of subjective well-being (positive and negative affect and life satisfaction) were studied. Participants were 40 undergraduate students (28 women and 12 males) who revealed that positive affect was most strongly associated with striving value, past fulfillment, and degree of effort towards goals. Negative affect had the opposite strong correlation. Persons who reported high life satisfaction also reported their strivings as important and valued regardless of past attainment of goals. The findings indicated that when studying subjective well-being, the emphasis should be toward personal strivings, rather than in terms of personality traits.

Zika and Chamberlain (1987) examined locus of control, assertiveness and meaning as possible moderators of stressors and subjective well-being. The results from 160 undergraduate students suggested that moderating variable effects were significantly influenced by gender with women greater being affected more readily by the locus of control variable. The women reported that chronic daily stressors (hassles) were directly related to their well-being reports. Also, meaning in life consistently predicted positive well-being. Emmons and King (1988) evaluated the effect of goal conflict and ambivalence on psychological and physical well-being in 88 undergraduate students. The students were asked to rate the amount of conflict experienced and ambivalence present between goals. Assessment was further made in relation to positive and negative affect and physical symptomatology. Results showed that high levels of a negative affect, depression neuroticism, and psychosomatic complaints were directly related to conflict and ambivalence. The group with a positive affect had the opposite results. One year later the same students were restudied with the finding that the results had remained the same, but that greater amounts of time were spent in striving.

Headey and Wearing (1989) examined the relationships among personality, life events, and subjective well-being in a general cross-sectional population. Similar results to Emmons and King's (1988) study were found in a stratified sample of 942 persons (women 54% and men 46%). Personality traits predisposed individuals to moderately stable levels of adverse events if the person had a positive state of subjective well-being. An equilibrium was stated as a desired balance between life events and subjective well-being for all personality types when factored for age and type of personality (Robins and Block, 1988).

Wetzler and Urzano (1988) investigated 6320 active-duty military persons (356 women and 5962 men) using the IPWB (Berkman, 1971) and measuring health behaviors. Findings showed that women had lower well-being scores in every category of well-being scores in every category of well-being, income, education, and were younger (mean=26.8 years) than their male counterparts. The association between well-being and health behaviors showed that even women who scored high on physical activity were still lower than men in psychological well-being.

Physical Well-being

The definition of physical well-being tends to be rather abstract. It is viewed as "a state of dynamic equilibrium between the organism and the environment within the appropriate limits of a particular form of life in all phases of the life cycle" (Blakistons's Gould Medical Dictionary, 1979). Since abstractness of definition poses a major problem, the operational definition and measurement of physical well-being in this study is consonant with the conceptual framework of determining the threats to physical well-being that may be a significant finding in women with long-term SCI.

DeVivo, Kartus, Rutt, Stover, and Fine (1987) reviewed the National Spinal Cord Injury Database to evaluate the cause of death for over 10,000 persons with SCI. They found that beyond the early phases of rehabilitation respiratory complications, cardiovascular disease, cancer, accidents, and suicide were the leading causes of death. The authors own data base of 310 persons with SCI adjusted for expected numbers of death in the general population, identified that septicemia, flu, and pneumonia, venous thrombosis, and embolism were the leading causes of mortality. The high incidence of septicemia correlated significantly with the severity of pressure sores.

According to Fabian (1990) well-being can be assessed by recognized objective multidimensional measures or abstract multifaceted concepts. Simply, well-being can be measured subjectively as an index of quality of life and distinctly from life satisfaction (Diener, 1984). As a subject, quality of life research has been conducted for over 20 years (Cantril, 1965) with only the last 10 years having explored the meaning of the construct and application to various groups as the DeVivo et al study (1987) (Andrews & Withey, 1976; Michalos, 1980). However, from the study results discrepancies between objective conditions such as health and well-being with these conditions have not been effectively linked with subjective indicators of well-being and variables that constitute a good life (Diener, 1984; Campbell & Converse, 1976).

Studies of well-being and at risk populations were necessary. Early studies by Cameron (1974) and Cameron, Titus, Kostin, and Kostin (1973) examined the differences in well-being outcomes between disabled and nondisabled groups. Later studies by these authors added the dimension of life differences between these groups as a means of assessing treatment interventions and services provisions. Contemporary studies (Andrews, 1986) have focused on the meaning and understanding of well-being as an outcome in persons with long-term disability and modelling for measurement in client improvement from acute care through rehabilitation.

Psychological Well-being

The psychological adjustment of women to the demand of long-term SCI has not been the subject of a great deal of discussion or research. This study's approach to studying psychological adjustment is consonant with the approach used by Decker (1982) and Schultz and Decker (1985). Their approach focused on the belief that a single

measure of psychological well-being was inadvisable due to the complexity of the concept. The approach used multiple measures for which normative data and tested tools were available in the study of 86 men and 14 women with long-term SCI. The tools used in the study, as well as, by Schultz and Decker (1985) were the Index of Psychological Well-being and the Center for Epidemiologic Studies Depression Scale.

Bracken (1980) advanced the concept that coping and adaptation theory could be used to explain the psychosocial responses as hindrance of optimization of rehabilitation from acute SCI. He furthered the notion that recovering from acute SCI could be likened to the mourning and other situations of severe loss or death. Premorbid personality types and influence of significant other support of the injured person, play a crucial role in coping with injury.

Ben Sira (1983) added the concept, predominance of personal resources, as primarily contributing affective interactional relationships where social support could be considered resource enhancing. He stated that the weight of these efforts could be of more significance than the severity of the injury or disability over time. Frank, Van Valin, and Elliot (1987) prompted further research in the psychological and social adjustment of the person with SCI over the long- term.. Their substantial review of the literature indicated that a study to evaluate long-term impact of psychological well-being and adjustment was necessary since Schultz and Decker (1985) evaluated persons with SCI greater than 20 years in duration from injury and that significant differences may be found closer to the time of onset of injury.

Turner and McLean (1989) postulated the relationship between physical disability and psychological distress. A sample of 967 subjects who identified themselves as disabled were matched with nondisabled persons within a community. Subjects were

matched on age, sex, and area of residence. Depression, anxiety, and estimation of major depressive disorder data were collected. Results indicated that disabled persons were substantially at risk for depressive symptoms, anxiety, and tendency toward a major psychological disorder. Chronic stress of adjustment to changes as the individual ages was felt by the authors to contribute significantly in this finding.

Depression has been described as a major health problem for women. The increased incidence of depression in women has been attributed to sex differences in biological and/or psychosocial functioning. To date no consistent evidence was reported that can be attributed to depression as a genetic predisposition in women, or a variation of hormonal influence on the female mood state (Franks and Faux, 1990). Rosen, Moghadam, and Endicott (1990) collected data in which women's general well-being and premenstrual symptoms were examined. A significant direct correlation between general well-being and premenstrual symptoms was found in the study of 947 women. Those having a higher score on both concepts and who were also older had fewer cognitive depressive symptoms than women with lower scores. A one year follow-up found women who reported lower scores on general well-being and who had premenstrual symptom to be more depressed than they had been previously. Franks and Faux (1990) also found in a study of 212 women that stress was a major predictor and correlate of depression regardless of ethnocultural group.

Two studies explored the relationship between stress and physical illness. Dixon, Dixon, and Spinner (1989) and Johnson and Lauver (1989) cited the literature as being inconclusive with respect to the role stress plays in the development of coping strategies and disintegrity as possible links between the two measures. Dixon et al's (1989) study evaluated disintegrity or the perception that one's life has not gone well in 91 master's

prepared nurses. Results should minimal correlation between stress and illness. Johnson and Lauver (1989) reviewed hypotheses linking coping and employed them in 84 persons in an interventional study. Statements evaluated against emotional-drive theory were not supported. Self-regulation theory was supported if the outcome measure returned to one's usual activities. Statement related to cognitive or self-efficacy theories proved to be inconclusive in application to the results of the interventions.

Watson (1988) correlated negative and positive affect with a daily questionnaire for 6 weeks in 80 subjects. Results were dependent upon the subject rating their mood, level of stress, suffering from various minor physical problems, time spent socializing, and whether or not they had exercised. Results between subjects showed that the level of physical complaints and perceived stress were correlated with individual differences in negative affect with no effect on positive affect. Within subjects analyses showed that exercise and socialization were highly related to positive affect. The relation of health complaints was equally strong for both positive and negative affect.

A variety of authors have tried to focus the divergence in the literature in the relation of stress to illness. Lazarus (1990) stated that current conceptualizations of stress seem to be insightful accounts of depression. He stated that threats to or actual loss of resources appear to be the same as loss of positive reinforcers as posited by his previous research in nonbiological depression. Deutsch (1989) called for a freeze on "stress wars" in journals. The author remarked that differences in researcher's approaches to the study of stress was leaving the research efforts of studying stress to scaled items and their results inconsistent with the discovery of onset of illness, which was leading to confounded measures in adults. Green (1986) essentially agreed with Deutsch that

confounding problems occurred when conceptually trying to link the contribution of objective events with subjective appraisals of stress and outcome in patients.

Lazarus (1985) first discussed the confounding of the relationship between stress and adaptational outcomes with psychological symptoms and somatic health. Lazarus, DeLongis, Folkman, and Gruen (1985) discussed stress as a complex construct much like trying to describe emotion. Their position apart from other psychologists was that stress is made up of many interrelated variables and processes as opposed to a simple concept that can be singularly measured and correlated with adaptational outcomes. Lazarus et al (1985) postulated a stress model that defines causal antecedents of stress as conflict arising from a person's values, commitments, goals, general beliefs such as self-esteem sense of personal control, interpersonal trust and existential beliefs; and environmental variables with demands from others, social support network, and interpersonal constraints. Mediating processes focusing on social support and coping options lead to immediate effects based on the quality of the interpersonal encounter and resultant physiological somatic changes. Long-term effects of stress directly generate changes in psychological well-being, somatic health or illness, and social functioning.

Pollack (1989) studied the concept of hardiness on adaptation to actual or potential health problems. The author argued that human resources to the same or similar situations varied markedly with the adaptational outcome to stress. She defined the hardy person as one who recognized life requiring persons to make decisions (personal control) actively with others (commitment), and to perceive self-change as ultimately benefitting (challenge) to personal development. Her study involved testing the premise in 60 female patients with chronic illnesses (hypertension, diabetes, and rheumatoid arthritis) as either possessing a potentially harmful or beneficial outcome. Results indicated that those

persons who were found to be hardy have significant correlations in higher levels of health status, engagement in health promotional activities, and use of social resources. The results indicated that this concept may indeed affect adaptational outcomes in patients with chronic conditions such as diabetes by influencing the individual's perception over time of the stressor (chronic illness), the coping strategies used, and social resources that they may choose to use.

Frank and Elliot (1986) studied life stress and psychological adjustment following spinal cord injury in 53 patients who were undergoing rehabilitation post-injury. They examined 44 men and 9 women of which included 32 quadriplegics. The time since injury was treated as an independent variable, as well as, life stress. Results indicated that in acutely injured patients that time since onset of injury did not moderate psychologic well-being due to hostility and phobic anxiety of long-term outcome. Inpatient rehabilitation following acute injury increased the patient's vulnerability to negative life events. The authors suggested that depression post-injury may be operative and may induce patients to psychological distress and obscure adjustments to injury. The results indicated that how patients change over time in adjustment to the impact of SCI was unknown. The findings of this study was supported by Richards (1986) who looked at psychological adjustment during the first year following SCI in 36 subjects. He found that depression one year post-injury significantly decreased and was no different than controls at this point. Schultz and Decker (1985) found that over the long-term or 20 years following SCI that their subjects were as satisfied as the general population with their lives, and that the subjects were only slightly more depressed than the general population. However, no studies were available that investigated the element of control in

health-promotional behaviors as they may affect long-term life satisfaction and psychological and physiological well-being.

Summary

Success with SCI rehabilitation depends on personal resource utilization and mobilizing energy to put one's life back together again. Understanding the physical sequelae of SCI, the effects of SCI on female physiology, and psychologic and social factors are germane for nursing. Research in perceived control, health-promoting behaviors, life satisfaction, and physical and psychological well-being reveal critical issues confronted by women with SCI and define the variables to guide data analysis for this study.

The significance of the specific demographic variables and correlates of SCI is well documented in the literature from 1970 forward as being statistically significant as indicators of long-term adjustment in SCI persons. The relevance of the variables have been more specifically oriented to men and to a lesser extent women with SCI.

The demographic variables of are, marital status, education, income, race, and employment status were found to be directly related to the correlates of years since injury, level and completeness of injury, and etiology of injury in SCI persons (Wright, 1983; Devivo et. al, 1987; Trieschman, 1988; Krause and Crewe, 1991). Mode of transportation was implicated in studies by Kutza (1985) and Danek and Lawrence (1985) in their studies of social welfare indicators. Transportation was a limiting factor in educational opportunity thus impacting on employment possibilities and income. These same demographic variables were implicated by Walker, Sechrist, and Pender (1987) as being directly related to health-promoting behaviors for both men and women.

The physical examination parameters for the breast and gynecologic indices were developed from studies by Zejdlik (1983), Terbizan and Schneeweiss (1983), Bedbrook (1985), Griffin-Kinney (1987) and Charlifue et al. (1987) which detailed normal breast and gynecologic structures and functions. The specific development of the home interview questions detailing menstruation, pregnancy and breast history were clarified and refined from the discussions in the studies by Robertson (1972), Charlifue et al (1984, 1987), Verduyn (1986), and Mendius (1989). As documented by the literature review female specific problems still present a contemporary relevance thus were included in either the home interview or the physiologic exam parameters.

The outcome variables life satisfaction, depression, perceived stress, psychological well-being demonstrated significant correlations with all demographic variables previously mentioned (Schulz & Decker, 1985; George et al, 1985; Walker et al, 1983; and Mehnert et al, 1990). Although the studies had male predominant samples, females were included.

The significance of multivariate approaches to examine perception of control, perceived stress, life satisfaction and psychologic well-being was demonstrated by Tetrick and LaRocco (1987) when they utilized healthy women volunteers to determine that such an approach could be used to determine strength and direction of correlations with women with SCI. Chwlsiz et al (1988) suggested that the variables of perceived control perceived stress, life satisfaction and psychologic well-being could be related to a person's subjective rating of well-being thus indicating the extent of successful coping in the presence of a disability. Further studies by Bulman and Wortman (1977) and Scholskas et al (1990) substantiate the placement of the predictive variables of perceived control and health-promoting behaviors in regard to their order placement in relationship to the

outcome variables in the hypothesis. Their findings also indicated that one's self control and psychologic distress were significantly correlated regardless of age, time since onset of injury, or level of injury. Their finds may indicate that physical parameters and correlates of SCI were not significant in the long-term adjustment post rehabilitation phase of SCI persons.

One of the first attempts to examine the health promotional model and the health promotions lifestyle questionnaire in persons with a wide range of disabilities was done by Becker et al (1989). Their findings indicated that these health promoting behaviors were correlated to one's outcome of adjustment to long-term disability. The demographic variables, physical exam parameters, predictor variables and outcome variables for the study were selected based on the strength of their discussion during the review of literature, enabling these variables to be directly examined in relationship to a totally female sample.

The paucity of research in women with SCI, however, documents the need for a study focusing on personal control and the estimation of health-related behaviors associated with long-term adjustment. Each of these variables have been tested, alone and in combination, in small numbers of women (sample size less than 20). The literature reviewed indicated that a study of these variables with a larger probability sample with SCI was indicated to more clearly define the impact of the construct of perception of personal control as it relates to lifestyle and resultant effects on outcome of life satisfaction and well-being.

CHAPTER 3

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

A cross-sectional, correlational, descriptive design for the purpose of using perceived control and health-promoting behaviors to predict the outcomes of well-being and life satisfaction of women with long-term SCI was proposed for this study. The outcomes of well-being and life satisfaction were explained based on multiple predictive indicators.

The proposed study was classified as applied research as the focus was practical and predictive through the natural observance of subjects (Abdellah & Levine, 1986). Criteria for the nonexperimental category met by this study design were absence of deliberate manipulation of the variables and lack of control over the research setting (Abdellah & Levine, 1986). Prior to subject entry, random selection was used to secure a representative sample of subjects from a well-delineated accessible population. (Abdellah & Levine, 1986).

According to Waltz and Bausell (1981), the independent and dependent variables in descriptive studies are not specified. However, in correlational studies, the definition of variables is required to delineate the variables to be described and their relationships. Perceived control and health-promoting behaviors with other contributory variables such as demographic measures, physical examination parameters, or correlates of SCI were the predictive variables. Life satisfaction and well-being were the outcome variables. Data collection procedures consisted of a structured interview and physical examination by the

researcher and a gynecologic and breast exam by a certified OB/GYN Nurse Practitioner. The patient completed the following self-report scales: Perceived Control Questionnaire (PCQ), Center for Epidemiologic Studies Depression Scale (CES-D), Perceived Stress Scale (PSS), Life Satisfaction Index-A (LSIA-A), Index of Psychological Well-being (IPWB), The Health-Promoting Life-Style Profile (HPLP).

Setting

The community within a geographically bounded Health Service Area which includes 13 counties consisting of 12,000 square miles in the Southwestern United States was the setting for this study. According to the 1990 census, this area had a population of 2.8 million persons. The area was diversified in terms of urban and rural areas, ethnic groups, and income levels.

Two types of settings were used for data collection. The first type of setting was in the subject's home or other place designated by the subject and conducive to a structured interview of approximately 2 hours. The second type of setting was at The Institute for Rehabilitation and Research which is internationally known for research in and treatment of spinal cord injury and other catastrophic disabilities. All physical, radiographic, and laboratory examinations were conducted at this site in a clinic designed to accommodate disabled persons. All appropriate equipment for such examinations was provided by the facility. Additionally, complete funding for this study was provided from a National Institute of Disabilities Rehabilitation and Research Grant awarded to Baylor College of Medicine, Department of Rehabilitation Research. The specific focus of this grant was to study persons in the community disabled by long-term spinal cord injury.

Population and Sample

For the purposes of data collection for this study, a probability sample of 40 women was drawn from an accessible population of approximately 128 women with long-term SCI who resided in the community. The systematic sampling method used to select the subjects recruited for the entire study involved the use of consecutive identification numbers given to each subject in the SCI Census immediately after telephone interview or their mailed Census Questionnaire was received in the research office. This study was part of a five year grant on-going since 1988 to develop the SCI Census and study both men and women with long-term SCI. All females whose identification number ended in a zero or five were contacted. If a person did not wish to participate or dropped out, the next lower identification number was recruited. This sampling technique continued until either a person agreed to participate or a male subject was encountered. Priority then was given to the next zero or five as the last digit of the census identification number. By using this method of systematic sampling, each subject was assured a reasonably equal chance of random selection.

Criteria for inclusion in the study was:

1. A minimum of one year since complete or incomplete SCI
2. A minimum age of 18 years
3. Traumatic etiology of the SCI
4. Ability to read or understand English or Spanish
5. Diagnosis of SCI with paraplegia or quadriplegia
6. No severe speech or cognitive residuals as a result of head injury

Protection of Human Subjects

The proposed study complied with all of the rules and regulations of the Human Subjects Review Committee of Texas Woman's University, Baylor College of Medicine, and the Institute of Rehabilitation and Research (Appendix L). The data for this study was collected in a prospective design when the researcher was a pre-doctoral fellow in a Rehabilitation Research fellowship at The Institute of Rehabilitation and Research, Baylor College of Medicine. Analysis of the data was performed retrospectively for the dissertation. Informed consent was obtained from all subjects verbally, and in writing after reading a written explanation of the study requirements in the form of a letter outlining the purpose, potential risks, potential benefits, and alternatives. (Appendix A). The name, address, and office telephone number of the researcher were listed in the letter. A statement indicating availability of the researcher to answer questions or concerns prior to, during, and after post study was included. A structured interview followed a verbal explanation of the study and a signed informed consent. Participation could be withdrawn at any time without penalty, however, no alternative study was available for the participant in which the same or similar information was collected.

Confidentiality of the data was maintained by using a study code and SCI Census Code Number which was kept in a locked office until the study was completed. The code list was kept separate from the data sheets and in a locked office. All data analysis was in summary form with no identifiers. Participation was voluntary, however, financial remuneration was recognized as necessary to compensate the subjects for the time and inconvenience involved.

Benefits from participation included the possibility of increased awareness of one's health status. Also, a comprehensive physical examination including gynecologic

and breast examinations, radiographs, and laboratory examinations was made available at no cost. Subjects also received a \$100.00 stipend for their time and as an incentive for study participation. Risks involved could include discomfort or distress from being asked sensitive questions, a hematoma from venipuncture, breach of confidentiality of their personal data, or embarrassment due to exposure of the body during the physical examinations. A summary letter and follow-up telephone call from the researcher with a copy of individual study results were made available to each participant. Due to the nature of the affective and bio-psychological domain queries, a debriefing was used to answer questions or explain study results further. A telephone call served as a debriefing.

Instruments

The following instruments were used in this study:

1. Demographic Data Sheet (Appendix B)
2. Physical Assessment Form (Appendix C)
3. Gynecologic Interview (Appendix D)
4. Perceived Control Questionnaire (PCQ) (Appendix E)
5. The Health-Promoting Life-Style Profile (HPLP) (Appendix F)
6. Perceived Stress Scale (PSS) (Appendix G)
7. Center for Epidemiologic Studies-Depression Scale (CES-D) (Appendix H)
8. Life Satisfaction Index-A (LSIA-A) (Appendix I)
9. Index of Psychological Well-being (IPWB) (Appendix J)
10. Summary Letter from Physician (Appendix K)

Demographic Data Form

The information contained on this form was used to collect general information for all subjects included in the study. Items of interest include age at injury, current age, marital status, race, level of education, employment status, transportation status, residence, and income category (Trieschman, 1988). According to Waltz and Strickland (1984), construction of measures in the descriptive domain are necessary to assess precise measurement of physical attributes to classify or categorize status of a subject. The results of such measurements are nominal, ordinal, and ratio in levels and were used to further refine correlated analysis and reliability and validity. Additionally, the demographic variables were regressed into the life satisfaction and well-being outcomes as predictive indicators. This form has been used to collect data for the 660 persons currently enrolled in the on-going spinal cord injury census at The Institute for Rehabilitation and Research.

Physical Assessment Form

This instrument was a multidimensional physical assessment form that was designed by physicians and this researcher to collect a review of physical parameters in a head-to-toe comprehensive, organized, sequential fashion. The form includes comprehensive parameters for collection of the gynecologic and breast examination data. Items included have been refined with 130 male SCI patients recently studied. The female specific information was added in consultation with a gynecologist who specializes in the care of disabled women. Data yielded by the instrument are nominal, interval, and ratio levels.

Health-Promoting Life-Style Profile

The Health-Promoting Life-style Profile (HPLP) was a 48-item self-report questionnaire that assesses physical and psychological health-promoting behaviors (Walker, Sechrist, & Pender, 1987). The Health-Promoting Life-style Profile was a multi-dimensional instrument to assess self-initiated actions and perceptions directed toward sustaining or increasing the respondent's level of well-being, self-actualization, or personal fulfillment. Each item was rated by the individual on the regularity in which it is engaged on a four-point scale ranging from "Never" to "Routinely." The alpha coefficient for the reliability of the total scale was .92 based on a sample of 952 adults indicating a high degree of internal consistency among items. Six subscale factors were found to have alpha coefficients from .70 to .90 indicating acceptable to a high degree of internal consistency (Walker et al, 1987).

Stability of the instrument was evaluated by 63 persons at two administrations in two week intervals. The Pearson r for the total scale was .93 and .81 to .90 for the subscales indicating a high positive correlation between test administrations. Using the larger sample to obtain construct validity, factor analysis yielded 6 factors in order of relative percent of explained variance: self-actualization health responsibility, exercise, nutrition, interpersonal and stress management. Factor 1, self-actualization was the strongest factor indicating the highest percentage (23.4%) of variance loading in the HPLP. The incorporation of self-actualization and sense of purpose by definition dominates the health-promoting lifestyle used to develop the items for the questionnaire (Walker et al, 1987). The nature of the other factors in low to moderate correlations indicated distinct interdimensional relationships without redundancy. The isolation of the self-actualizing factor as the predominant dimension lent critical evidence in support of

actualization in health promoting behaviors. This actualization may promote positive or negative behaviors as individuals interact with other persons and their environment (Pender, 1982). Further research was indicated in other populations representing various states of health and illness which is directly applicable to this study. Permission was obtained for the use of this instrument from the authors. The level of measurement is ordinal but may be treated as interval as a total score was calculated (Allen & Yen, 1979).

Center for Epidemiologic Studies Depression Scale (CES-D)

The Center for Epidemiologic Studies Depression Scale is a 20-item, self-report scale designed to measure depressive symptoms in the general population (Radloff, 1977). Reliability measurement by alpha coefficient ranging from .84 to .90 were obtained indicating a high internal consistency among items (Radloff, 1977, Schultz & Decker, 1985). Validity by factor analysis yielded four clearly delineated factors: depressed affect, positive affect, somatic and retarded activity, and an interpersonal factor (Radloff, 1977). A total score was calculated which rank-ordered the person on a scale from non-depressed to depressed. The level of data was interval.

Perceived Control Questionnaire (PCQ)

This questionnaire is a 60-item, self-report scale designed for this study to measure a multidimensional state of perceived control of affective behaviors of the self, others, health and the environment (Nunchuck, 1988). The tool was pilot tested with 30 able-bodied women and 5 SCI disabled women. Reliability measurement by alpha coefficient was .97 for the non-disabled women and .96 for the disabled women indicating high internal consistency among items for both groups. Validity by factor analysis yielded two clearly delineated factors of control: Factor 1, self (64% variance

explained); and Factor 2, others, environment, and health (26% variance explained) (Nunchuck, 1988). Although a preliminary factor analysis was performed on a sample of 35 persons, for validity to be established, a sample size of 300 persons or 5 persons per question are required for a valid factor analysis. A total score was calculated from rank-ordered items on a 3-point scale from "No Control" to "Total Control" as an indication of the persons' belief of their degree of control over specific areas of beliefs or values. The level of the data was interval as a total score is calculated (Allen & Yen, 1979).

Life Satisfaction Index-A (LSIA-A)

The LSIA-A was an 18-item self-report scale designed to measure subjective satisfaction with life. Reliability for the instrument was established with the general population of 1,716 persons by Adams (1969) resulting in an alpha coefficient of .75 indicating relative consistency among variables for a sample of white males and females.

Neugarten, Havinghurst, and Tobin (1964) developed the tool to be scored using a system of 2 points for an affirmative response, 1 point for an uncertain response, and a 0 for a non-affirmative response. This measure by factor analysis theoretically and empirically was structured around five components: zest versus apathy - the subject's enthusiasm of response and degree of ego involvement in any of the various activities that involve the subject and other people; resolution and fortitude - the extent to which the subject regards her life as meaningful and accepts resolutely that which life has been; congruence between desired and achieved goals - the extent to which the subject feels that she has achieved certain goals in life, whatever those goals might be; self-concept - the subject's concept of self, including physical, psychological, and social attributes; and mood tone - the extent to which the subject expresses happy, optimistic attitudes,

depression feelings of being blue or lonely, or feelings of bitterness. In a study of persons 100 persons with SCI, the scale had an alpha coefficient of .76 indicating acceptable internal consistency among items (Schultz & Decker, 1985). In the same study, concurrent validity was established with other measures of life satisfaction; LSIA, .99; LSIZ, .95; Cavan, .80; and Philadelphia Geriatric Morale Scale, .80 (Schultz & Decker, 1985). The level of the data is interval as a total score yields a level of satisfaction (Adams, 1969).

Index of Psychological Well-being (IPWB)

This 8-item self-report, Likert-type scale was developed previously by Berkman (1971) to measure mental health in a general population survey of 6,928 persons. The scale comprised both negative and positive feeling-state measures describing relative strength of one's feelings. Reliability for this instrument has not been reported. The criterion validity of the scale was supported by Berkman with intercorrelated measures of mental health and life-stress. The IPWB yielded a score ranging from 1 to 7; 1 indicating a high level of psychological well-being. Berkman (1971) reported a mean score of 3.77. In a study of individuals with SCI, Schulz and Decker (1985) reported a mean score of 4.04. The level of data is interval as a total index of well-being is calculated (Berkman, 1971).

Perceived Stress Scale (PSS)

The PSS is a 10-item self-report scale designed by Cohen and Wills (1985) to reflect the degree to which individuals find their lives in the past 30 days unpredictable, uncontrollable, or overloading. A national probability sample of 2,387 persons yielded an alpha coefficient of .87 for reliability indicating a high degree of internal consistency

among items. Each item is scored on a 5-point Likert-type scale ranging from "Never" to "Very Often." The instrument has been shown to have predictive validity with other measures of psychological and physical symptoms(Glasgow, Klesges, Mizes & Pechacek, 1985; Kuiper, Olinger, & Lyons, 1986). The level of the data was interval as a total score is calculated (Cohen & Wills, 1985).

Data Collection

After having been randomly selected to the systematic sample, the prospective participant was contacted by telephone to establish willingness of the person to participate in the study. If agreement was obtained, a date for the home visit to complete a structured interview and the forms was established. Prior to the home visit, the consent form, and the Self-Report Physical and Psychological Well-being packet was mailed to the subject for completion.

At the home visit, the subject was asked to sign the consent form, respond to the Structured Interview of Physical Well-being which included female specific questions, and was informed of the physical evaluations performed at the institute. If interest in participating in the study was viable, the subject was scheduled for a day at the institute to complete the study (Figure 3).

Transportation was arranged by pre-paid Cab fare, the Institute's Van, or personal car which was reimbursed to the participant. Questionnaires or scales to be self-administered included: Perceived Control Questionnaire, Perceived Stress Scale, Index of Psychological Well-being, Life Satisfaction Index-A, The Health-Promoting Life-style Profile, and Center for Epidemiologic Studies-Depression Scale. During the visit to the institute, the comprehensive physical examination including gynecologic and breast exams

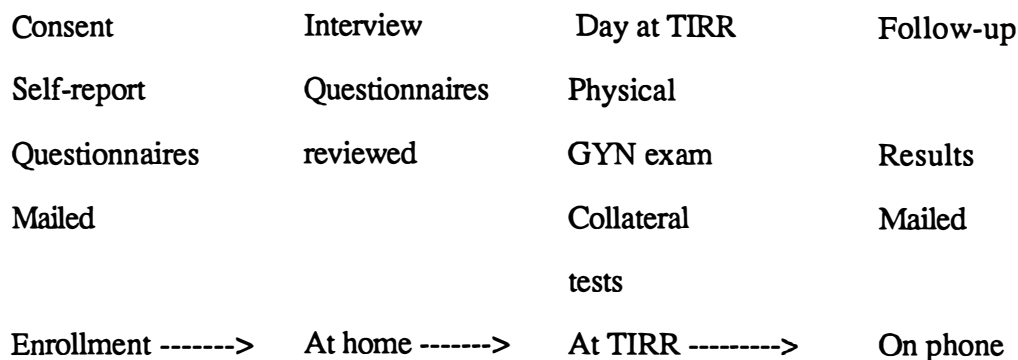


Figure 3. Study Time-line

was conducted by a consultant physician and certified gynecologic nurse practitioner, respectively. Additional data was obtained and made available through the research grant and included:

Collateral Examination

1. Urinalysis, culture and sensitivity
2. Renal scan
3. Xrays of chest, spine, shoulders, abdomen, hips, and knees.
4. 12 lead ECG, cholesterol studies, lipid screen
5. Pulmonary capacity study
6. SMAC 20 and complete blood profile
7. Vocational status evaluation
8. Physical therapy assistive equipment consultation

Observations and Measures

General gynecologic and self-breast examination history was obtained as part of the home interview and by general questioning during the physical examination. After completion of the physical examination, each person was positioned and draped for the gynecologic and breast exams. The procedure for the draping and examination was explained in detail as listed below, as well as the breast self-examination (BSE). The BSE was taught and queried as to continued performance during the post-study telephone call.

Breast Examination

1. Inspection of skin, tissue, nipples, and clavicular and axillary nodes.
2. Palpation of clavicular and axillary nodes, breast tissue, and nipples.

Gynecologic Examination

1. Inspection of external genitalia including hair and skin.
2. Palpation of external genitalia including skin, orifices, and musculature of pelvic floor.
3. Palpation of internal genitalia including vaginal walls, cervix, uterus, and ovaries. Bimanual rectal examination for musculature and reflex activity and stool specimen are included.
4. Slide mount for pap smear (Griffin-Kenny, 1986).

To guarantee internal quality assurance and consistency of study performance, each subject was guided through her day at the Institute by the researcher.

After final physical examination study results have been received, the consultant physician prepared a letter of interpretation of findings and recommendations for each participant (Appendix L). The information was forwarded to the researcher to apprise the

participants of their individual results in writing and over the telephone as a debriefing from the study. A follow-up telephone call by the researcher was made one month after results had been given to the participant to ascertain whether any questions or concerns should be addressed by further consultation. An offer was made to forward the results to their personal physicians or a care facility of their choice. If a critical need was indicated for psychological services, assistance in locating a resource was offered. If recommendations were made that the person should seek further assessment or treatment, a telephone call was made no more than 30 days from the date of the summary telephone call to determine if the person followed through on the recommendations. If further follow-up was necessary, the participant was asked to complete a release of information form so that it could be determined what the follow-up assessment or treatment plan was and as corroborating evidence of the need for referral.

Treatment of Data

Data were entered on a VAX/VMS mainframe system 5.3. The analyses were completed using SPSSX , SAS, and BMDP Standard Statistical packages, and additional programming as necessary by the researcher using FORTRAN Programming. Data were analyzed using descriptive statistics (means, frequencies, standard deviations, and percentages) to summarize the data and to characterize the study sample in terms of the following:

Demographic Variables

Age
 Marital status
 Employment status
 Education
 Income
 Years since injury
 Age at injury
 Level and completeness of injury
 Etiology of injury
 Race
 Mode of transportation

Epidemiologic Variables

Prevalence and Severity
 of gynecologic and breast
 dysfunction

Chi-square and Pearson Correlation analyses were devoted to cross-tabulating and determining the strength and direction of relationships among the demographic variables, physical exam, and total scores on self-report questionnaires. In the context of a linear model, residual analysis was performed to determine variables which are independently associated with the presence of a specific level (paraplegia or quadraplegia) and completeness (complete versus incomplete) of injury, demographic variable, physical examination parameter, and a total score from self-report questionnaire.

An alpha coefficient was calculated to estimate the internal consistency reliability of all self-report measures and the physical examination parameters. A factor analysis was used to establish construct validity of the Perceived Control Questionnaire and the other self-report measures for disabled women.

To confirm the hypothesized relationships between predictive and outcome variables, multiple regression analyses using a linear residual model was used. The Perceived Control Questionnaire Total Score and The Health-Promoting Life-style Profile Score was used as the predictor measures to establish the independence of the predictors on the outcome variables. The HPLP Score, as recognized in the moderating predictive

variable position, was regressed in the general linear residual model to further the relationship of the predictors to outcome of life satisfaction, and physical and psychological well-being (Figure 4).

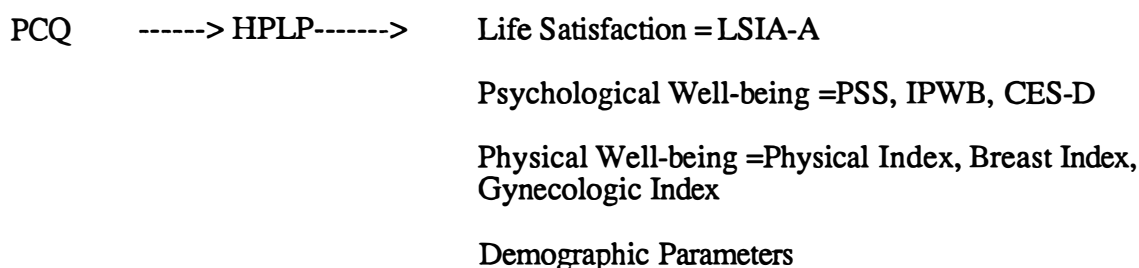


Figure 4. Flow Chart for Multivariate Analysis

Variables found to be significant in the residual analysis were applied to canonical correlation to tease the related factors from the analysis. The rotation of the predictor variables in strength and relationship to the psychological outcomes and the contribution of the importance to one another was intended to answer the central hypothesis in a multivariate fashion. Also, the contribution of the psychological well-being to one's life satisfaction was important to understand in establishing each outcome's contribution to each other as a separate variable. MANCOVA was performed for those significant variables from the regression to establish the differences in the levels of the group means with perceived control and health-promoting lifestyles held constant to understand the contribution of variance for predictor variables with criterion variables.

Jendrek (1985) stated that univariate analyses are performed to characterize the individual variables using descriptive statistical format. He further stated that bivariate analyses characterize answers to questions of relationships or measures of association

among specified variables to justify covariational or causal determination in hypothesis testing. Correlational and regression analyses indicated the strength and direction of and predictability in relationships among specified variables after relationships are determined. Residual analysis was used to assist in supporting theory across variable development. Evidence that estimated variables were stable across measurements and did not violate the Principle of Additivity was a necessary statistical technique for regression modelling. Results were less likely to be artifact of statistics and gave a truer picture of sample or population differences when such controls were used in regression modelling (Verran & Ferketich, 1987).

Multivariate analyses characterized an inferential technique to test for differences between means of data groups. MANCOVA placed selected significant measures in variable positions to satisfy tests of specific variable contribution to the sample differences (Tabachnick & Fidell, 1989)

Summary

The procedure for collection of data from 40 women with long-term SCI using a cross-sectional, correlational survey design was used for the proposed study. Data was obtained from a structured interview and self-report questionnaires and scales. Comprehensive physical examinations including gynecologic and breast exams was performed with additional collateral physical, vocational, and assistive equipment exams. Protection of human subjects according to specific data collection procedures was followed to assure participant confidentiality. Statistical treatment of data as specified to characterize the sample, determine sample differences, intercorrelations, and associations

for predictability and hypothesis testing to answer the problem of study was performed as appropriate to the level of data.

CHAPTER 4

ANALYSIS OF DATA

The relationship between perceived control and health-promoting behaviors as predictors of life satisfaction and well-being outcomes of women with long-term spinal cord injury was the focus of this study. The central hypothesis was evaluated using the Perceived Control Questionnaire and Health-Promoting Lifestyle Profile as the predictors of the Life Satisfaction Index-A, Index of Psychological Well-being, Perceived Stress Scale, and Center for Epidemiologic Studies-Depression Scale as outcomes of women with long-term SCI. These data as analyzed are presented in this chapter.

The demographic and physical examination data were used to describe the sample, and data were summarized using descriptive statistics. Descriptive statistics were used to evaluate the women's scores on the study instruments. Data treatment to answer the central hypothesis were analyzed using both descriptive and inferential statistics.

Description of the Sample

An accessible population of 128 women with long-term spinal cord injury yielded a randomly selected sample of 40 women residing in the community. All women who agreed to participate and completed the study were submitted for analyses. The level of injury of the 40 subjects revealed that 22 women (55%) were paraplegics from thoracic and lumbar spine injuries, and 18 women (45%) were quadriplegics from cervical spine injuries. The subjects were further divided by completeness of injury by Frankel Score which yielded 18 (45%) complete paraplegics, 14 (35%) complete quadriplegics, and 8

(20%) incomplete injuries. All subjects spoke, read, and comprehended English. No subjects reported or demonstrated a severe speech or cognitive deficit. The traumatic etiology of the subject's injuries accounted for 20 Motor Vehicle Accidents (50%), 11 Acts of Violence (gunshot wounds) (27.5%), 2 Falls (5%), 4 Sports Related (10%), and 3 other injuries which did not fit into a single category (7.5%) (Table 1).

Table 1

Frequencies and Percentages of Level and Completeness of Injury, Etiology of Injury, Marital Status, Military Service, Mode of Transportation, Employment Status, Education, and Income Reported by 40 Women with Long-Term SCI.

Variable	n	%
<u>Level of Injury</u>		
Paraplegic	22	55.0
Quadriplegic	18	45.0
Total	40	100.0
<u>Completeness of Injury</u>		
Complete Paraplegics	18	45.0
Complete Quadriplegics	14	35.0
Incomplete Injuries	8	20.0
Total	40	100.0
<u>Etiology of Injury</u>		
Motor Vehicle Accidents	20	50.0
Acts of Violence (Gunshot Wounds)	11	27.5
Falls	2	5.0
Sports Related	4	10.0
Other (Not Classified)	3	7.5
Total	40	100.0
<u>Race</u>		
White	27	67.5
Black	9	22.5
Hispanic	4	10.0
Total	40	100.0

Table 1 (Continued)

Variable	n	%
<u>Marital Status</u>		
Never Married	17	42.5
Married	12	30.0
Divorced/Separated/Widow	11	27.5
Total	40	100.0
<u>Military Service</u>		
Yes	2	5.0
No	38	95.0
Total	40	100.0
<u>Mode of Transportation</u>		
Public or Others	23	57.5
Self	17	42.5
Total	40	100.0
<u>Employment Status</u>		
Active Job/Volunteer/Student/ Homemaker	29	72.5
Not Active Job	11	27.5
Total	40	100.0
<u>Education</u>		
0-9 years	8	20.0
High School Grad	19	47.5
1-3 years College	10	25.0
Bachelors Degree	2	5.0
Masters Degree	1	2.5
Total	40	100.0
<u>Income</u>		
0-5,000	8	20.0
5,001-10,000	13	32.5
10,001-15,000	8	20.0
15,001-30,000	5	12.5
30,001-80,000	6	15.0
Total	40	100.0

The racial breakdown for the women included 27 (67.5%) Caucasians, 9 (22.5%) Blacks, and 4 (10%) Hispanics. The median was 8.8 for years (mean=11.3 years; SD=7.73 years) since the onset of injury. The subjects varied from 2.1 to 35.64 years from their date of injury. The median years of age at injury was 21.98 years (mean=25.8 years; SD=12.47 years). The women varied from injury at birth (0) to injury at 57.74 years of age. The subjects' median current age was 37.12 years (mean=37.1 years; SD=11.6 years). For the sample, the ages varied from 20.86 to 75.98 years (Table 2).

Table 2

Mean, Median, and Standard Deviations of Years since Injury, Age at Injury, Age, and Income Reported by 40 Women with Long-Term SCI.

Variable	Mean	Median	SD
Years Since Injury	11.3	8.8	7.73
Age at Injury	25.8	21.98	12.47
Age	37.1	34.15	11.6
Income	\$16,598.00	\$9,200.00	\$18,319.00

Marital status included 17 women who were (42.5%) never married; 12 married (30%); and 11 (27.5%) separated, divorced, or widowed. Two subjects (5%) reported being veterans of military service, but neither person was injured during active duty. Twenty-three of the women (57.5) depended on public or others for transportation, 17 (42.5%) drove their own cars. The subjects reported that 29 (72.5%) were actively employed or involved in volunteer activities, a student, or full-time homemaker. Eleven

(27.5%) subjects reported a status of not employed, or not involved in an activity outside of the home, or homemaking. For 8 (20%) of the women, the highest level of education completed was the ninth grade. Nineteen subjects (47.5%) completed high school, and 10 subjects (25%) reported 1-3 years of college. A baccalaureate was reported by 2 subjects (5%) with only one subject obtaining a master's degree as the highest level of achievement in education (Table 1). The median income split of the women was \$9200.00 annually. The annual income varied from \$1000.00 to \$80,000.00 (Table 2).

At the home interview, a gynecologic, pregnancy, and breast history was obtained to facilitate the gynecologic portion of the physical exam by the OB/GYN Nurse Practitioner which included a gynecologic examination and pap smear. The results of the interview were summarized to include a breakdown of the sample and subcategories of the sample as appropriate (Tables 3,4,5). The sample included 19 of 40 women (47.5%) who used indwelling catheters for urinary management. Seven women (17.5%) had passed into menopause and 6 of the 7 were taking replacement hormones. One woman was taking hormones to cease her menses and was included in the hormone group due to her borderline age for menopause. The menses was evaluated for regularity, flow characteristics, interference with bowel regimen, potential to cause urinary tract infections or skin breakdown, and vaginal infection incidence. Results were summarized in Table 3 for all 40 women. The ability to detect PreMenstrual Syndrome (PMS) was important to understand due to the level and completeness of injury usurping sensation or perception of the symptoms. For 7 of 9 categories, 12 (30%) to 29 (72.5%) women reported having one or more of the symptoms of PMS irrespective of level or completeness of injury. Roughly 50 % of the women changed their own tampons or pads and 77.5% reported douching at least once a month. Gynecologic surgeries were reported and were

characterized largely by sterilization procedures. Birth control methods and sexual activity were of interest. Twenty-seven of the 40 (67.5%) women were sexually active and of these 13 (48%) were paraplegics and 14 (52%) were quadriplegics. However, the preferred method of birth control for 45% of both groups was nothing. Sterilization followed close behind with 25% of the sample. Only one person was taking birth control pills which are contraindicated in SCI due to embolic potentiation. Only 12.5% of the sample reported that their partner used condoms.

Table 3

Frequencies, Percentages, Means and Standard Deviations for Gynecologic History Parameters of 40 Women with Long-term SCI

Parameter	n	%
<u>Present Urinary Management</u>		
Indwelling catheter	15	37.5
Reflex stimulation or pressure	4	10.0
Normal Urination	5	12.5
Intermittent Cath no collector	8	20.0
Intermittent Cath with collector	1	2.5
Suprapubic Catheter	3	7.5
Diapers	4	10.0
Total	40	100.0
<u>Menopause</u>		
Yes	7	17.5
No	32	80.0
Unknown	1	2.5
Total	40	100.0
<u>If yes, history of hormone replacement</u>		
No	8	20.0
Yes	7	17.5
Not applicable	25	62.5
Total	40	100.0

Table 3 (Continued)

Parameter	n	%
<u>Currently, taking hormones</u>		
No	6	15.4
Yes	7	17.9
Unknown	26	66.7
Total	40	100.0
<u>Regularity of Menses</u>		
Regular	27	67.5
Irregular	7	17.5
No period	6	15.0
Total	40	100.0
<u>Flow of menses</u>		
Light	3	7.9
Moderate	20	52.6
Heavy	9	23.7
No flow	6	15.8
Total	40	100.0
<u>Bowel disturbance with Menses</u>		
Yes	28	70.0
No	5	12.5
Not applicable	7	17.5
Total	40	100.0
<u>UTI with menses</u>		
Never	28	70.0
Occasionally	2	5.0
Frequently	4	10.0
Always	0	0.0
Not applicable	6	15.0
Total	40	100.0
<u>Bleeding between periods</u>		
No	29	72.5
Yes	8	20.0
Unknown	3	7.5
Total	40	100.0

Table 3 (Continued)

Parameter	n	%
<u>Bleeding after intercourse</u>		
No	34	85.0
Yes	5	12.5
Unknown	1	2.5
Total	40	100.0
<u>History of vaginal infection</u>		
No	11	25.0
Yes	29	72.5
Unknown	1	2.5
Total	40	100.0
<u>Vaginal Infection last year</u>		
No	14	35.9
Yes	16	41.0
Unknown	9	23.1
Total	40	100.0
<u>Skin breakdown with vaginal infection</u>		
No	28	70.0
Yes	3	7.5
Unknown	9	22.5
Total	40	100.0
<u>Skin breakdown with vaginal infection last year</u>		
No	4	10.3
Yes	1	2.6
Unknown	34	87.2
Total	40	100.0
<u>Skin breakdown with UTI</u>		
No	32	82.0
Yes	4	10.3
Unknown	8	7.7
Total	40	100.0

Table 3 (Continued)

Parameter	n	%
<u>Skin breakdown with UTI</u>		
<u>last year</u>		
No	4	10.5
Yes	2	5.3
Unknown	32	84.2
Total	40	100.0
<u>Hot flashes or mood changes with menses</u>		
No	18	46.2
Yes	19	49.7
Unknown	2	5.1
Total	40	100.0
<u>Douche</u>		
No	9	22.5
Yes	31	77.5
Total	40	100.0
<u>Symptoms of PMS</u>		
<u>Irritability</u>		
No	12	30.0
Yes	25	62.5
Unknown	3	7.5
Total	40	100.0
<u>Nervousness</u>		
No	18	45.0
Yes	19	47.5
Unknown	3	7.5
Total	40	100.0
<u>Abdominal bloating</u>		
No	8	20.0
Yes	29	72.5
Unknown	3	7.5
Total	40	100.0
<u>Headaches</u>		
No	22	55.0
Yes	15	37.5
Unknown	3	7.5
Total	40	100.0

Table 3 (Continued)

Parameter	n	%
<u>Breast tenderness</u>		
No	28	70.0
Yes	9	22.5
Unknown	3	7.5
Total	40	100.0
<u>Food cravings</u>		
No	25	62.5
Yes	12	30.0
Unknown	3	7.5
Total	40	100.0
<u>Diarrhea</u>		
No	31	77.5
Yes	6	15.0
Unknown	3	7.5
Total	40	100.0
<u>Weight gain</u>		
No	21	52.5
Yes	16	40.0
Unknown	3	7.5
Total	40	100.0
<u>Swelling extremities</u>		
No	23	57.5
Yes	14	35.0
Unknown	3	7.5
Total	40	100.0
<u>Change your own pads or tampons</u>		
No	11	28.2
Yes	28	51.3
Not applicable	8	20.5
Total	40	100.0
<u>Gynecologic surgeries</u>		
<u>D & C</u>		
No	25	61.5
Yes	15	38.5
Total	40	100.0
<u>Conization</u>		
No	36	89.5
Yes	4	10.5
Total	40	100.0

Table 3 (Continued)

Parameter	n	%
<u>Ovaries removed</u>		
No	32	79.5
Yes	8	20.5
Total	40	100.0
<u>Vaginal hysterectomy</u>		
No	38	95.0
Yes	1	2.5
Unknown	1	2.5
Total	40	100.0
<u>Abdominal hysterectomy</u>		
No	31	77.5
Yes	18	20.0
Unknown	1	2.5
Total	40	100.0
<u>Tubal ligation</u>		
No	27	71.9
Yes	11	28.1
Total	40	100.0
<u>Method of birth control</u>		
Injection - Depo-Provera	2	5.0
BC pills	1	2.5
Diaphragm	1	2.5
I.U.D.	1	2.5
Foam, gel, sponge	1	2.5
None, sterile	10	25.0
None	18	45.0
Rhythm or abstain	6	15.0
Total	40	100.0
<u>Sexual activity</u>		
No or abstain	13	32.5
Yes	27	67.5
Total	40	100.0
<u>Partner Condom use</u>		
No	22	55.0
Yes	5	12.5
Not applicable	13	32.5
Total	40	100.0

Table 3 (Continued)

Parameter	n	%
<u>Partner sterile</u>		
No	21	52.5
Yes	5	12.5
Not applicable	14	35.0
Total	40	100.0

Parameter	Mean	SD
Age of menarche (years)	12.9	1.5
Length of menses (days)	5.7	3.1
Menses cessation after injury (months)	3.5	6.6
Tampons used each menses	9.6	8.4
Pads used each menses	9.2	10.6

The mean age for menarche was 12.9 years (SD=1.5 years). The menses may be interrupted during the acute recovery from SCI, the average length of disruption reported was 3.5 months (SD=6.6 months). The length of cessation varied from no interference to 36 months.

Pregnancy was evaluated in relation to one's difficulty becoming pregnant or with delivery. Few women, less than 20%, reported problems in becoming pregnant, while thirty-two (80%) of the women reported successful pregnancy before or after injury. Eighteen women (56.3%) reported having children prior to injury, and 14 (43.7%) reported having children after injury. Of this group there were 9 (64.3%) first time

mothers, 5 (35.7%) mothers with babies under 18 months of age at the time of this study. All 14 women (100%) reported having had a urinary tract infection during their pregnancy. Forty percent of the women reported, however, that they had problems with miscarriage, stillbirth, or spontaneous abortion, and nine (22.5%) of the sample had had elective abortions irrespective of injury or not. Urinary tract infections occurred in 19 of the 32 pregnant women (59.4%). Complications with their pregnancies are summarized in Table 6. Nausea plagued 81.3% of the sample and vomiting, 71.9%, respectively. The women reported a mean of 2.6 children before their injuries ($SD=2.9$) and 2.1 ($SD=3.1$) after injury.

Table 4

Frequencies, Percentages, Means and Standard Deviations for Pregnancy History
Parameters of 40 Women with Long-term SCI

Parameter	n	%
<u>Problems becoming pregnant</u>		
No	31	77.5
Yes	8	20.0
Unknown	1	2.5
Total	40	100.0
<u>A problem before injury</u>		
No	15	37.5
Yes	4	10.0
Unknown	21	52.5
Total	40	100.0
<u>A problem since injury</u>		
No	16	47.5
Yes	2	5.0
Unknown	16	47.5
Total	40	100.0

Table 4 (Continued)

Parameter	n	%
<u>Try to become pregnant now</u>		
No	38	95.0
Yes	2	5.0
Unknown		
Total	40	100.0
<u>Successful pregnancy</u>		
No	7	17.5
Yes	32	80.0
Unknown	1	2.5
Total	40	100.0
<u>History of</u>		
Miscarriage	5	12.5
Spontaneous abortion	1	2.5
Elective abortion	9	22.5
Ectopic pregnancy	0	0.0
Stillbirth	1	2.5
Total	16	40.0
<u>Number of children</u>		
By adoption	1	2.5
Given up for adoption	2	5.0
Total	3	7.5
<u>Experienced during pregnancy</u>		
<u>UTI</u>		
No	19	59.4
Yes	11	34.4
Unknown	2	6.3
Total	32	100.0
<u>Bowel irregularity</u>		
No	20	62.5
Yes	10	31.3
Unknown	2	6.2
Total	32	100.0
<u>Skin breakdown</u>		
No	29	90.6
Yes	2	6.3
Unknown	1	3.1
Total	32	100.0

Table 4 (Continued)

Parameter	n	%
<u>Nausea</u>		
No	4	12.5
Yes	26	81.3
Unknown	2	6.2
Total	32	100.0
<u>Vomiting</u>		
No	7	21.9
Yes	23	71.9
Unknown	2	6.2
Total	32	100.0
<u>Blood pressure problems</u>		
No	27	84.4
Yes	3	7.5
Unknown	2	6.2
Total	32	100.0
<u>Blood sugar problems</u>		
No	29	90.6
Yes	1	3.1
Unknown	2	6.3
Total	32	100.0
<u>False labor</u>		
No	21	65.6
Yes	8	25.0
Unknown	3	9.4
Total	32	100.0
<u>Bleeding</u>		
No	24	75.0
Yes	6	18.8
Unknown	2	6.2
Total	32	100.0
<u>Frequent position change</u>		
No	15	46.9
Yes	13	40.6
Unknown	4	12.6
Total	32	100.0

Table 4 (Continued)

Parameter	Mean	SD
Number of children before injury	2.6	2.9
Number of children after injury	2.1	3.1
Number of children delivered vaginally	3.0	2.8
Number of children delivered cesarean	1.8	3.2

A history of breast problems was collected to better understand the etiology of breast problems in the sample. Of the 40 women, 15 (37.5%) routinely performed breast self-examination (BSE). A history of pain (37.5%), discharge (15.6%), fibrocystic disease or noncancerous lump (12.5%) was reported for the sample. No one (100%) had had a cancerous lesion diagnosed. Ten women (25%) had had mammograms and all were over the age of 35 years. Only six women (15%), injured or not at the time of delivery, had breast fed their children (Table 5).

The subjects were further characterized by physical examination parameters, a physician index derived from a composite score of all physical exam data points, and personal rating of their own (subjective) well-being (Table 6). The median weight was found to be 130.5 pounds (mean=138.5 pounds; SD=37.9 pounds). The weights for the subjects varied from 78 to 222 pounds. The mean height of the women was 5 feet 5 and 1/3 inches (med=5 feet and 7 1/2 inches; SD=3.15 inches). The subjects varied from 5 feet to 5 feet and 11 inches. The mean blood pressure was 107.5 systolic and 65.1 diastolic (med=109/70 points; SD 18.34 points). The subjects varied from 68 to 160 points of systolic blood pressure and from 38 to 88 points of diastolic blood pressure.

Table 5

Frequencies, Percentages, Means, and Standard Deviations for Breast History Parameters
for 40 Women with Long-term SCI

Parameter	n	%
<u>Wears a bra</u>		
No	9	22.5
Yes	31	77.5
Total	40	100.0
<u>Perform BSE</u>		
No	25	62.5
Yes	15	37.5
Total	40	100.0
<u>Pain or Discomfort</u>		
No	27	67.5
Yes	13	37.5
Total	40	100.0
<u>History of:</u>		
<u>Discharge</u>		
No	34	85.0
Yes	6	15.6
Total	40	100.0
<u>Color</u>		
Bloody	3	50.0
Clear	3	50.0
Milky	0	00.0
Total	6	100.0
<u>Amount</u>		
Light	4	60.0
Moderate	1	20.0
Heavy	1	20.0
Total	6	100.0
<u>Fibrocystic</u>		
No	37	92.5
Yes	3	7.5
Total	40	100.0

Table 5 (Continued)

Parameter	n	%	X	SD
<u>Noncancerous lump</u>				
No	36	92.0		
Yes	2	5.0		
Unknown	2	5.0		
Total	40	100.0		
<u>Cancerous lump</u>				
No	38	95.0		
Unknown	2	5.0		
Total	40	100.0		
<u>Breast biopsy</u>				
No	39	98.5		
Unknown	1	2.5		
Total	40	100.0		
<u>Mastectomy</u>				
No	40	100.0		
Total	40	100.0		
<u>Lumpectomy</u>				
No	40	100.0		
Total	40	100.0		
<u>Mammogram</u>				
No	30	75.0		
Yes	10	25.0		
Total	40	100.0		
<u>Other breast surgery</u>				
No	38	95.0		
Yes	2	5.0		
Total	40	100.0		
<u>Breast fed children</u>				
No	26	65.0		
Yes	6	15.0		
Not Applicable	8	20.0		
Total	40	100.0		

The mean pulse for the women was 74.7 beats per minute (med=78 bpm; SD=11.6 bpm). The pulse varied from 50 to 90 beats per minute.

Table 6
Mean, Median, and Standard Deviation of Physical Exam Parameters Reported by 40 Women with Long-Term SCI.

Parameter	Mean	Median	SD
Weight (pounds)	138.51	130.5	37.94
Height (feet)	5.53	5.75	3.15
Blood Pressure (BP)	107.45/65.1	109.0/70	18.34
Pulse	74.65	78	11.6
Physician Index	3.48	3.0	0.96
Personal Rating of Subjective Well-Being	2.08	2.0	0.66
Breast Exam Score	0.2	0.0	0.72
Gyn Exam Score	1.1	1.0	1.32

The physician index resulted in a mean index of physical well-being based on objective physiological measures for the subjects of 3.5 (med=3; SD=0.96). The subjects were indexed on a scale from 1 to 5 with 1 being the most serious of findings requiring immediate attention or hospitalization and 5 indicating a healthy state requiring no follow-up (Table 4). The subjects gave a personal (subjective) rating of their own health status. This rating was a composite of physical and psychological well-being. The mean score

was 2.03 (med=2; SD=0.66). The measure was rated on a scale from 1 to 4 with 1 being excellent to 4 for a poor state of well-being. A breast exam score was totalled for all of the physical exam criteria. The mean score was 0.2 (med=0, SD=0.72). The scores were calculated with 0 being normal findings and a 1 for each abnormal finding. The scores varied from 0 to 4 abnormal findings per patient. Five of the 40 women (12.5%) had a positive breast exam finding indicative of a physiologic change. One subject had a breast mass and was referred for a mammogram. A gynecological score was calculated using the same criteria and scoring system. The mean score was 1.1 (med=1; SD=1.32). The scores varied from 0 to 5 abnormal findings per patient. Pap Smear results for 39 of 40 women were obtained and demonstrated that 2 (5%) were referred for definitive further study. Eight women (20%) were found to have serious vaginal infections and or inflammations that would require treatment. The mean number of years since the last pap smear was 5.6 years (med=2 years; SD=7.9 years). The subjects varied from never having a pap smear at age 43 to 27 years ago post-hysterectomy. Hemoccult test for presence or absence of occult bleeding from the colon for the sample (100%) was negative.

The subjects were evaluated for their ability to perform breast self examination (BSE). Of the 40 women, 23 (57.5%) were clinically judged to be physically able to perform BSE. Fifteen women (37.5%) were not physically able to perform BSE and two (5%) could perform BSE with hand braces. After questioning about current practice of BSE, results showed that 15 women (37.5%) currently practiced BSE, 23 (57.5%) did not currently perform BSE, and 2 (5%) depended upon a visiting nurse to perform BSE for them (Table 7). During the telephone debriefing the researcher asked if the incidental

teaching of BSE during the physical exam had encouraged a change in BSE performance.

No one reported that the teaching of BSE had made an impact on their behavior.

Table 7

Frequencies and Percentages of Physician Index, Person Rating of Subjective Well-Being, Breast Exam Score, Gyn Exam Score.

Parameter	Rating	n	%
<u>Physician Index</u>			
Ill, Immediate Attention	1	1	2.5
Ill, Follow-up Recommend	2	4	10.0
Fair Health, Recommend	3	16	40.0
Good Health, Recommend	4	13	32.5
Excellent Health	5	6	15.0
Total		40	100.0
<u>Person Rating of Subjective Well-Being</u>			
Excellent	1	6	15.0
Good	2	26	65.0
Fair	3	7	17.5
Poor	4	1	2.5
Total		40	100.0
<u>Breast Exam Score</u>			
Normal	0	36	90.0
One Abnormal Data Point	1	2	5.0
Two Abnormal Data Points	2	1	2.5
Four Abnormal Data Points	4	1	2.5
Total		40	100.0
<u>Gyn Exam Score</u>			
Normal	0	18	45.0
One Abnormal Data Point	1	9	22.5
Two Abnormal Data Points	2	8	20.0
Three Abnormal Data Points	3	2	5.0
Four Abnormal Data Points	4	2	5.0
Five Abnormal Data Points	5	1	2.5
Total		40	100.0

Table 7 (Continued)

Parameter	Rating	n	%
<u>Pap Smear Results</u>			
Normal Findings		37/39	95.0
Positive Finding requiring referral		2/39	5.0
Acute Inflammation/Infection		8/39	20.5
<u>Ability to Perform Breast Self Examination</u>			
Yes		23	57.5
No		15	37.5
Restricted Ability		2	5.0
Total		40	100.0
<u>Currently Practice Breast Self Examination</u>			
Yes		15	37.5
No		23	57.5
Depend on Others		2	5.0
Total		40	100.0

Categorical Correlations between Demographic Variables

Inter-item pair-wise correlations between the demographic parameters for the 40 women resulted in further identification of the total sample. For this group of analyses, the demographic parameters considered were age, years since injury, marital status, race, education, income, employment status, level and completeness of injury, etiology of injury, mode of transportation, and subjective well-being. The first group of analyses pertained to significance testing of differences in frequencies of the categorical parameters. For these analyses the Chi-Square test of significance was used. Findings during the cross tabulation process that were significant at $p \leq .05$ (Table 8) were education and race ($p < .04$), education etiology of injury ($p < .02$), and education and level and completeness

Table 8

Pair-wise Categorical Comparisons between Demographic Variables using Chi-Square.

Variables	CHI SQUARE	df	p
Employment x Marital Status	2.780	2	0.25
Education x Marital Status	1.651	4	0.80
Education x Employment	3.601	2	0.17
Race x Marital Status	6.667	4	0.15
Race x Employment	0.200	2	0.91
Race x Education	9.802	4	0.04*
Level and Completeness of Injury x Marital Status	3.594	4	0.46
Level and Completeness of Injury x Employment	2.741	2	0.25
Level and Completeness of Injury x Race	2.269	4	0.69
Level and Completeness of Injury x Education	11.156	4	0.03*
Etiology of Injury x Marital Status	2.437	4	0.65
Etiology of Injury x Employment	0.695	2	0.71
Etiology of Injury x Race	10.577	4	0.03*
Etiology of Injury x Level and Completeness of Injury	14.104	8	0.08
Etiology of Injury x Education	18.27	4	0.02*
SUBWB x Marital Status	8.419	6	0.21
SUBWB x Employment	5.056	3	0.17
SUBWB x Race	13.320	6	0.04*
SUBWB x Level and Completeness of Injury	3.148	6	0.79
SUBWB x Education	11.761	6	0.07
Drive Self x Marital Status	4.388	2	0.11
Drive Self x Employment	0.708	1	0.40
Drive Self x Race	4.232	2	0.12
Drive Self x Level and Completeness of Injury	5.177	2	0.08
Drive Self x Etiology of Injury	3.576	2	0.17
Drive Self x Education	8.026	2	0.20

*p<.05

of injury ($p<.03$). Other significant findings were among race and etiology of injury ($p<.03$) and race and subjective well-being ($p<.04$).

Pearson Correlation Coefficients were performed to examine the strength and direction of association with the ratio level demographic parameters of age and years since injury. Results for the 40 women revealed little relationship between age and years since injury $r=0.211$ with a $p<.192$.

Differences between the ratio level demographic variables, age and years since injury, the physical exam parameters, by the dichotomous parameters of employment status and income were evaluated by a T-test for group mean differences (Table 9). No significance differences were found in income by levels of employment at $p<.05$. A t-test was performed among the mean differences of the ratio level demographic variables, physical exam parameters and the levels of breast and gynecologic exam score as a category of absence or presence. No significant differences were found during analysis at $p<.05$ level.

Analysis of Variance was performed on the ratio level demographic variables, age and years since injury, employing the categorical parameters with more than two levels (race, etiology of injury, education, marital status, and level and completeness of injury) as grouping factors to understand the differences between group means. Results (Table 10) were found to be significant for age by marital status ($p<.02$), and age and pulse by level and completeness of injury ($p<.006$, $p<.03$ respectively), and weight by race ($p<.03$).

Table 9

T-Test of Mean Differences of Demographic Variables and Physical Exam Parameters and Levels of Employment, Income Split, Breast and Gynecologic Exam Scores

Score and Parameter	Variable	df	t	p
Weight	Level of Employment	1,38	0.84	0.41
Pulse	Productive		0.63	0.53
Breast Score	Non-productive		1.39	0.17
Gyn Score			0.24	0.81
Years since Injury			-0.38	0.71
Age			1.38	0.18
Weight	Income Split	1,38	0.70	0.49
Pulse	< 9,200.00		0.84	0.40
Breast Score	> 9,200.00		1.87	0.39
Gyn Score			0.24	0.81
Years since Injury			-0.14	0.89
Age			0.27	0.79
Weight	Level of Breast	1,36	-1.59	0.12
Pulse	Exam Scores		-0.41	0.69
Gyn Score	Absent vs		0.62	0.54
Years since Injury	Present		1.36	0.18
Age			-0.49	0.63
Weight	Level of Gynecologic	1,36	1.05	0.30
Pulse	Exam Score		-0.24	0.82
Breast Score	Absent vs		-1.53	0.14
Years since Injury	Present		-1.55	0.13
Age			-1.00	0.33

* $p < .05$

The Newman-Keuls and Tukey post-hoc tests at the 95% confidence interval were applied to the differences among the levels of the groups that were significant with respect to age (Table 11). Results demonstrated that the significant differences occurred between

Table 10

Analysis of Variance of Physical Exam Parameters on Levels of Demographic Variables, Physician Index, and Personal Score of Subjective Well-Being.

Score and Parameter	Variable	df	f	p
Weight	Physician Index	4,35	0.58	0.68
Pulse			1.63	0.19
Breast Score			0.40	0.81
Gyn Score			1.45	0.24
Years since Injury			2.43	0.07
Age			0.43	0.78
Weight	Subjective Well-Being	3,36	0.88	0.46
Pulse			0.73	0.54
Breast Score			0.00	0.99
Gyn Score			0.35	0.79
Years since Injury			2.16	0.11
Age			0.58	0.63
Weight	Race	2,37	3.74	0.03*
Pulse			0.91	0.41
Breast Score			0.30	0.74
Gyn Score			0.36	0.70
Years since Injury			0.22	0.80
Age			0.05	0.95
Weight	Education	2,37	1.44	0.25
Pulse			1.83	0.18
Breast Score			1.20	0.31
Gyn Score			0.86	0.43
Years since Injury			0.85	0.44
Age			0.11	0.90
Weight	Marital Status	2,37	1.22	0.31
Pulse			1.20	0.31
Breast Score			0.57	0.06
Gyn Score			0.30	0.74
Years since Injury			1.00	0.38
Age			4.33	0.02*

Table 10 (Continued)

Score and Parameter	Variable	df	f	p
Weight	Level and Completeness of Injury	2,37	0.04	0.96
Pulse			3.87	0.03*
Breast Score			3.22	0.06
Gyn Score			0.26	0.78
Years since Injury			0.26	0.77
Age			5.81	0.006*
Years since Injury	Etiology of Injury	2,37	0.24	0.79
Age			0.58	0.57

* $p < .05$

the levels within the groups of never married and married for group comparisons for age by marital status. The same treatment was applied to level and completeness of injury and age. Results between groups as compared showed significance $p < .002$ for complete quadriplegics as compared to incomplete injuries and a $p < .05$ significance for complete paraplegics and incomplete injuries. Significant differences existed for age by marital status group. The never married group had a significantly lower age compared to married or divorced, separated or widowed groups. Pulse and level of completeness of injury were found to be significantly different for complete quadriplegics as compared to the complete paraplegics or incomplete injured.

Table 11

Ordered Mean Differences for Newman-Keuls Post Hoc Test for Total Scores for
Demographic Variables and Physical Exam Parameters

Weight by Race	Sample Size	Group Mean	133.31	165.0	114.00
White	27	133.31	-	-2.27	2.06
Black	9	165.0		-	3.79*
Hispanic	4	114.00			-

*p<.05

α critical value of t = 3.36

Age by Marital Status	Sample Size	Group Mean	31.35	41.04	41.70
Never Married	17	31.35	-	3.57*-	-2.59
Married	11	41.04		-	0.12
Divorced/Separated/Widow	12	41.70			-

*p<.05

α critical value of t = 3.36

Level and Completeness of Injury by Pulse	Sample Size	Group Mean	68.29	78.78	76.50
Complete Quadriplegic	14	69.97	-	-3.73*	-1.78
Complete Paraplegic	18	100.0		-	1.37
Incomplete Injury	8	76.50			-

*p<.05

α critical value of t = 3.36

Level and Completeness of Injury by Age	Sample Size	Group Mean	33.05	35.42	48.07
Complete Quadriplegic	14	33.05	-	-0.92	-4.28**
Complete Paraplegic	18	35.42		-	-3.88*
Incomplete Injury	8	48.07			-

*p<.05; **p<.01

α critical value of t = 3.36; 4.20

Reliability Measures for Self-Report Instruments

Six self-report instruments were used to identify the predictor and outcome variables. The instruments used were the Perceived Control Questionnaire (PCQ) and Health-Promoting Lifestyle Profile (HPLP) as the predictor measures and the Life Satisfaction Index-A (LSIA), Index of Psychological Well-being (IPWB), Perceived Stress Scale (PSS), and Center for Epidemiologic Studies-Depression Scale (CESD) as outcome measures (Table 12).

Perceived Control Questionnaire

The Perceived Control Questionnaire was used in this study as a self-report scale to measure a multidimensional state of perceived control of affective behaviors of the self, others, health and the environment (Nunchuck, 1988). The instrument as completed by the 40 women with long-term SCI resulted in a reliability measurement by alpha

Table 12

Mean Score, Standard Deviation, and Alpha Coefficient for Six Self-Report Measures Used as Predictor and Outcome Variables

Variable	Mean	SD	Alpha Coefficient
PCQ	139.85	19.73	0.96
HPLP	71.0	20.40	0.92
LSIA	8.1	4.68	0.82
IPWB	4.38	1.56	0.73
PSS	18.75	7.55	0.83
CESD	14.65	8.99	0.85

coefficient of .96 indicating a high internal consistency among the items for total score calculation.

The range of possible scores for the 3-point, 60-item questionnaire was 60 to 180. The individual questionnaire scores varied from 93 to 177 with a mean score for the sample of 139.9 (SD=19.7). The grand mean for the scale was 2.3 (SD=1.8) indicating slightly above moderate control of one's self, others, health, and environment for the sample. No subscale evaluation was performed as the total score on this questionnaire was being tested for this study. The results of this questionnaire as compared to previous evaluation in the pilot study of the instrument revealed a reliability measure by alpha coefficient of .96 indicating the same high degree of internal consistency among items for a sample of five disabled women. The mean score for the pilot was 136.8 (SD=23.1). The overall grand mean was 2.3 which indicated slightly above moderate control, however, due to sample size for the pilot, these results only indicated a trend for the larger study.

Health-Promoting Lifestyle Profile

The Health-Promoting Lifestyle Profile was used with the permission of the authors (Appendix K) as a self-report scale as a multidimensional measure of health-promoting behaviors in this study (Walker, Sechrist, Pender, 1987). The instrument as completed by the 40 women in the sample resulted in a reliability measurement by alpha coefficient of .92 indicating a high internal consistency among the items for total score calculation.

The range of possible scores for the 4-point, 48-item profile was 48 to 192. The individual profile scores varied from 18 to 110 with a mean score for the sample of 71

(SD=20.4). The grand mean for the scale was 1.5 indicating slightly above never that the sample would engage regularly in a way of life or personal behaviors that reflect health-promotion. No subscale evaluation was performed as the total score this questionnaire was being tested for this study.

Life Satisfaction Index-A

The Life Satisfaction Index-A was used as a self-report scale to measure a subjective satisfaction with life. The instrument as completed by the 40 women in this study resulted in a reliability measurement by alpha coefficient of .82 indicating a moderate internal consistency among the items for total score calculation.

The range of score for the index was 18 for total agreement with the items or 0 for total disagreement. The individual index scores varied from 0 to 17 with a mean score for the sample of 8.1 (SD=4.7). The results indicated an average life satisfaction for the sample's satisfaction with their lives. No subscale evaluation was performed as the total score on this index was used for this study.

Index of Psychological Well-being

The Index of Psychological Well-being was used as a self-report scale to measure mental health. The instrument as completed by the 40 women in this study resulted in a reliability measurement by alpha coefficient of .73 indicating an average internal consistency among the items for total score calculation.

The range of possible scores for the 8-item index was 0 to 9 for the positive scores or 0 to 15 for the negative items. The index was then derived on a scale from 1 to 7. A score of 1 to 3 indicated feelings as being "posit" (Berkman, 1971). A score of 4 indicated that the person was balanced. A score from 5 to 7 indicated a state of negative

mental health. The individual index scores varied from 1 to 9 with a mean score for this study of 4.4 (SD=1.6) indicating balanced individuals for the sample. No subscale evaluation was performed as the total score for this index was tested for this study.

Perceived Stress Scale

The Perceived Stress Scale was used as a self-report scale to reflect the degree to which individuals find their lives in the past 30 days as unpredictable, uncontrollable, or overloading. The instrument as completed by the 40 women in this study resulted in a reliability measurement by alpha coefficient of .83 indicating a moderate internal consistency among the items for total score calculation.

The range of possible scores was a 10 to 50 for the 5-point, 10-item scale. The individual scale score varied from 6 to 48 with a mean score for the sample of 18.8 (SD=7.6). The grand mean for the scale was 1.9 indicating slightly above almost never that the sample perceived events for the past 30 days as being unpredictable, uncontrollable, or overloading. No subscale evaluation was performed as the total score on this scale was tested in this study.

Center for Epidemiologic Studies-Depression Scale

The Center for Epidemiologic Studies-Depression Scale was used as a self-report scale to measure depressive symptoms in the general population. The instrument as completed by the 40 women in this study resulted in a reliability measurement by alpha coefficient of .85 indicating a high internal consistency among the items for total score calculation.

The range of possible scores was a 0 to 60 for the 4-point, 20-item scale. A total score of 16 or above indicated possible clinical depression. The individual scale scores

varied from 0 to 34 with a mean score for the sample of 14.7 (SD=9.0). The grand mean for the scale was 0.7 indicating an absence of clinical depression in this sample. No subscale evaluation was performed as the total score on this scale was tested in this study.

Validity Measures for Self-Report Instruments

Six self-report instruments were subjected to multivariate factor analysis to establish construct validity for the predictor and outcome variables. The instruments used were the Perceived Control Questionnaire and Health-Promoting Lifestyle Profile as the predictor measures and the Life Satisfaction Index-A, Index of Psychological Well-being, Perceived Stress Scale, and Center for Epidemiologic Studies-Depression Scale as outcome measures. The exploratory data analyses were performed to 1) correlate the multiple scale items within each instrument by clustering the question themes into highly correlated factors, 2) interpret each factor according to the questions belonging to the cluster, and 3) summarize the factor clusters labeling for convenience the relationships of the instrument questions by proportion of variance explained by factor score (Table 13). Hair, Anderson & Tatham (1989) stated that factor analysis techniques enable the ability to observe patterns of relationships to reduce the data to smaller sets of components or factors to use the data as source variables to account for the observed intercorrelations in the data. In this study, principle component extraction with varimax orthogonal rotation was used for data reduction to obtain the factor scores on each instrument.

Perceived Control Questionnaire

The 60-item questionnaire was subjected to factor analysis. Although guided by the pilot study of this instrument which yielded 10 factors as present, the analysis could not be confirmed due to the low number of subjects to questionnaire items. The factor

Table 13
Factor Analysis for Six Self-Report Questionnaires Used as Predictor and Outcome Variables

	Principle Factor	Variance Explained	Carmine Theta	Proportion of Variance in Factor Score
PCQ	1	19.95	0.97	65.0%
HPLP	1	11.9	0.94	29.0%
LSIA	1	4.7	0.83	34.0%
IPWB	1	2.54	0.69	43.0%
PSS	1	4.14	0.84	62.2%
CESD	1	5.67	0.87	43.0%

analysis proceeded for this study using the sample of 40 women with long-term SCI with continued recognition of a low ratio of number of subjects to instrument items. Data reduction resulted in 4 factors. Factor 1 accounted for 65% of the proportion of the factor score variance. The Carmine Theta was 0.966. Questions related to Factor 1 were to feeling control over peer pressure, completion, positive mental attitudes, values, success, and ability to deal with problems from inner strength. The underlying conceptualization of this factor was self-confidence to deal with problems based on life values.

Health-Promoting Lifestyle Profile

For this study, a 48-item profile was subjected to factor analysis using the sample of 40 women with long-term SCI with continued recognition of an askew ratio of number

of subjects to instrument items. Data reduction resulted in 10 factors. Factor 1 accounted for 29% of the proportion of the factor score variance. The Carmine Theta was 0.940. Factor 1 loadings related questions regarding feelings of growing in positive directions and purpose, awareness of stress and happiness, personal strengths and weaknesses, working toward long-term goals, and finding their environment pleasing and satisfying. The underlying conceptualization of this factor was the ability of the subjects to self-determine their future by goal directed behaviors, or in other words, self-actualization.

Life Satisfaction Index-A

Factor analysis of the 18 item profile proceeded for this study using the sample of 40 women with long-term SCI with continued recognition of a low ratio of number of subjects to instrument items. Data reduction resulted in 4 factors. Factor 1 accounted for 34% of the proportion of the factor score variance. The Carmine Theta was 0.83. Questions loading on Factor 1 included not feeling tired or old, happiness with life, and general happiness irrespective of age. The underlying conceptualization of this factor was that for the most part, regardless of the injury, the life satisfaction of the sample as compared to others was the same.

Index of Psychological Well-being

For the 8-item profile, the factor analysis proceeded using the sample of 40 women with long-term SCI with continued recognition of a low ratio of number of subjects to instrument items. Data reduction resulted in 4 factors. Factor 1 accounted for 43% of the proportion of the factor score variance. The Carmine Theta was 0.69. Factor 1 loadings related questions regarding feeling on top of the world, generally interested in life, not being bored, and feelings of accomplishment. The underlying conceptualization

of this factor was that the mental health of the sample showed a balanced, if not upbeat attitude, and a feeling of accomplishment in life.

Perceived Stress Scale

For this study, a 10-item profile using the sample of 40 women with long-term SCI with continued recognition of a low ratio of number of subjects to instrument items. Data reduction resulted in 2 factors. Factor 1 accounted for 80% of the proportion of the factor score variance. The Carmine Theta was 0.89. Questions related to feeling control in life, not stressed and confident, things going their way and were able to cope loaded on Factor 1. The underlying conceptualization of this factor was the ability to handle problems without anger or stress.

Center for Epidemiologic Studies-Depression Scale

The factor analysis proceeded for this study using the sample of 40 women with long-term SCI with continued recognition of a low ratio of number of subjects to instrument items. Data reduction resulted in 6 factors. Factor 1 accounted for 43% of the proportion of the factor score variance. The Carmine Theta was 0.87. Factor 1 included related questions that reflected depression occasionally, that life in general was a success, and that life was being enjoyed. The underlying conceptualization of this factor was the feeling that the sample expressed feeling of being as good as compared with other people and was hopeful about the future.

Inferential Analyses of Demographic Variables, Physical Examination Parameters and Total Scores on the Self-Report Questionnaires

Inferential statistics were used to test whether the differences observed between the levels of demographic variables, physical examination parameters, and total scores of the

self-report questionnaires were statistically significant for the hypothesis testing (Figure 5). Inferential analyses were undertaken using the following variables:

<u>Demographic Variables</u>	<u>Physical Examination Parameters and Self-Report Questionnaires</u>
Age	Height
Marital Status	Weight
Employment Status	Blood Pressure
Education	Pulse
Income	Breast Exam Score
Race	Gynecologic Exam Score
Years since Injury	Personal rating of
Level and Completeness of Injury	Subjective Well-being
	Physician's Index Score
	Perceived Control Score
	Health-Promoting
	Lifestyle Profile Score
	Life Satisfaction Score
	Index of Psychological
	Well-being Score
	Perceived Stress Score
	CES-Depression Score

Figure 5. Variables for Inferential Analyses

A t-test was performed to determine if there were significant differences ($p < .05$) in the total mean scores on the self-report questionnaires according to the demographic variables that were dichotomous (Table 14). No significant differences between the means were found. A t-test was performed between mean score differences among the six self-report questionnaires and the levels of breast and gynecologic exam scores with absence or presence as a grouping factor. A significant mean difference was found for the health promoting lifestyle profile by breast exam score at $p < .05$. The finding indicated that the lower the mean score on the HPLP, the higher the incidence of a positive finding on the breast exam score.

Table 14

T-Test of Mean Differences of Questionnaire Scores and Levels of Demographic Variables and Physical Exam Parameters

Score and Parameter	Variable	df	t	p
PCQ	Level of Employment	1,38	-0.70	0.49
LSIA	Productive		-0.38	0.70
IPWB	Non-productive		0.65	0.52
CESD			0.31	0.76
HPLP			0.10	0.92
PSS			-0.66	0.51
PCQ	Income Split	1,38	1.26	0.21
LSIA	< 9,200.00		-1.09	0.28
IPWB	> 9,200.00		0.30	0.77
CESD			-0.45	0.65
HPLP			-1.56	0.13
PSS			0.79	0.43
PCQ	Level of Breast	1,36	-0.80	0.43
LSIA	Exam Score		-0.99	0.33
IPWB	Absent vs Present		1.28	0.21
CESD			1.28	0.21
HPLP			-2.17	0.04*
PSS			1.25	0.22
PCQ	Level of Gynecologic	1,36	1.46	0.16
LSIA	Exam Score		1.24	0.22
IPWB	Absent vs Present		-0.50	0.62
CESD			-1.37	0.18
HPLP			-0.83	0.42
PSS			-1.55	0.13

* p<.05

Pearson Correlations were performed to describe the strength and direction of the relationship between the demographic variables, physical examination parameters, and total mean scores on the self-report questionnaires. A correlation coefficient was used to examine the pair-wise correlations (p<.05). Significant correlations were found between

all total mean scores on the self-report questionnaires (Table 15). Significant positive correlations were discovered between perceived control, health-promoting behaviors, psychological well-being and life satisfaction. Significant negative correlations indicated that those subjects who had high perceived control scores perceived themselves less stressed and with fewer symptoms of depression. The strength of the correlations were moderate although significant at $p < .01$. The inferential observation of the self-report questionnaire's strength and direction of correlations was important in the determination that multicollinearity among the questionnaire items and factors did not exist allowing each instrument to stand independently in its position in the hypothesis for each set of analyses.

Demographic variables and physical examination parameters that were significant positive correlations with the total mean self-report scores were race, income, personal, subjective well-being, gynecologic exam score, and physician index score. Significant negative correlations were found between perceived control and age, and health-promoting behaviors and Index of Psychologic Well-Being with the gynecologic index score. Again, the strength of the correlations was moderate compared to the level of significance $p < .01$.

Additional correlations were performed between the demographic variables and the physical examination parameters. Significant positive correlations were discovered for income, age, level and completeness of injury, and education with blood pressure, breast exam score, and pulse range. Significant negative correlations indicated that the longer the time since injury the lower the physician index score and the higher the pulse. Significant positive correlations were found for the demographic variables of income, marital status, and age with education, and level and completeness of injury. Significant negative correlations were found for income, race, and education. Only moderate strength of correlation existed for the significant findings ($p < .01$).

Table 15

Pearson Correlation of Relationship of Mean Scores of Questionnaires with Physical Exam Parameters and Demographic Variables

Score and Parameter	Variable	r	p
LSIA	PCQ	0.486	0.001*
IPWB		-0.523	0.000*
CESD		-0.552	0.000*
HPLP		0.426	0.006*
PSS		-0.501	0.000*
Physician Index		0.067	0.679
Weight		0.090	0.581
Height		0.030	0.854
BP		-0.108	0.508
Pulse		-0.007	0.966
Breast Score		-0.301	0.059
Gyn Score		-0.403	0.010
Years Since Injury		-0.100	0.539
Age		-0.342	0.031*
IPWB	LSIA	0.543	0.000*
CESD		-0.569	0.000*
HPLP		0.551	0.000*
PSS		-0.361	0.047*
Physician Index		0.132	0.416
Weight		0.068	0.678
Height		0.041	0.803
BP		-0.070	0.668
Pulse		-0.018	0.910
Breast Score		-0.097	0.551
Gyn Score		-0.242	0.133
Years Since Injury		-0.123	0.450
Age		-0.182	0.262
CESD	IPWB	0.672	0.000*
HPLP		-0.571	0.000*
PSS		0.464	0.003*
Physician Index		-0.156	0.337
Weight		0.002	0.990
Height		-0.047	0.771
BP		0.161	0.320
Pulse		-0.048	0.769

Table 15 (Continued)

Score and Parameter	Variable	r	p
Breast Score	IPWB	0.023	0.890
Gyn Score		0.355	0.025*
Years Since Injury		0.066	0.687
Age		0.161	0.322
HPLP	CESD	-0.471	0.002*
PSS		0.487	0.001*
Physician Index		-0.087	0.593
Weight		-0.043	0.793
Height		0.151	0.354
BP		0.132	0.416
Pulse		0.108	0.506
Breast Score		0.173	0.287
Gyn Score		0.215	0.182
Years Since Injury		0.038	0.817
Age		0.147	0.366
PSS	HPLP	-0.351	0.027*
Physician Index		0.371	0.019
Weight		0.146	0.370
Height		0.008	0.959
BP		0.076	0.641
Pulse		0.009	0.956
Breast Score		-0.078	0.631
Gyn Score		-0.426	0.006*
Years Since Injury		-0.178	0.272
Age		0.026	0.875
Physician Index	PSS	-0.114	0.484
Weight		-0.193	0.232
Height		0.011	0.946
BP		0.018	0.911
Pulse		0.018	0.910
Breast Score		0.085	0.604
Gyn Score		0.377	0.017
Years Since Injury		-0.100	0.539
Age		-0.060	0.713

*p<.05

Table 16

Pearson Correlation of Relationship of Physical Exam Parameters with Other Exam Parameters, Physician Index and Demographic Variables

Score and Parameter	Variable	r	p
Weight	Physician Index	-0.067	0.683
Height		0.066	0.686
BP		-0.122	0.455
Pulse		-0.084	0.607
Breast Score		-0.030	0.856
Gyn Score		-0.180	0.256
Years since Injury		0.288	0.072
Age		-0.185	0.254
Height	Weight	0.030	0.852
BP		0.181	0.263
Pulse		-0.066	0.683
Breast Score		0.258	0.108
Gyn Score		0.012	0.940
Years since Injury		-0.164	0.313
Age		0.075	0.645
BP	Height	0.029	0.858
Pulse		0.173	0.287
Breast Score		0.189	0.243
Gyn Score		-0.116	0.474
Years since Injury		-0.066	0.684
Age		0.151	0.351
Pulse	BP	0.297	0.062
Breast Score		-0.003	0.985
Gyn Score		0.121	0.456
Years since Injury		-0.171	0.919
Age		0.477	0.002*
Breast Score	Pulse	0.045	0.781
Gyn Score		-0.105	0.517
Years since Injury		-0.436	0.005*
Age		0.074	0.652

Table 16 (Continued)

Score and Parameter	Variable	r	p
Gyn Score	Breast Score	0.059	0.717
Years since Injury		-0.281	0.0079
Age		0.444	0.004*
Years since Injury	Gyn Score	0.152	0.348
Age		0.023	0.888
Age	Years since Injury	0.211	0.192

*p<.05

Analysis of Variance testing was undertaken to examine differences ($p<.05$) between groups on the levels of the demographic variables, physical examination parameters, and total mean scores on the self-report questionnaires. The findings indicated a significant differences between the group means on the self-report questionnaires by race. A significant difference was found in the mean score on the Perceived Control Questionnaires by race (Table 17).

Table 17

Analysis of Variance of Mean Questionnaire Scores on Physical Exam Parameters and Levels of Demographic Variables, Physician Index, and Personal Score of Subjective Well-Being.

Score and Parameter	Variable	df	f	p
PCQ	Physician Index	4,35	0.48	0.75
LSIA			0.82	0.52
IPWB			1.06	0.39
CESD			0.49	0.74
HPLP			2.03	0.11
PSS			0.38	0.82
PCQ	Subjective Well-Being	3,36	1.26	0.30
LSIA			2.58	0.07
IPWB			0.51	0.68
CESD			1.68	0.19
HPLP			1.67	0.19
PSS			1.04	0.39
PCQ	Race	2,37	5.16	0.01*
LSIA			1.80	0.18
IPWB			0.55	0.58
CESD			0.16	0.85
HPLP			0.21	0.81
PSS			0.17	0.85
PCQ	Education	2,37	0.42	0.66
LSIA			1.96	0.16
IPWB			0.63	0.54
CESD			1.62	0.21
HPLP			2.92	0.07
PSS			0.34	0.71
PCQ	Marital Status	2,37	2.16	0.13
LSIA			0.96	0.39
IPWB			0.17	0.85
CESD			0.91	0.41
HPLP			0.41	0.67
PSS			0.31	0.74

Table 17 (Continued)

Score and Parameter	Variable	df	f	p
PCQ	Level and Completeness of Injury	2,37	1.44	0.25
LSIA			0.50	0.61
IPWB			0.46	0.64
CESD			1.00	0.38
HPLP			0.74	0.49
PSS			0.44	0.65

* $p < .05$

A Tukey-Kramer Unequal Groups Post Hoc Test was performed to identify which groups were significantly different. Hispanics scored significantly higher on the Perceived Control Questionnaire than Whites or Blacks (Table 18). From the analysis of variance results, multivariate techniques were indicated to confirm the study hypothesis.

Table 18

Ordered Mean Differences for Tukey-Kramer Post Hoc Test for Total Scores on Perceived Control Questionnaire by Race and Life Satisfaction by Breast Exam Score

PCQ by Race	Sample Size	Group Mean	133.78	149.56	159.00
White	27	133.78	-	-2.61	-.537*
Black	9	149.56	-	-	-1.74
Hispanic	4	159.00	-	-	-

* $p < .05$

α critical value of $t = 3.36$

Multivariate Data Analyses for Hypothesis Confirmation Using Life Satisfaction and Well-being as Outcomes Predicted by Perceived Control and Health-Promoting Behaviors

Multivariate Data Analyses for Hypothesis Confirmation Using Life Satisfaction and Well-being as Outcomes Predicted by Perceived Control and Health-Promoting Behaviors

A statistical model approach developed by Tabachnick and Fidell (1989) was used as the strategy to approach the multiple constraints of varied demographic variables, physical exam parameters, and predictors and outcome variables. Selected statistical modeling techniques were used to adequately study these multiple relationships and to obtain a more complete, realistic understanding of the variables in their positions in the central hypothesis. The approach selected observed the theoretical constructs of the effects of perceived control and health-promoting behaviors as natural parametric variations manifold in singular and combined influence on life satisfaction and well-being outcomes (Figure 4).

The multivariate theoretical model used in the analyses was as follows:

1. To evaluate all variables with respect to a univariate dependent measure (Life Satisfaction) using Multivariate Multiple Regression to explain the degree of relationship among the variates as their different effects were interrelated and could not be separately interpreted.
2. To perform a Canonical Correlation to predict the degree and strength of relationship of the multiple variates of the psychological well-being variables on the demographic and physical exam parameters as independent variables which were significant in the regression model using perceived control and health-promoting behaviors as moderating variables.
3. To examine by Canonical Correlation the relationship of life satisfaction on the psychological well-being variables.
4. Perform Multiple Analysis of Covariance (MANCOVA) of significant mean differences of demographic variables and/or physical exam parameters holding

perceived control and health-promoting behaviors constant to establish the effects of such differences on the outcome variables.

According to Tabachnick and Fidell, (1989) the technique to build a regression model requires the outcome of the regression to be capable of being measured by a single dependent variable or in the case of this study, an outcome. Since the Life Satisfaction variable was measured by a single total score, this variable was selected as the variable on which to build the regression model (Table 19). Multivariate multiple regression analysis was performed, as recommended by Tabachnick and Fidell (1989), to determine if demographic variables such as age, race, income, level and completeness of injury, physical exam scores such as breast score, gynecological score, weight, height, pulse, blood pressure, physician index score, subjective well-being, total score of Perceived Control, Health-Promoting Lifestyle Profile, and Psychological Well-being outcomes were predictive of Life Satisfaction.

The regression analysis indicated that age, race, income, Center for Epidemiologic Studies-Depression Scale, Perceived Control Score, and Health-Promoting Lifestyle Score contributed significantly to Life Satisfaction. In the analysis of the contribution of the variables as entered into the multiple regression analysis in forward fashion, the physical exam scores contributed 13% to life satisfaction. The addition of the demographic variables increased 33% the contribution of the independent variables to the analysis of life satisfaction. The addition of the psychological well-being scores increased marginally (37%) the contribution of the variables to life satisfaction. However, the contribution of PCQ and HPLP increased the contribution of the independent variables (63%), indicating significant activity of the regressed variables, perceived control and health-promoting behaviors on life satisfaction. The regression analysis was indicated to

Table 19

Multiple Regression Analysis of Life Satisfaction Score on Demographic Variables, Physical Exam Parameters, Perceived Control, Health-Promoting Lifestyle Profile Score, and Psychological Well-being Scores for 40 women with long-term SCI.

Variable	f	r ²	Coefficient	Standard error	t	p
Physical Exam Measures						
MD Score	0.69	0.13	0.37	0.82	0.443	0.661
Breast Score (df=7,32)			-1.39	1.12	-1.223	0.228
GYN Score			-0.83	0.61	-1.360	0.183
Weight			-0.001	0.23	-0.060	0.953
Height			-0.02	0.25	-0.081	0.936
Pulse			-0.42	0.73	-0.580	0.566
BP			-0.002	0.05	0.005	0.996
Demographic Variables						
Age	2.25	0.33	-0.12	0.06	-2.207	0.034*
Race (df=7,32)						
White			-4.63	2.53	-1.829	0.077
Black			-5.53	2.58	-2.145	0.040*
Hispanic (dropped)						
Income			0.001	0.004	2.842	0.008*
Level and Completeness of Injury						
Quad Complete			-0.212	2.23	-0.095	0.925
Para Complete			-0.63	2.13	-0.297	0.768
Incomplete (dropped)						
Subjective Well-Being			-1.88	0.99	-1.903	0.066
Questionnaire Total Scores						
IPWB	7.08	0.37	-0.87	0.54	-1.604	0.118
CESD (df=3,36)			-0.19	0.10	-2.016	0.051*
PSS			0.01	0.10	0.008	0.993
PCQ	9.18	0.63	0.10	0.037	2.687	0.011*
HPLP (df=5,34)			0.07	0.030	2.349	0.025*

*p<.05

determine fully the significance of age, income, and race. The variables PCQ and HPLP would need to be held constant eliminating the need for a summated index score.

In an effort to determine the significance of the differences among the variables, a canonical correlation was performed to measure the strength of the overall relationships between the linear composites of multiple predictor and multiple outcome variables (Hair, Anderson, Tatham (1989). The first canonical correlation was performed between age, income, Perceived Control, and Health-Promoting Behaviors as predictors of the three Psychological Well-being Outcomes (Table 20). The Canonical relationship found statistical significance between Perceived Control and Health-Promoting Behaviors and the first combined canonical factor of Psychological Well-being to explain 86.3% of the factor at $p < .002$ (Table 21). Perceived Control explained 39.6% and Health-Promoting Behaviors 32% of the shared variance explained by the criterion variable, Psychological

Table 20

Canonical Correlation Analysis of Canonical Variables of Perceived Control, Health-Promoting Behaviors, Age, Income, on Canonical Variables of the Index of Psychological Well-being, Center for Epidemiologic Studies-Depression Scale, and Perceived Stress Scale

	Canonical Correlation	Standard Error	Canonical r-Square	f	p
1	0.721	0.077	0.519	2.93	0.002*
2	0.369	0.138	0.136	0.95	0.469
3	0.117	0.158	0.013	0.24	0.784

* $p < .05$

Well-being. No other significant correlations existed in the canonical loadings. The redundancy index was calculated to be 18.74 % which was interpreted to be a significant contribution of the predictors of Perceived Control and Health-Promoting Behaviors to the outcome of Psychological Well-being.

Table 21

Correlations Between Age, Income, Perceived Control, and Health-Promoting Behaviors and Canonical Variables of Psychological Well-being Outcomes

	WB1	WB2	WB3
Age	0.107	-0.196	0.093
PCQ	-0.629	-0.052	-0.026
Income	-0.153	-0.132	-0.023
HPLP	-0.565	0.153	0.042

The second canonical correlation was performed between the linear composites of the multiple psychological well-being outcome variables to measure the strength of the overall relationships between the criterion measure (life satisfaction), as well as, the shared variance of and the redundancy of using multiple measures. The three well-being indicators (Index of Psychological Well-being, Center for Epidemiologic Studies-Depression Scale, Perceived Stress Scale) were placed in the predictor position and Life Satisfaction was placed as the criterion variable (Table 22). The Canonical relationship found to be statistically significant was between the Psychological Well-being and Depression Scales. The standardized variance explained by Life Satisfaction with the Psychological Well-being variables was 37.1% which was considered to be a significant

Table 22

Canonical Correlation Analysis of Canonical Variables of Canonical Variables of the Index of Psychological Well-being, Center for Epidemiologic Studies-Depression Scale, and Perceived Stress Scale on Life Satisfaction

	Canonical Correlation	Standard Error	Canonical r-Square	f	p
1	0.609	0.101	0.371	7.08	0.0007*

*p<.05

contribution of one's psychological status in relation to life satisfaction (Table 23). The shared variance of life satisfaction with psychological well-being accounted for 5.76% or little contribution in the rotation of the factors in reverse. This finding was statistically significant in establishing the outcome measures as independent measures of outcome. The redundancy index was calculated to be 13.76% and significantly explained a large proportion of the criterion variable. The findings indicated that Perceived Control and Health-Promoting Behaviors could predict Life Satisfaction and Well-Being. Also, that Life Satisfaction and Well-Being were independent variables with life satisfaction being the variable of greater significance in the final analysis.

Multiple Analysis of Covariance (MANCOVA) was performed to assess the significance of the levels of mean differences of demographic variables on the outcome variables while simultaneously holding Perceived Control and Health-Promoting Behaviors constant. This technique evaluated age, race, and income effects on the total

Table 23
Correlations Canonical Variables of Psychological Well-being Variables and Life Satisfaction

	WB1	WB2	WB3
LSIA	0.543	0.569	0.317

scores of life satisfaction, depression, psychological well-being, and perceived stress. Perceived control and Health-Promoting Behaviors were treated as covariates to give a true analysis of the demographic variable effect on the outcome measures (Table 24). The effects of age, income and race were portrayed by multivariate regression and ANOVA analyses to be statistically significant. Therefore, the MANCOVA was undertaken to draw a conclusion of the variable effects on the outcome variables as a true measure. The regression model indicated that perceived control and health-promoting behaviors would need to be held constant due to their significant correlation with life satisfaction. Age, income and race were not significant. The evaluation of the effect of the covariates, however, was significant ($f(2,36)=4.68; 4.79; 5.00$ respectively at $p<.0001$) across the age, race, and income. This finding was viewed as another indication of the significance of the contribution of perceived control and health-promoting behaviors as predictors of life satisfaction and well-being.

Table 24

Multiple Analysis of Covariance Effects of Age, Income, and Race on Life Satisfaction and Well-being with Perceived Control and Health-Promoting Behaviors as Covariates

Variable	df	T ²	f	p
Age	4,33	4.29	0.98	0.43
Income	4,33	5.22	1.20	0.33
Race	2,35	13.41	.57	0.15

Summary of Findings

The data collected on the 40 women with long-term SCI in this sample were described and analyzed by use of descriptive and inferential statistics. Significant differences at $p < .05$ were found between the pair-wise demographic variables of race, education, etiology of injury, subjective well-being, and level and completeness of injury. Significant group differences $p < .05$ were found between the levels of marital status, age, level and completeness of injury, and the physical exam parameters, weight and pulse.

Reliability using total scores for the six self-report questionnaires was established by alpha coefficient. Construct validity was established by factor analysis using principle component varimax rotation.

Inferential analyses of the demographic variables, physical examination parameters and the mean scores on the self-report questionnaires resulted in a significant difference ($p < .05$) between breast exam score and score on the HPLP. Pair-wise comparisons

among the self-report measures revealed a significant negative relationship between perceived control and perceived stress and symptoms of depression.

Multivariate multiple regression demonstrated the significance of the contribution of age, race, and income, perceived control, and health-promoting behaviors to life satisfaction. Canonical Correlations were used to evaluate the direction and strength of the canonical factors of age, income, perceived control, and health-promoting behaviors and the three measures of psychological well-being. Strong canonical factor contributions from perceived control 39.6% and health-promoting behaviors (32%) were found. A second canonical factor loading between life satisfaction and the well-being variables revealed a significant contribution 37.1% of life satisfaction to psychological well-being. MANCOVA was used to evaluate further the effects of age, race, and income on life satisfaction and well-being with perceived control and health-promoting behaviors as the covariates. When these predictors were held constant the effects of age, race, and income were not significant. However, the effects of the covariates were highly significant, ($p < .0001$) further validating the predictive ability of these two variables with the life satisfaction and well-being outcomes of women with long-term SCI and accepting the study hypothesis.

CHAPTER 5

SUMMARY OF STUDY

The life satisfaction and well-being outcomes of women with long-term SCI were the primary variables to which Perceived Control, Health-Promoting Behaviors and other derived variables were compared. Specific demographic variables such as age, race, and income and physical examination data including breast and gynecologic parameters were identified that were statistically significant in group specification within the study sample. The research hypothesis tested was:

There is a direct relationship among perceived control and health promoting behaviors as predictors of life satisfaction and well-being outcomes of women with long-term SCI.

In this chapter, an overview of the study methodology is presented. Discussion of the findings is then presented, and conclusions and implications of the findings are examined. Recommendations for further investigations are also offered.

Summary

A randomly selected sample of 40 women with long-term spinal cord injury residing in the community was used for study participation. This study was conducted by use of a cross-sectional, correlational, descriptive design. The predictor variables of the study included perceived control and health-promoting behaviors, as well as, demographic variables. The outcome measures were life satisfaction and well-being which

encompassed both physical and psychological parameters. Multiple instruments were used to collect data: a demographic data sheet; a structured interview, a physical examination form; and six self-report questionnaires: the researcher designed Perceived Control Scale, the Health-Promoting Lifestyle Profile (Walker, Sechrist, & Pender, 1987), the Life Satisfaction Scale, the Index of Psychological Well-being, and the Perceived Stress Scale. The random start method was used to obtain a systematic sample of 40 women with long-term SCI greater than one year from an accessible population of 128 women with SCI and living in a 13 county area surrounding Houston. There were 18 women (45%) with complete paraplegia, 14 (35%) with complete quadriplegia, and 8 with (20%) incomplete injuries who participated in this study.

Data were analyzed using descriptive statistics for demographic variables and physical examination parameters to describe the sample and both nonparametric and parametric statistical procedures to characterize the sample into groups. Significant findings ($p < .05$) were found among the demographic variables of education, race, income, level and completeness of injury, etiology of injury, and mode of transportation. Significant differences ($p < .05$) were found between the categories of marital status, and level and completeness of injury, and the levels of group means of weight, age, and pulse. Reliability and validity for the six self-report measures were established by alpha coefficient and factor analysis for principle component extraction. Inferential analyses of the demographic variables, physical examination parameters, and the total score on the self-report questionnaires resulted in a significant relationship ($p < .05$) between the breast exam score and the health-promoting lifestyle profile indicating that the lower the score the higher the incidence of a positive finding during the breast exam. Pair-wise correlations revealed that those persons scoring high in perceived control ($p < .01$) perceived less stress

and fewer symptoms of depression. The strength of all the significant correlations was moderate compared to the level of significance. Through all inferential analyses race and age were consistently significant indicating the need for further analyses to define the effect of these variables on the outcome of women with long-term SCI. Lack of multicollinearity among the self-report instruments and moderate strength correlations allowed the questionnaires to stand independently in the confirmation of the study hypothesis. Perceived control and health-promoting behaviors, as isolated by multivariate analysis, significantly (67%) contributed to life satisfaction and to psychological well-being (<40%). Due to the statistical significance of these variables as predictors of the outcome of life satisfaction, their effects were held constant resulting in no significant difference for age, race, and income as related to the outcomes of women with long-term SCI.

Discussion of Findings

The results of this study demonstrated that perceived control and health-promoting behaviors could be used to predict life satisfaction and well-being outcomes in women with long-term SCI. Although defined by level and completeness of injury, the women who participated in this study were a homogeneous group. Demographic data and physical examination parameters reflected that differentiation, while a matter of statistical significance, was ameliorated when the predictive variables were held constant. In this section, the demographic variables, physical examination parameters, and total questionnaire scores will be separately addressed.

Significant differences among group means were found for race and weight ($p<.03$), marital status and age ($p<.02$), and level and completeness of injury and age

($p < .006$) and pulse ($p < .03$). Results indicated significant differences between blacks and hispanics by weight. Quadriplegics tended to be younger, have a lower pulse, and to never have married.

Significant correlations were found between age and blood pressure ($p < .002$), breast score ($p < .004$) and years since injury and pulse. Findings indicated that age, blood pressure, and breast exam score were positively associated by moderate strength. The further the subject was in years from injury, the higher the pulse. Results for these physical examination parameters showed that as a person ages with SCI, physical adaptation mirrors that of the general population for increases in pulse, blood pressure, and potential for breast pathology. This finding was important since only 15 (37.5%) of the sample performed breast self-exam.

Significant differences were found for the mean scores of the six self-report questionnaires that comprised the predictor and outcome variables by the demographic variables and physical exam parameters. Results indicated a significant difference in perceived control by race. Hispanics scored significantly higher on the questionnaire than whites or blacks. In attempting to understand this finding, race was reexamined in relation to the other demographic variables to identify operant influences on personal control of beliefs and values that may account for racial differences.

Tests of significance revealed that race and educational level ($p < .04$), etiology of injury and race ($p < .03$), etiology of injury and education ($p < .02$), and personal rating of subjective well-being and race ($p < .04$) were significant. Blacks were injured as a group 66.7% of the time by an act of violence rather than 18.5% of the time for whites. Blacks (22.2%) and hispanics (75%) had less education than whites (11.1%). Whites (36%) and hispanics (25%) had some college or college degrees, while blacks (22%) had some

college. An excellent rating of subjective well-being was reported by 14.8% of whites, 50% of hispanics and 0% of blacks. A rating of good was selected by 74.1% whites, 66.7 blacks, 0% hispanics. Fair was rated by 33.3% of the blacks and 7.4% of the whites and 50% of hispanics. Poor subjective well-being was rated by 7.4% of the whites. This finding indicated that black women were more frequently injured with SCI by acts of violence, less educated and had lower reported levels of subjective well-being. This finding was important as their income level was the largest group in the annual income split of less than \$9200.

The findings for this study for age and race paralleled the analysis from the National Spinal Cord Injury Database. DeVivo, et al. (1987) found that nonwhites with SCI were more likely (36.1%) to be the victims of violent acts and were also younger in age than their white counterparts. Other analyses from this study indicating that persons who were younger when injured were more likely to have adjusted to injury better were consistent with those of Krause and Crewe (1991). The authors also reported significant relationships between time since injury and age. However, these variables had no significant relationship with life satisfaction. The findings in the study did indicate that some changes in physical functioning were likely as the person with the SCI aged. Findings, in this study, indicated that physiological variables were significantly related to age and length from injury. Age was also found both by Krause and Crewe and in this study to be negatively correlated with life satisfaction indicating that as age increased, the lower the likelihood of adjustment to injury would be.

Physiological variables in this study were of little significance when correlated to the outcome of SCI. The gynecologic exam score was significantly related ($p < .025$) with the Index of Psychological well-being and Health-Promoting Lifestyle Profile ($p < .006$)

but with little strength in the correlations. This finding indicated that women with SCI were more likely to develop gynecologic problems, some of which were evidenced by physical exam findings from childbirth, indwelling catheters, infection, and surgical procedures such as hysterectomy. The data of years since pap smear indicating that 59.5% of the women had not had a pap smear in the last year with a mean length of time being 5.6 years (med=2 years; SD=7.9 years) demonstrates a significant trend toward neglect in the gynecologic health of women with SCI. The women who had an absence of gynecologic findings and a pap smear (40.5%) in the past year had higher mean scores on all predictor and outcome variables. These findings indicate that women with SCI who demonstrate higher levels of personal control of attitudes and lifestyle behaviors in gynecologic health also are more satisfied with life, less stressed and depressed, and have a higher index of psychological well-being. While not significant ($p<.05$), the ages and race for those women with absent gynecologic findings were younger and white.

In the multivariate regression analysis, the physiologic parameters (13%) contributed little effect in predicting outcome of long-term SCI in women. Age, race, and income (33%) contributed more to outcome. A trend toward significance of depressive symptoms and outcome was found but of little additive effect to the demographic variables (37%) contribution. The most significant finding was the large proportion of contribution (67%) by perceived control and health-promoting behaviors to the outcome of life satisfaction. The indication from the direction and strength of the correlation for these two measures is thereby supporting the hypothesis that given information regarding mean scores on the PCQ and HPLP, one could predict the life satisfaction outcome scores for the women with SCI and validate the study model and hypothesis. Additionally, all things

being equal, when PCQ and HPLP are held constant, all ages, racial mix, and income levels of women with SCI have equal potential to achieve life satisfaction and well-being.

Conclusions and Implications

The results of this study led to the following conclusions and implications:

1. Blacks are more likely to be injured from acts of violence, have lower incomes, less education, lower ratings of subjective well-being, and lower perception of control than other racial groups, placing them at a higher risk to health instability than other racial groups of women with SCI.
2. Women, who are aging with SCI, demonstrate the same effects of aging as the nondisabled women with increased pulse, blood pressure levels, and numbers of potentially positive breast examination findings.
3. Higher numbers of positive gynecologic exam findings of women with long-term SCI and the trend toward not receiving routine pap smears not only place these women at health risk, but also reflect lower reports of health-promoting behaviors which may have a reciprocal effect on lower reports of index of psychological well-being.
4. Perceived control and health-promoting behaviors as positioned in the model are predictive of life satisfaction and well-being outcomes of women with long-term SCI.

The need for women with long-term SCI to develop and maintain control as they age with their injuries and facilitate health-promoting behaviors has implications for nursing research, practice, and education. The following implications have been formulated based on the findings of this study:

1. Minority women living in the community prior to injury would benefit from programs to increase awareness of safeguards to protect them from acts of violence with lethal affects, one of which is spinal cord injury.
2. Programs to emphasize breast self-exam and routine gynecologic exams are important for the health awareness of women with SCI during inpatient rehabilitation and during clinic follow-up visits.
3. Development of clinical practices by nurses that foster positive reinforcement of the personal control and healthy lifestyle constructs in women with SCI from the point of injury through rehabilitation and their return to the community are essential for the well-being of these women.

Recommendations for Further Study

The finding of this study resulted in the following recommendations for further study:

1. Replication of the study with a larger sample drawn from a more heterogeneous or a national sample to maximize variability and increase generalizability of the findings.
2. Further research experience with the Perceived Control Questionnaire in nursing research to investigate its applicability to other areas in nursing practice.
3. The revision of the Health-Promoting Lifestyle Profile with the author's permission to include the types of behaviors more generally performed or modified by the disabled person to increase the sensitivity of the instrument in the disabled population.

4. Further research using the Nunchuck Interpersonal Human Potential Model to evaluate other factors that may significantly impact the outcomes of women with long-term SCI such as social support, functional performance status, and vocational or rehabilitative potential.
5. Development of educational programs to teach breast and gynecologic health and emphasize these areas as an equal partner in routine follow-up with urinary tract infection, skin care, and cardiopulmonary integrity for disabled women.
6. Further research experience in preventative programs for minority education to safeguard women from acts of violence that can lead to disability or death.
7. Development of educational programs for acute care nurses who have the first contact with persons with SCI to learn how to initiate positive control attitudes and health-promoting behaviors early in the injury recovery phase to impact quality of life from the point of injury before arrival at the rehabilitation setting.

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APPENDIX A
Informed Consent Form

Persons with Spinal Cord Injury:
Life Status and Experience with Aging
Consent for Participating in a Research Study Conducted by
Baylor College of Medicine and
Texas Woman's University College of Nursing

I, _____, agree to participate in a study concerned with the lives of persons with spinal cord injury, including their experience as they grow older. Other purposes are to determine the impact of gynecologic or breast problems and psychosocial factors. I understand that the results will contribute to identifying needed improvements in services for persons with spinal cord injury.

I understand that my participation will be of six kinds:

1. Completion of several questionnaires that will be mailed to me.
2. An interview lasting approximately 2 hours conducted in my residence at a time convenient to me.
3. A day spent at The Institute for Rehabilitation and Research (TIRR) for a variety of medical examinations including gynecological and breast examinations, and laboratory tests that have been explained to me.
4. A letter from the TIRR physician about 4 weeks after completion of the examinations and tests, discussing the findings and making any necessary recommendations pertinent to my personal health situation.
5. A phone call approximately 1 week after receipt of the written recommendations to allow for the personalized results of my tests to be explained, and if necessary, recommendations for further treatment or follow-up.
6. Telephone interviews approximately 1 and 3 months later to follow-up on the recommendations that were made to me.

Discomforts or risks of my participation include a possible bruising from blood drawing, embarrassment from potential difficulty in body positioning or body exposure during the physical examinations, breach of confidentiality, and/or distress caused by answering sensitive questions.

I have been informed that the confidentiality of the data collected will be maintained and the data locked in the research office. My name will not be used in publications and presentations of the study results. I have been informed that the confidentiality of the data collected will be maintained within current legal limits. Additionally, I understand that every attempt will be made to alleviate any discomfort, physical or emotional, from the physical examinations.

Benefits expected from participating in this study are a free comprehensive physical including gynecologic and breast examinations, extensive health assessment, and gaining additional information about my body through tests made available at no expense to me and valued at \$1500.00 to determine the presence or absence of conditions that place me at risk.

The alternative to my participation in this study is accessing routine medical care at my own expense.

I understand that my transportation to and from TIRR and my lunch there will be provided at no expense to me and that I will receive a check for \$100.00 at the time of my day spent at TIRR, or through the mail as soon as possible thereafter.

I have been told that throughout my participation, I can call the project director, Marcus Fuhrer, (713-799-7011) or Susan K. Burns (713-960-1233), about any questions that I have.

I also understand that in the event of physical injury resulting from this research, neither Baylor College of Medicine, The Institute for Rehabilitation and Research, nor Texas Woman's University College of Nursing are able to offer financial compensation nor to absorb the cost of medical treatment. However, necessary facilities, emergency treatment and professional services will be available to research subjects, just as they are to the community generally. By signing this consent form and participating in this study I am not waiving or giving up any right I might have to seek recovery for damages caused by negligence or intentional misconduct of those conducting this program.

I understand that I am free to withdraw my consent and discontinue participation in this study at any time, without affecting my health care or benefits in any way.

Signature

Date

Witness

Date

APPENDIX B
Demographic Data Sheet

INFORMATION FOR THE SCI CENSUS

PLEASE PRINT Contact: ☐ 1 He/She called ☐ 2 We called (Phone verification)

Interviewer Name _____ Int. # _____

1. Date form completed ____/____/____ BEGIN ____:____ 2. SCI CENSUS #
mo./day/yr. TIME3. Name _____ To be assigned
Last, First Middle by officePreferred title ☐ Mr. ☐ Ms. ☐ Miss ☐ Mrs. ☐ None
☐ Other (Describe _____)Do you use: ☐ Jr. ☐ Sr. ☐ III ☐ None ☐ Other (Describe _____)4. Phone #: 5. Address:
(____)____-____ No. & Street _____ Apt. _____
area City _____, TX Zip _____

6. In what county do you actually live, not the county of your post office, if they are different?

☐ 1 Austin ☐ 5 Fort Bend ☐ 9 Matagorda ☐ 13 Wharton
☐ 2 Brazoria ☐ 6 Galveston ☐ 10 Montgomery
☐ 3 Chambers ☐ 7 Harris ☐ 11 Walker
☐ 4 Colorado ☐ 8 Liberty ☐ 12 Waller

7. In which of the following ways did you get your spinal cord injury?

NOTE: READ LIST, CHECK ONE.

☐ 1 Motor vehicle accident
☐ 2 Act of violence (gunshot or knife wound)
☐ 3 Fall
☐ 4 Sport
☐ 5 Other (Describe _____)8. Do you currently walk at all? ☐ 0 No ☐ 1 Yes

9. NOTE: ASK ONLY IF WALKS. Do you use a cane, a walker, braces, ankle or leg supports, or any other walking aid?

☐ 0 No ☐ 1 Yes ☐ 8 N/A (Doesn't walk)10. Does your spinal cord injury currently impair your use of your arms or hands? ☐ 0 No ☐ 1 Yes11. Do you currently use a machine such as a respirator or phrenic nerve stimulator most of the time? ☐ 0 No ☐ 1 Yes12. Do you suffer from pain frequently? ☐ 0 No ☐ 1 Yes13. NOTE: ASK ONLY IF SUFFERS FROM FREQUENT PAIN. Does your pain interfere with your daily activities? ☐ 0 No ☐ 1 Yes ☐ 8 N/A
(no frequent pain)

In case you change your phone number or address, please give us the name, phone number, and address of a relative or friend who will always know where to reach you.

14. Other Phone #: 15. Other Name and Address:

(____)____-____ Name _____
area No. & Street _____ Apt. _____
City _____, TX Zip _____16. What is the relationship of the person whose name, phone number, and address you just gave us? For example, parent, friend, or sister.
Relationship _____

17. In which of the following ways did you find out about the SCI CENSUS?
NOTE: READ LIST, CHECK ALL THAT APPLY.
☐ 1 Were you sent a notice?
☐ 2 Did you see a notice in a doctor's office or clinic?
☐ 3 Did you see a notice in a newspaper? to be coded
by office
☐ 4 Did someone tell you about it? _____
Describe relationship
 Is he/she disabled? ☐ 0 No ☐ 1 Yes ☐ 8 N/A (not told)
☐ 5 Other (Describe _____)
18. What is your race or ethnicity? NOTE: READ LIST, CHECK ONE.
☐ 1 White ☐ 2 Black ☐ 3 Hispanic ☐ 4 Asian
☐ 5 Other (Describe _____)
19. Which language do you usually speak? NOTE: CHECK ONE.
☐ 1 English ☐ 2 Spanish ☐ 3 Other (Describe _____)
20. NOTE: ASK ONLY IF ANSWER TO #19 IS NOT ENGLISH. OTHERWISE, CHECK 'YES'
AND GO ON TO #21.
 Do you speak English well enough to answer questions and fill out forms in
English if you take part in our future studies? ☐ 0 No ☐ 1 Yes
21. Which language do most of your family members usually speak?
NOTE: CHECK ONE.
☐ 1 English ☐ 2 Spanish ☐ 3 Other (Describe _____)
22. What is your sex? ☐ 1 Female ☐ 2 Male
23. Date of birth: _____ 24. Date spinal cord injury occurred:
 mo./day/yr. mo./day/yr.
25. Which of the following describes your current marital status?
NOTE: READ LIST, CHECK ONE.
☐ 1 Never married ☐ 3 Separated ☐ 5 Widowed (not married now)
☐ 2 Married ☐ 4 Divorced ☐ 6 Other (Describe _____)
(not separated) (not married now)
26. Do you live in: NOTE: READ LIST, CHECK ONE.
☐ 1 A private home such as a house, apartment, mobile home, etc.
☐ 2 A nursing home
☐ 3 Other (Describe _____)
27. With whom do you live? NOTE: READ LIST, CHECK ALL THAT APPLY.
☐ 1 No one ☐ 2 Spouse ☐ 3 Parent(s) ☐ 4 Child(ren)
☐ 5 Friend(s) ☐ 6 Attendant(s) ☐ 7 Other(s) _____
(Describe)
28. Do you need help taking care of your self such as with eating, getting
dressed, bowel and bladder care, bathing, etc.?
NOTE: IF YES, ASK IF EVERY DAY AND GET DETAILS ON AMOUNT, CHECK ONE.
☐ 1 No, none at all
☐ 2 Yes, less than 4 days a week
☐ 3 Yes, 4 to 6 days per week
☐ 4 Yes, every day - 1 hour or less
☐ 5 Yes, every day - more than 1 hour
☐ 6 Other (Describe _____);

29. NOTE: ASK ONLY IF NEEDS HELP TAKING CARE OF SELF.

Who usually helps you?

NOTE: READ LIST, CHECK ALL THAT APPLY AND ANSWER OTHER QUESTIONS ON EACH.

	How many live with you	How many <u>don't</u> live with you	How many are not paid	How many are paid by you	How many are paid by other(s)
	2 dig	2 dig	2 dig	2 dig	2 digit
___ 1 Relative(s)	___	___	___	___	___
___ 2 Friend(s) or neighbor(s)	___	___	___	___	___
___ 3 Hired attendant(s)	___	___	___	___	___
___ 4 Other(s) _____ (Describe)	___	___	___	___	___
___ 8 N/A (Doesn't need help with these activities.)					

30. Which of the following types of local transportation do you use when you must go somewhere? NOTE: READ LIST, CHECK ALL THAT APPLY.

- ___ 1 I drive my own vehicle independently.
 ___ 2 Other people such as family, friends, or my attendant drive me.
 ___ 3 I use public transportation such as buses, taxis, or paratransit.
 ___ 4 I have no type of transportation, in other words, I never go anywhere.
 ___ 5 Other (Describe _____)

31. What is the highest level of education you have currently completed:

- ___ 1 Completed 0 - 8 grades
 ___ 2 Completed 9 - 11 grades
 ___ 3 Graduated from high school or got GED
 ___ 4 Attended 1 - 3 years of college
 ___ 5 Received Associate degree
 ___ 6 Received Bachelor's degree
 ___ 7 Received Master's degree or higher

32. Have you completed a training program in a technical or trade school?

___ 0 No ___ 1 Yes

33. Are you a veteran? ___ 0 No ___ 1 Yes

34. What is your current occupational and educational status?

NOTE: READ LIST, CHECK ALL THAT APPLY.

- ___ 01 Working for pay - full time (at least 32 hours per week)
 ___ 02 Working for pay - part time (less than 32 hours per week)
 ___ 03 Student - full time (where _____)
 ___ 04 Student - part time (where _____)
 ___ 05 Homemaker - does at least 50% of homemaking (laundry, cooking, cleaning, grocery shopping)
 ___ 06 Volunteer work - full time (at least 32 hours per week)
 ___ 07 Volunteer work - part time (less than 32 hours per week)
 ___ 08 Retired
 ___ 09 Unemployed - looking for work
 ___ 10 Unemployed - not looking for work
 ___ 11 Unemployed - registered with Texas Employment Commission
 ___ 12 Other (Describe _____)

35. NOTE: ASK ONLY IF WORKING FOR PAY OR VOLUNTEER.

What kind of work do you do?

to be coded
by office

NOTE: WRITE N/A, IF DOESN'T WORK.

Job 1 _____

Job 2 _____

NOTE: ASK ONLY IF WORKING OR DOING VOLUNTEER WORK. As one other method of keeping in contact with you if you move, please give us your employer's name, work phone number and address.

Work Phone #: _____ Work Address: _____
36. Job 1 Employer _____
(____)____-____ No. & Street _____ Suite _____
area _____ City _____ Zip _____

37. Job 2 Employer _____
(____)____-____ No. & Street _____ Suite _____
area _____ City _____ Zip _____

38. Which of the following sources of income do you have on a regular basis?

NOTE: READ LIST, CHECK ALL THAT APPLY.

- ☐ 01 Employment
- ☐ 02 Spouse's employment or other income (e.g., SSI)
- ☐ 03 Other family member(s) who lives with you
- ☐ 04 Other family member(s) who does not live with you
- ☐ 05 Social Security (SSI or SSDI)
- ☐ 06 VA pension
- ☐ 07 Other pensions from previous employment including disability
- ☐ 08 Workman's Compensation
- ☐ 09 Foodstamps
- ☐ 10 Welfare
- ☐ 11 Living primarily off savings (can be checked with Foodstamps)
- ☐ 12 Other (Describe _____)

NOTE: INTERVIEWER READ OR PARAPHRASE THE FOLLOWING:

Thank you for participating in the SCI CENSUS. We will be sending you a thank you letter along with a form that lists issues of interest to some people with spinal cord injury. We'd like to know what issues interest you in order to help us plan programs and services. Please complete the form indicating your own areas of interest and return it as soon as possible in the stamped envelope we will provide. Thanks again for your help in our research. It is very important and we value your assistance. Also, please tell other people with SCI to call in because we want to include everyone we can in this area.

APPENDIX C
Physical Assessment Form

___ 0 Normal ___ 1 Abnormal

10. Neurological Exam

Cranial nerves

II - visual fields

Right	_____	Normal	_____	Abnormal
Left	_____	Normal	_____	Abnormal

III, IV, VI - Pupils

Right	_____	Normal	_____	Abnormal
Left	_____	Normal	_____	Abnormal

EOM

Right	_____	Normal	_____	Abnormal
Left	_____	Normal	_____	Abnormal

Ptosis

Right	_____	Normal	_____	Abnormal
Left	_____	Normal	_____	Abnormal

V Corneal reflex

Right	_____	Normal	_____	Abnormal
Left	_____	Normal	_____	Abnormal

Facial sensation

Right	_____	Normal	_____	Abnormal
Left	_____	Normal	_____	Abnormal

Masseters

Right	_____	Normal	_____	Abnormal
Left	_____	Normal	_____	Abnormal

VII Wrinkle forehead

Right	_____	Normal	_____	Abnormal
Left	_____	Normal	_____	Abnormal

bare teeth

Right	_____	Normal	_____	Abnormal
Left	_____	Normal	_____	Abnormal

VIII finger rub

Right	_____	Normal	_____	Abnormal
Left	_____	Normal	_____	Abnormal

IX,X Palatal elevation

Right	_____	Normal	_____	Abnormal
Left	_____	Normal	_____	Abnormal

XI shoulder shrug

Right	_____	Normal	_____	Abnormal
Left	_____	Normal	_____	Abnormal

XII protrude tongue

Right	_____	Normal	_____	Abnormal
Left	_____	Normal	_____	Abnormal

11. Cerebellar exam for paraplegics

Finger-nose-finger

Right	_____	Normal	_____	Abnormal
Left	_____	Normal	_____	Abnormal

12. Sensory exam:

Last normal level to light touch:

Right ___ Complete ___ Incomplete ___
 Left ___ Complete ___ Incomplete ___

Last normal level to pinprick:

Right ___ Complete ___ Incomplete ___
 Left ___ Complete ___ Incomplete ___

Vibration:

Right wrist ___ normal ___ Abnormal
 Left wrist ___ normal ___ Abnormal
 Right ankle ___ normal ___ Abnormal
 Left ankle ___ normal ___ Abnormal

Position Sense:

Right little finger ___ normal ___ Abnormal
 Left little finger ___ normal ___ Abnormal
 Right great toe ___ normal ___ Abnormal
 Left great toe ___ normal ___ Abnormal

13. A.S.I.A. Motor Index Scale

SCORE	C4	Diaphragm	Left	MUSCLE	Right
0 Absent	C5	Deltoid and/or biceps - elbow flexion	___	C5	___
1 Trace	C6	Wrist extensors	___	C6	___
2 Poor	C7	Triceps - elbow extension	___	C7	___
3 Fair	C8	Flexor profundus - finger flexion	___	C8	___
4 Good	T1-L1	Hand intrinsic	___		___
5 Normal		Use sensory level, abdominal reflexes and Beevor's sign to help localize lowest normal neurological segment	___		___
	L2	Iliopsoas - hip flexion	___	T1	___
	L3	Quadriceps - knee extension	___	L2	___
	L4	Tibialis anterior - dorsiflexion (DF)	___	L3	___
	L5	Extensor hallucis longus - great toe extension	___	L4	___
	S1	Gastrocnemius - ankle plantar flexion	___	L5	___
	S2 - S5	Use sensory level	___	S1	___

Maximum each side = 50

TOTAL
LEFT ___TOTAL
RIGHT ___

Maximum total score = 100

GRAND
TOTAL ___

14. Level of injury - bony _____ neurological - motor
 Frankel grade _____ sensory

L ___ R ___
 L ___ R ___

15. Spasticity - Ashworth Tone Scale

SCORES

- 1 No increase in tone
- 2 Slight increase in tone
(a "catch" with PROM)
- 3 Moderate increase in tone
but easily moved through PROM
- 4 Marked increase in tone
(PROM is difficult)
- 5 Rigid in flexion or extension

----- Right - upper limb
 ----- Left - upper limb
 ----- Right - lower limb
 ----- Left - lower limb

(A) Complete

(B) *Isospastic* - Preserved
 sensation only
 Preservation of any demonstrable
 sensation, including objective sensation
 sensation. Voluntary motor function is
 absent.

(C) *Isospastic* - Preserved motor
 (non-functional)
 Preservation of voluntary motor func-
 tion which performs no useful purpose ex-
 cept psychoproprioception. Sensory function
 may or may not be preserved.

(D) *Isospastic* - Preserved motor
 (functional)
 Preservation of voluntary motor func-
 tion which is useful functionally.

(E) Complete Recovery
 Complete return of all motor and
 sensory function, but still may have ab-
 normal reflexes.

16. Deep tendon reflexes

SCORES

- 0 Areflexic
- 1 Hyporeflexic
- 2 Normal
- 3 Mild hyperreflexic
- 4 Three or four beats of clonus
- 5 Unsustained clonus
- 6 Sustained clonus

Biceps - right -----
 Biceps - left -----
 Triceps - right -----
 Triceps - left -----
 Knee - right -----
 Knee - left -----
 Ankle - right -----
 Ankle - left -----

17. Decubitus Ulcers

Grade

0 None

1 Limited to superficial & dermal
 layers (include redness that does
 not blanch to touch and redness
 that requires no intervention)

2 Involving epidermal & dermal
 layers & extending into adipose
 tissue

3 Extending through superficial
 structure and adipose tissue down
 to & including muscle

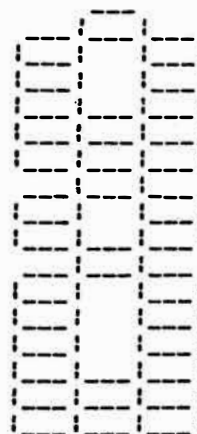
4 Destruction of all soft tissue
 structures and communication with
 bone or joint structures

8 Yes, grade unknown

9 Unknown

Occiput
 Scapula
 Elbow
 Ribs
 Spinous process
 Iliac crest
 Sacral
 Ischium
 Trochanter
 Genital
 Knee
 Malleolar
 Heel
 Foot
 Buttock
 Loc. unclassified

Left C Right



18. Skin maceration ___ 0 Absent ___ 1 Present
 a. If present, list sites

1 _____
 2 _____
 3 _____

19. Skin rash or other abnormalities ___ 0 Absent ___ 1 Present
 a. If present, list sites

1 _____ Describe briefly _____
 2 _____ Describe briefly _____
 3 _____ Describe briefly _____

Note: For all range of motion testing, only values $> 10^\circ$ from normal will be reported. Values $\leq 10^\circ$ within the normal value will be indicated only by a check mark.

20. Neck

1. Range of motion

a) Flexion

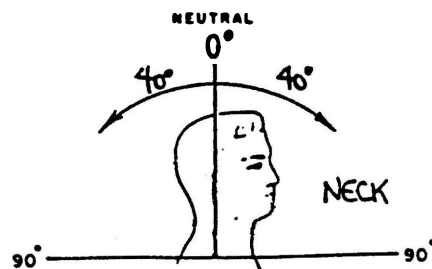
b) Extension

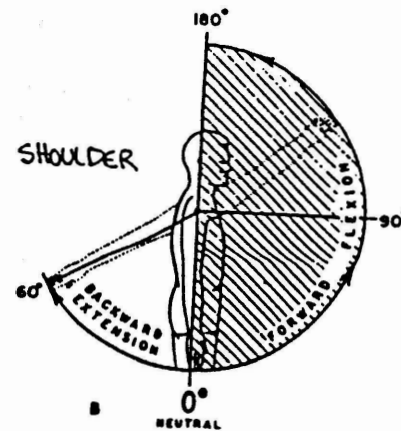
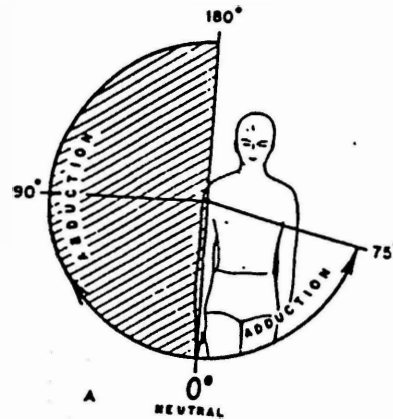
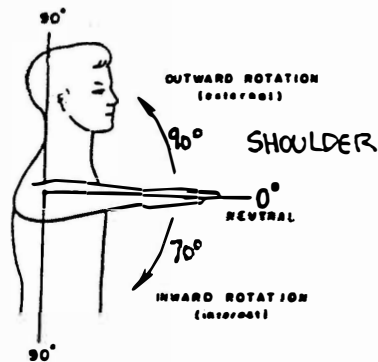
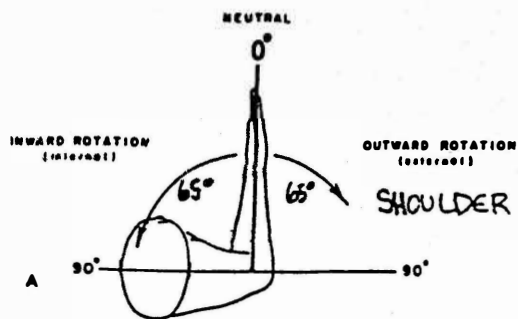
2. Swelling ___ 0 Absent ___ 1 Present

3. Deformity ___ 0 Absent ___ 1 Present

4. Other abnormality ___ 0 Absent ___ 1 Present

If present, describe _____





21. Shoulder

a. Right shoulder

1) Range of motion

a) Abduction

b) Flexion

c) External rotation

2) Swelling

3) Deformity

4) Other abnormality

If present, describe

0 Absent

0 Absent

0 Absent

1 Present

1 Present

1 Present

b. Left shoulder

1) Range of motion

a) Abduction

b) Flexion

c) External rotation

2) Swelling

3) Deformity

4) Other abnormality

If present, describe

0 Absent

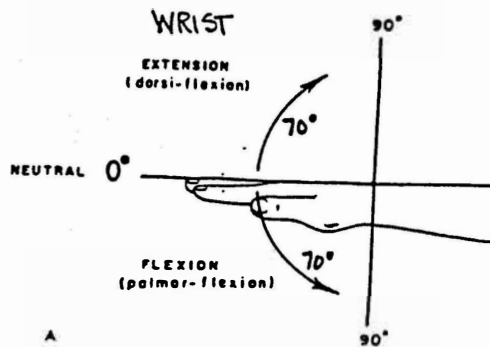
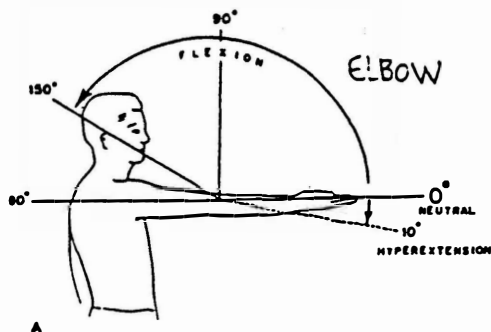
0 Absent

0 Absent

1 Present

1 Present

1 Present



22. Elbow

a. Right elbow

1) Range of motion

a) Flexion

b) Extension

2) Swelling

3) Deformity

4) Other abnormality

If present, describe

0 Absent

0 Absent

0 Absent

1 Present

1 Present

1 Present

b. Left elbow

1) Range of motion

a) Flexion

b) Extension

2) Swelling

3) Deformity

4) Other abnormality

If present, describe

0 Absent

0 Absent

0 Absent

1 Present

1 Present

1 Present

23. Wrists

a. Right wrist

1) Range of motion

a) Flexion

b) Extension

2) Swelling

3) Deformity

0 Absent

0 Absent

1 Present

1 Present

b. Left wrist

1) Range of motion

a) Flexion

b) Extension

2) Swelling

3) Deformity

0 Absent

0 Absent

1 Present

1 Present

24. Hands

a. Right hand

1) Deformity ___ 0 None ___ 1 Mild ___ 2 Marked

2) Function ___ 0 Complete ___ 1 Somewhat Limited ___ 2 Very Limited

b. Left hand

1) Deformity ___ 0 None ___ 1 Mild ___ 2 Marked

2) Function ___ 0 Complete ___ 1 Somewhat Limited ___ 2 Very Limited

25. Ankle

a. Right ankle

1) Range of motion

a) Plantar flexion ___ °

b) Dorsi flexion ___ °

2) Swelling ___ 0 Absent ___ 1 Present

3) Deformity ___ 0 Absent ___ 1 Present

4) Other abnormality ___ 0 Absent ___ 1 Present

If present, describe _____

b. Left ankle

1) Range of motion

a) Plantar flexion ___ °

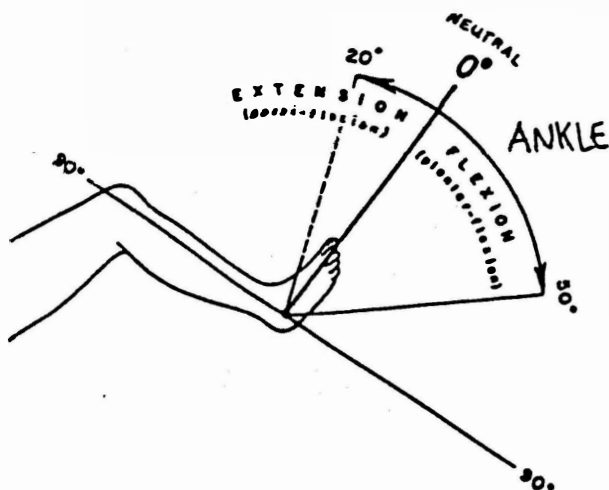
b) Dorsi flexion ___ °

2) Swelling ___ 0 Absent ___ 1 Present

3) Deformity ___ 0 Absent ___ 1 Present

4) Other abnormality ___ 0 Absent ___ 1 Present

If present, describe _____



26. Knee

a. Right knee

1) Range of motion

a) Flexion

0

b) Extension

0

2) Swelling

0 Absent

1 Present

3) Deformity

0 Absent

1 Present

4) Other abnormality

0 Absent

1 Present

If present, describe _____

b. Left knee

1) Range of motion

a) Flexion

0

b) Extension

0

2) Swelling

0 Absent

1 Present

3) Deformity

0 Absent

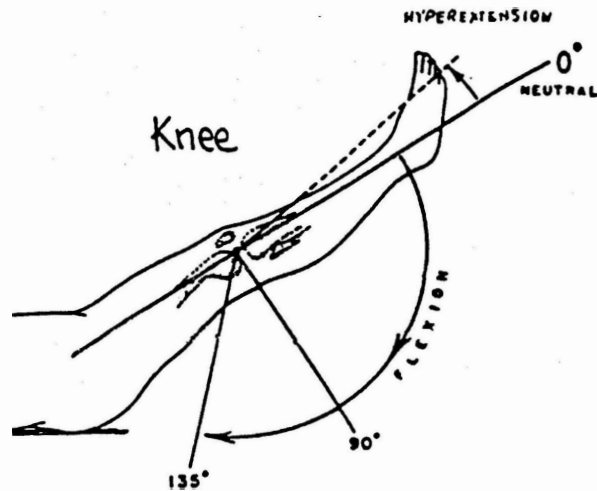
1 Present

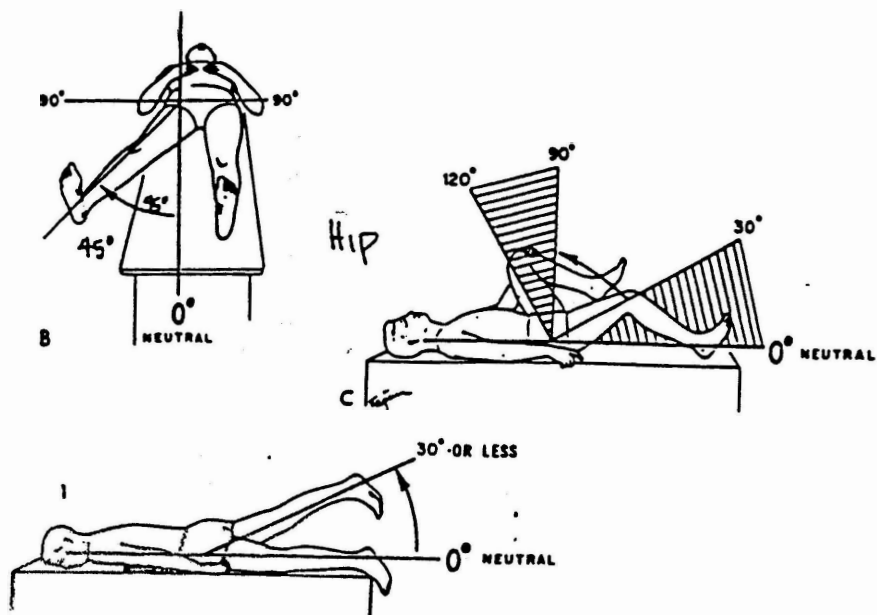
4) Other abnormality

0 Absent

1 Present

If present, describe _____





27. Hip

a. Right hip

1) Range of motion

- a) Abduction
- b) Flexion
- c) Extension

____ 0
____ 1
____ 0

2) Swelling

____ 0 Absent

____ 1 Present

3) Deformity

____ 0 Absent

____ 1 Present

4) Other abnormality

____ 0 Absent

____ 1 Present

If present, describe _____

b. Left hip

1) Range of motion

- a) Abduction
- b) Flexion
- c) Extension

____ 0
____ 1
____ 0

2) Swelling

____ 0 Absent

____ 1 Present

3) Deformity

____ 0 Absent

____ 1 Present

4) Other abnormality

____ 0 Absent

____ 1 Present

If present, describe _____

28. Back

a. Deformity

____ 0 Absent

____ 1 Present

1) If present, check all that apply:

- ____ 1 Scoliosis
- ____ 2 Kyphosis
- ____ 3 Increased lumbar lordosis
- ____ 4 Decreased lumbar lordosis
- ____ 5 Other (describe)

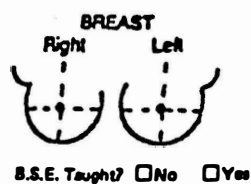
40. Groin maceration ☐ 0 No ☐ 1 Yes
41. Groin rash or other skin abnormality ☐ 0 No ☐ 1 Yes
 a. If yes, describe briefly _____
42. - 46. NOT APPLICABLE TO FEMALES
47. Urinary ostomy ☐ 0 Absent ☐ 1 Present
 a. If present, is it ☐ 0 Healed ☐ 1 Not healed
 b. Type
 ☐ 1 Suprapubic
 ☐ 2 Iliac loop
 ☐ 3 Iliac conduit
 ☐ 4 Nephrostomy tube
48. NOT APPLICABLE TO FEMALES
49. Artificial sphincter ☐ 0 Absent ☐ 1 Present
 a. If present, is it in ☐ 0 Good ☐ 1 Poor
 condition condition
 b. Type
 ☐ 1 _____
 ☐ 2 _____
50. Rectal sensation ☐ 0 Normal ☐ 1 Abnormal
51. Rectal sphincter tone ☐ 0 Normal ☐ 1 Increased/
 Decreased
52. Voluntary rectal sphincter control ☐ 0 Normal ☐ 1 Abnormal
53. Anal wink ☐ 0 Normal ☐ 1 Increased/
 Decreased
 a. right side
 b. left side ☐ 0 Normal ☐ 1 Increased/
 Decreased
54. - 55 NOT APPLICABLE TO FEMALES
56. Thyroid Exam ☐ 0 Normal ☐ 1 Abnormal

Breast Examination

	Right		Left	
	0 Normal	1 Abnormal	0 Normal	1 Abnormal
57. Lymphatics				
a. Supraclavicular	----	----	----	----
b. Infraclavicular	----	----	----	----
c. Lateral	----	----	----	----
d. Central	----	----	----	----
e. Subscapular	----	----	----	----
f. Pectoral	----	----	----	----

	Right		Left	
	0 Normal	1 Abnormal	0 Normal	1 Abnormal
58. Tissue				
a. Size	----	----	----	----
b. Symmetry	----	----	----	----
c. Contour	----	----	----	----

	Right		Left	
	0 Absent	1 Present	0 Absent	1 Present
d. Masses	----	----	----	----
e. Dimpling	----	----	----	----



Breast Examination (continued.)

	Right		Left	
	0 Normal	1 Abnormal	0 Normal	1 Abnormal
59. Skin				
a. Color	----	----	----	----
b. Edema	----	----	----	----
c. Venous pattern	----	----	----	----

	Right		Left	
	0 Normal	1 Abnormal	0 Normal	1 Abnormal
60. Areola				
a. Color	----	----	----	----
b. Size	----	----	----	----
c. Consistency	----	----	----	----
d. Mobility	----	----	----	----

	Right		Left	
	0 Absent	1 Present	0 Absent	1 Present
e. Tenderness	----	----	----	----

	Right		Left	
	0 Normal	1 Abnormal	0 Normal	1 Abnormal
61. Nipples				
a. Size	----	----	----	----
b. Shape	----	----	----	----
c. Consistency	----	----	----	----
d. Direction	----	----	----	----

	Right		Left	
	0 Absent	1 Present	0 Absent	1 Present
e. Rashes	----	----	----	----
f. Ulceration	----	----	----	----
g. Discharge	----	----	----	----
h. Retraction	----	----	----	----

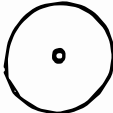
Pelvis

External	0 Normal	1 Abnormal	Comments
61. <u>Hair</u>	----	----	
62. <u>External Genitalia</u>	0 Normal	1 Abnormal	
a. Mons pubis	----	----	
b. Labia minora	----	----	
c. Clitoris	----	----	
d. Urethral orifice	----	----	
e. Vaginal opening	----	----	
f. Baratholin glands	----	----	

Vulva/Anus

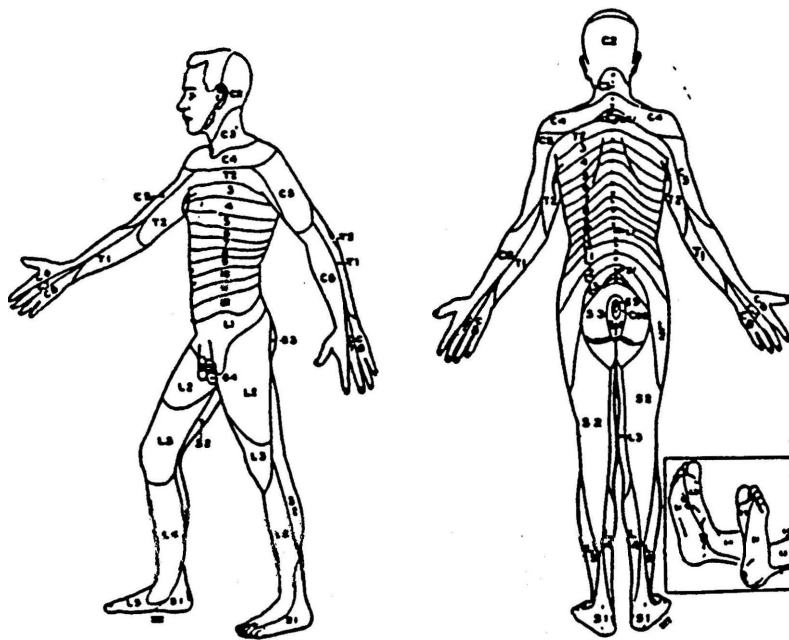


Cervix



Pelvis63. Internal Examination, continued

	0 Normal	1 Abnormal
h. Adnexa Left	----	----
1) size	----	----
2) shape	----	----
3) consistency	----	----
4) mobility	----	----
	0 Absent	1 Present
5) tenderness	----	----
	0 Normal	1 Abnormal
64. Perineum	----	----
65. Pap Smear done?	1 Yes ----	0 No ----
66. Date of last menstrual period: Began	-----	Ended -----
67. Hemocult test	---- 0 Normal	---- 1 Abnormal



APPENDIX D
Gynecologic Interview

SPINAL CORD INJURY

1. Do you know the level and completeness of your spinal cord injury (C-5, T-12, etc.)?

___ 0 No ___ 1 Yes ___ 0 Complete

a. If yes, what is it? _____ ___ 1 Incomplete

- 1) Do you know if that is your bony or neurological level?

___ 0 No ___ 1 Yes

If yes, what is it? ___ bony ___ neurological

If both bony and neurological levels are known, please list both and label which is which.

URINARY SYSTEM

1. What method of urinary management did you use when you first went home after your spinal cord injury?

___ 00 None (diapers, wet self, chux in bed, etc.)
 ___ 01 Indwelling urethral catheter
 ___ 02 Catheter free with external collector - uses reflex
 stimulation or external pressure to void
 ___ 03 Catheter free without external collector - uses reflex
 stimulation or external pressure to void
 ___ 04 Normal - no reflex stimulation or external pressure
 ___ 05 Intermittent catheterization - without external collector
 ___ 06 Intermittent catheterization - with external collector
 ___ 07 Conduit (drain for urine requiring surgery involving
 intestinal tract)
 ___ 08 Suprapubic catheter
 ___ 09 Other _____
 ___ 10 Missing

2. What is your present method of urinary management?

___ 00 None (diapers, wet self, chux in bed, etc.)
 ___ 01 Indwelling urethral catheter
 ___ 02 Catheter free with external collector - uses reflex
 stimulation or external pressure to void
 ___ 03 Catheter free without external collector - uses reflex
 stimulation or external pressure to void
 ___ 04 Normal - catheter free - no reflex stimulation or external
 pressure used
 ___ 05 Intermittent catheterization - without external collector
 ___ 06 Intermittent catheterization - with external collector
 ___ 07 Conduit (drain for urine requiring surgery involving
 intestinal tract)
 ___ 08 Suprapubic catheter
 ___ 09 Other _____
 ___ 10 Missing

a. How long have you used this method? _____

SKIN

1. Have you had any pressure sore problems in the past 12 months? We mean by a pressure sore, more than just a reddening of the skin. We mean any open break in the skin.

_____ 0 No _____ 1 Yes

- a. If yes, for each new sore, how many days did it last, on which part of the body did it occur, and did it interfere with daily activities?

Problem Number	Number of Days	Part of Body	Interfered with Daily Activities (Circle One)		
01	_____	_____	1 No	2 Some	3 A lot
02	_____	_____	1 No	2 Some	3 A lot
03	_____	_____	1 No	2 Some	3 A lot
04	_____	_____	1 No	2 Some	3 A lot
05	_____	_____	1 No	2 Some	3 A lot
06	_____	_____	1 No	2 Some	3 A lot
06	_____	_____	1 No	2 Some	3 A lot
07	_____	_____	1 No	2 Some	3 A lot
08	_____	_____	1 No	2 Some	3 A lot
09	_____	_____	1 No	2 Some	3 A lot
10	_____	_____	1 No	2 Some	3 A lot
11	_____	_____	1 No	2 Some	3 A lot
12	_____	_____	1 No	2 Some	3 A lot

If necessary, continue on back of page.

Genitourinary System

1. How old were you when you started having periods? _____
2. Have you already gone through menopause? ___ 0 No ___ 1 Yes
(usually defined as having no periods for 1 year)
3. When was your last period? ____/____ Interviewer: Ask, even if
mo. yr. last period was long ago.
4. How long did it last? _____ days
5. Are your periods regular or irregular?
___ 1 regular ___ 2 irregular ___ 8 not applicable
(not menstruating)

If irregular, please describe. _____
6. Are your periods:
___ 1 light ___ 2 moderate ___ 3 heavy ___ 8 Not applicable
(not menstruating)
7. Do your periods interfere with your bowel program?
___ 0 No ___ 1 Yes ___ 8 Not applicable
8. Do you ever get urinary tract infections with your periods?
___ 0 Never ___ 1 Occasionally ___ 2 Frequently
___ 3 Always ___ 8 Not applicable
9. Have you ever had any bleeding between periods?
___ 0 No ___ 1 Yes
10. After sexual intercourse, have you ever had any bleeding?
(Even if no longer menstruating.)
___ 0 No ___ 1 Yes
11. Have you ever had a vaginal infection?
___ 0 No ___ 1 Yes
12. If yes, have you had a vaginal infection in the past 12 months?
___ 0 No ___ 1 Yes ___ 8 Not applicable

13. Have you ever had skin breakdown associated with vaginal infection?
___ 0 No ___ 1 Yes ___ 8 Not applicable
14. If yes, have you had a skin breakdown associated with a vaginal infection in the past 12 months?
___ 0 No ___ 1 Yes ___ 8 Not applicable
15. Have you ever had a skin breakdown associated with a urinary tract infection?
___ 0 No ___ 1 Yes ___ 8 Not applicable
(never had a UTI)
16. If yes, have you had a skin breakdown associated with a urinary tract infection in the past 12 months?
___ 0 No ___ 1 Yes ___ 8 Not applicable
17. Have you had "hot flashes" or changes in mood associated with your menstrual cycle? (Including past menstrual periods, if no longer menstruating.)
___ 0 No ___ 1 Yes
18. Do you douche? ___ 0 No ___ 1 Yes
If yes, how often? _____
19. How long after your spinal cord injury did your periods resume? _____ months ___ 8 Not applicable
(periods ended before SCI)
20. Do you (or did you ever) experience any of the following before your period?:
(Interviewer: Ask, even if no longer menstruating.)
- a. Irritability ___ 0 No ___ 1 Yes
- b. Nervousness ___ 0 No ___ 1 Yes
- c. Abdominal bloating ___ 0 No ___ 1 Yes
- d. Headaches ___ 0 No ___ 1 Yes
- e. Breast tenderness ___ 0 No ___ 1 Yes
- f. Food cravings ___ 0 No ___ 1 Yes
- g. Diarrhea ___ 0 No ___ 1 Yes
- h. Weight gain ___ 0 No ___ 1 Yes
- i. Swelling of legs/
ankles ___ 0 No ___ 1 Yes

21. Do you change your own pads or tampons?

___ 0 No ___ 1 Yes ___ 8 Not applicable
(not menstruating)

If no, who helps you? _____

22. Approximately, how many tampons do you use with each period?

_____ 8 Not applicable

23. Approximately, how many pads do you use with each period?

_____ 8 Not applicable

24. Have you ever had any of the following?

a. D & C (dilation and curettage) ___ 0 No ___ 1 Yes

b. Conization (removal of a portion

of the cervix for ___ 0 No ___ 1 Yes

laboratory examination)

c. Ovaries removed ___ 0 No ___ 1 Yes

If yes, ___ one ovary

___ both ovaries

d. Vaginal hysterectomy ___ 0 No ___ 1 Yes

e. Abdominal hysterectomy ___ 0 No ___ 1 Yes

f. Tubal ligation (tubes cut) ___ 0 No ___ 1 Yes

25a. Are you currently sexually active? ___ 0 No ___ 1 Yes

25b. What kind of birth control do you practice currently?

(Check all that apply):

___ birth control pills

___ diaphragm

___ I.U.D.

___ foam, gel, and/or sponge

___ none, because I am sterile

___ none

___ other (describe)

26. Does your sexual partner use condoms?

___ 0 No ___ 1 Yes ___ 8 Not applicable
(no partner)

27. Is your sexual partner sterile?

___ 0 No ___ 1 Yes ___ 8 Not applicable
(no partner)

28. If you have already gone through menopause, have you ever taken hormone replacements (Premarin, etc.)?

___ 0 No ___ 1 Yes ___ 8 Not applicable
(have not gone through menopause)

29. If yes, are you taking hormone replacements currently?

___ 0 No ___ 1 Yes ___ 8 Not applicable

Pregnancy History

1. Have you ever had problems becoming pregnant?

___ 0 No ___ 1 Yes

a. Did you have this problem before your injury?

___ 0 No ___ 1 Yes

b. Have you had this problem since your injury?

___ 0 No ___ 1 Yes

2. Are you trying to get pregnant at this time?

___ 0 No ___ 1 Yes

3. Have you ever been pregnant? ___ 0 No ___ 1 Yes

(IF NO, SKIP TO BREAST HISTORY.)

4. If yes, how many times have you been pregnant? ___ times

Pregnancy History, continued

5. Have you ever had:

a. a miscarriage? ___ 0 No ___ 1 Yes If yes, how many? ___

b. a spontaneous abortion? ___ 0 No ___ 1 Yes

If yes, how many? ___

c. an elective abortion? ___ 0 No ___ 1 Yes

If yes, how many? ___

d. an ectopic pregnancy? ___ 0 No ___ 1 Yes
(pregnancy in your tubes)

If yes, how many? _____

e. a stillbirth? ___ 0 No ___ 1 Yes If yes, how many? ___

6. How many live births have you had? _____

7. How many living children do you have now? _____

8. Do you have any children by adoption? ___ 0 No ___ 1 Yes

If yes, how many? _____

9. Have you given any children up for adoption?

___ 0 No ___ 1 Yes If yes, how many? _____

10. How many children did you have before your injury? _____

11. How many children have you had since your injury? _____

12. How many of your children were delivered vaginally? _____

13. How many of your children were delivered by cesarean
section? _____

14. Were there any complications with any deliveries?

___ 0 No ___ 1 Yes If yes, please describe:

Pregnancy History, continued

15. During any of your pregnancies, did you experience any of the following:

urinary tract infection? ___ 0 No ___ 1 Yes

bowel irregularity? ___ 0 No ___ 1 Yes

skin breakdown? ___ 0 No ___ 1 Yes

nausea? ___ 0 No ___ 1 Yes

vomiting? ___ 0 No ___ 1 Yes

blood pressure problems? ___ 0 No ___ 1 Yes

blood sugar problems? ___ 0 No ___ 1 Yes

pre-delivery labor? ___ 0 No ___ 1 Yes
(false labor - not Braxton-Hicks contractions)

bleeding? ___ 0 No ___ 1 Yes

16. During any of your pregnancies, did you need to change your position (weight shifts, etc.) more frequently than usual?

Interviewer: Ask, even if pregnancy was before SCI.

___ 0 No ___ 1 Yes

Breast History

1. Do you usually wear a bra? ___ 0 No ___ 1 Yes

2. Do you routinely examine your breasts? ___ 0 No ___ 1 Yes

If yes, how often? _____

3. Have you ever had any pain or discomfort in your breasts?

___ 0 No ___ 1 Yes If yes, please describe _____

Breast History, continued

4. Have you ever had:

a. unexpected discharge from your breasts?

___ 0 No ___ 1 Yes

If yes, color:

___ 1 bloody

___ 2 clear

___ 3 milky (pus)

and amount:

___ 1 light

___ 2 moderate

___ 3 heavy

b. fibrocystic disease? ___ 0 No ___ 1 Yes
(lumpy breasts)

c. a noncancerous lump? ___ 0 No ___ 1 Yes

If yes, when? _____

d. a cancerous lump? ___ 0 No ___ 1 Yes

If yes, when? _____

e. a breast biopsy? ___ 0 No ___ 1 Yes

If yes, was it ___ a needle biopsy or
___ an open (cut) biopsy?

If yes, when? _____

f. a mastectomy (all of breast removed)?

___ 0 No ___ 1 Yes

If yes, when? _____

Breast History, continued

4. Have you ever had:

g. a lumpectomy (part of breast removed)

___ 0 No ___ 1 Yes

If yes, when? _____

h. a mammogram? ___ 0 No ___ 1 Yes

If yes, when was last one? ____/____
mo. yr.

i. other breast surgery? ___ 0 No ___ 1 Yes

If yes, when? _____

Please describe: _____

5. If you had children, did you breast feed any of them?

___ 0 No ___ 1 Yes ___ 8 Not applicable
(never had children)

If yes, how many of them did you breast feed? _____

How long per child? Child # 1 _____ months

Child # 2 _____ months

Child # 3 _____ months

Child # 4 _____ months

Child # 5 _____ months

APPENDIX E

Perceived Control Questionnaire

PERCEIVED CONTROL QUESTIONNAIRE

The purpose of this questionnaire is to determine the contribution of control toward your feelings, beliefs, and value systems in relation to yourself, others and the environment.

On a scale of 1 to 3 circle your best response.

- 1 = No Control
2 = Moderate Control
3 = Total Control

1. How much control do you feel you have over the following factors:

- | | | | |
|--|---|---|---|
| A. Your work situation (including homemaking)? | 1 | 2 | 3 |
| B. Your personal relationships with others? | 1 | 2 | 3 |
| C. Making yourself well if you are ill? | 1 | 2 | 3 |
| D. A nurse's care in an illness? | 1 | 2 | 3 |
| E. Over yourself in everyday activities? | 1 | 2 | 3 |
| F. Setting personal goals? | 1 | 2 | 3 |
| G. Setting work/homemaking related goals? | 1 | 2 | 3 |
| H. Your actions in social situations? | 1 | 2 | 3 |
| I. Obtaining what's important to you? | 1 | 2 | 3 |
-

2. How much control do you feel you have over answering this questionnaire?

1 2 3

3. How much control do you feel you have over the following factors:

- | | | | |
|--|---|---|---|
| A. Your feelings under stress? | 1 | 2 | 3 |
| B. Your ability to cope under stress? | 1 | 2 | 3 |
| C. Your ability to routinely solve problems? | 1 | 2 | 3 |
| D. Participation in volunteer activities? | 1 | 2 | 3 |
| E. Your ability to resist pressure from others? | 1 | 2 | 3 |
| F. Your ability to accept responsibility for your actions? | 1 | 2 | 3 |

1 = No Control 2 = Moderate Control 3 = Total Control

- | | | | | |
|----|---|---|---|---|
| G. | Your ability to assume responsibility
for the actions of others? | 1 | 2 | 3 |
| H. | Your feelings of self-consciousness? | 1 | 2 | 3 |

4. How much control do you feel you have over
the following factors:

- | | | | | |
|----|--|---|---|---|
| A. | The good things in your life? | 1 | 2 | 3 |
| B. | Your ability to cope with life in general? | 1 | 2 | 3 |
| C. | Your ability to cope with rejection from others? | 1 | 2 | 3 |
| D. | The ability of others to cope when you reject
them? | 1 | 2 | 3 |

5. What extent of control do you have over the
following factors:

- | | | | | |
|----|---|---|---|---|
| A. | Being critical of yourself? | 1 | 2 | 3 |
| B. | Congratulating yourself on a job well done? | 1 | 2 | 3 |
| C. | Accepting praise of your work/homemaking
from others? | 1 | 2 | 3 |
| D. | Accepting criticism of your work/homemaking
from others? | 1 | 2 | 3 |
| E. | Loyalty to yourself? | 1 | 2 | 3 |
| F. | Loyalty to others? | 1 | 2 | 3 |
| G. | Loyalty to your work/homemaking? | 1 | 2 | 3 |
| H. | Loyalty to your religious beliefs? | 1 | 2 | 3 |
| I. | Your independence? | 1 | 2 | 3 |
| J. | Giving of yourself to others in need? | 1 | 2 | 3 |

6. What extent of control do you have over the
following factors:

- | | | | | |
|----|--|---|---|---|
| A. | Situations based on competition? | 1 | 2 | 3 |
| B. | Cooperating with others in a variety of
situations? | 1 | 2 | 3 |
| C. | Feelings of insecurity? | 1 | 2 | 3 |

1 = No Control 2 = Moderate Control 3 = Total Control

D. Feelings of anxiety?	1	2	3
E. Feelings of depression?	1	2	3
F. Feelings of hostility toward yourself?	1	2	3
G. Feelings of hostility toward others?	1	2	3
H. Doing what you want to do?	1	2	3
I. Dealing with reality?	1	2	3
J. Adjusting your attitude from situation to situation?	1	2	3
K. Having a positive mental attitude about life?	1	2	3
L. Basing your life on a personal value system?	1	2	3
M. Using a positive mental attitude when judging others?	1	2	3

7. What degree of control do you have in the following situations:

A. Making a failure into a success?	1	2	3
B. Coping with succeeding at a task within your control?	1	2	3
C. Coping with succeeding at a task due to factors beyond your control?	1	2	3
D. Coping with failure at a task within your control?	1	2	3
E. Coping with failure at a task due to factors beyond your control?	1	2	3
F. Being consistent in dealing with problems?	1	2	3
G. Dealing with problems from personal strength?	1	2	3

8. How much control do you think you have over:

A. Your life?	1	2	3
B. Your work/homemaking situation?	1	2	3
C. Your health?	1	2	3
D. Others?	1	2	3

1 = No Control 2 = Moderate Control 3 = Total Control

9. How much control do you really have over:

- | | | | |
|--|---|---|---|
| A. Your life? | 1 | 2 | 3 |
| B. Your work/homemaking situation? | 1 | 2 | 3 |
| C. Your health? | 1 | 2 | 3 |
| D. <u>Others?</u> | 1 | 2 | 3 |

APPENDIX F
Health-Promoting Lifestyle Profile

LIFESTYLE PROFILE

DIRECTIONS This questionnaire contains statements regarding your *present* way of life or personal habits. Please respond to each item as accurately as possible, and try not to skip any item. Indicate the regularity with which you engage in each behavior by circling:

N for never, S for sometimes, O for often, or R for routinely.

	NEVER	SOMETIMES	OFTEN	ROUTINELY
1 Eat breakfast.	N	S	O	R
2 Report any unusual signs or symptoms to a physician.	N	S	O	R
3 Like myself.	N	S	O	R
4 Perform stretching exercises at least 3 times per week.	N	S	O	R
5 Choose foods without preservatives or other additives.	N	S	O	R
6 Take some time for relaxation each day.	N	S	O	R
Have my cholesterol level checked and know the result.	N	S	O	R
8 Am enthusiastic and optimistic about life.	N	S	O	R
9 Feel I am growing and changing personally in positive directions.	N	S	O	R
10 Discuss personal problems and concerns with persons close to me.	N	S	O	R
11 Am aware of the sources of stress in my life.	N	S	O	R
12 Feel happy and content.	N	S	O	R
13 Exercise vigorously for 20-30 minutes at least 3 times per week.	N	S	O	R
14 Eat 3 regular meals a day.	N	S	O	R
15 Read articles or books about promoting health.	N	S	O	R
16 Am aware of my personal strengths and weaknesses.	N	S	O	R
17 Work toward long-term goals in my life.	N	S	O	R
18 Praise other people easily for their accomplishments.	N	S	O	R
19 Read labels to identify the nutrients in packaged food.	N	S	O	R
20 Question my physician or seek a second opinion when I do not agree with recommendations.	N	S	O	R
21 Look forward to the future.	N	S	O	R
22 Participate in supervised exercise programs or activities.	N	S	O	R
23 Am aware of what is important to me in life.	N	S	O	R

Lifestyle Profile (cont.)

	NEVER	SOMETIMES	OFTEN	ROUTINELY
24 Enjoy touching and being touched by people close to me.	N	S	O	R
25 Maintain meaningful and fulfilling interpersonal relationships.	N	S	O	R
26 Include roughage/fiber (whole grains, raw fruits, raw vegetables) in my diet.	N	S	O	R
27 Practice relaxation or meditation for 15-20 minutes daily.	N	S	O	R
28 Discuss my health care concerns with qualified professionals.	N	S	O	R
29 Respect my own accomplishments.	N	S	O	R
30 Check my pulse rate when exercising.	N	S	O	R
31 Spend time with close friends.	N	S	O	R
32 Have my blood pressure checked and know what it is.	N	S	O	R
33 Attend educational programs on improving the environment in which we live.	N	S	O	R
34 Find each day interesting and challenging.	N	S	O	R
35 Plan or select meals to include the "basic four" food groups each day.	N	S	O	R
36 Consciously relax muscles before sleep.	N	S	O	R
37 Find my living environment pleasant and satisfying.	N	S	O	R
38 Engage in recreational physical activities (such as walking, swimming, soccer, bicycling, rolling, wheelchair sports).	N	S	O	R
39 Find it easy to express concern, love and warmth to others.	N	S	O	R
40 Concentrate on pleasant thoughts at bedtime.	N	S	O	R
41 Find constructive ways to express my feelings.	N	S	O	R
42 Seek information from health professionals about how to take good care of myself.	N	S	O	R
43 Observe my body at least monthly for physical changes/danger signs.	N	S	O	R
44 Am realistic about the goals that I set.	N	S	O	R
45 Use specific methods to control my stress.	N	S	O	R
46 Attend educational programs on personal health care.	N	S	O	R
47 Touch and am touched by people I care about.	N	S	O	R
48 Believe that my life has purpose.	N	S	O	R

Northern Illinois University 
DeKalb, Illinois 60115-2854

Health Promotion Research Program
Social Science Research Institute
Ambulatory Cancer Clients Project
Cardiac Rehabilitation Project
Corporate Project
Older Adults Project
(815) 753-9670

May 31, 1989

Susan Burns
3009 Houston Ave.
Houston, TX 77009

Dear Ms. Burns:

I enjoyed talking with you on the telephone about your proposed study last week. You have permission to use the 48-item Health-Promoting Lifestyle Profile in your study of the relationship between health conception, perceived control of health, self-efficacy and health-promoting lifestyle among women with spinal cord injury. You may have copies made from the form which is enclosed. Content should not be altered in any way and the copyright/permission statement at the end must be reproduced.

There is no charge for approved research use, but I would appreciate receiving a complete report of your study for our files. We are particularly interested in information about scores (range, mean and standard deviation) on the Lifestyle Profile, reliability coefficients, and correlations with other measured variables. I would also be most interested in seeing a copy of your instrument to measure self-efficacy and perceived control of health.

Best wishes with your study.

Sincerely,



Susan Noble Walker, Ed.D., R.N.
Associate Professor and
Co-Director, Health Promotion Research Program

Encl.

APPENDIX G
Perceived Stress Scale

Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts during the last month. Please indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is: don't try to count up the number of times you felt a particular way, but do indicate a reasonable estimate.

1. In the last month, how often have you been upset because of something that happened unexpectedly?

 __ 0 never __ 1 almost never __ 2 sometimes
 __ 3 fairly often __ 4 very often
2. In the last month, how often have you felt that you were unable to control the important things in your life?

 __ 0 never __ 1 almost never __ 2 sometimes
 __ 3 fairly often __ 4 very often
3. In the last month, how often have you felt nervous and "stressed"?

 __ 0 never __ 1 almost never __ 2 sometimes
 __ 3 fairly often __ 4 very often
4. In the last month, how often have you felt confident about your ability to handle your personal problems?

 __ 0 never __ 1 almost never __ 2 sometimes
 __ 3 fairly often __ 4 very often
5. In the last month, how often have you felt that things were going your way?

 __ 0 never __ 1 almost never __ 2 sometimes
 __ 3 fairly often __ 4 very often
6. In the last month, how often have you found that you could not cope with all the things you had to do?

 __ 0 never __ 1 almost never __ 2 sometimes
 __ 3 fairly often __ 4 very often

Perceived Stress Scale, p. 2.

7. In the last month, how often have you been able to control irritations in your life?

☐ 0 never ☐ 1 almost never ☐ 2 sometimes
☐ 3 fairly often ☐ 4 very often

8. In the last month, how often have you felt that you were on top of things?

☐ 0 never ☐ 1 almost never ☐ 2 sometimes
☐ 3 fairly often ☐ 4 very often

9. In the last month, how often have you been angered because of things that happened that were outside of your control?

☐ 0 never ☐ 1 almost never ☐ 2 sometimes
☐ 3 fairly often ☐ 4 very often

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

☐ 0 never ☐ 1 almost never ☐ 2 sometimes
☐ 3 fairly often ☐ 4 very often

The questions you have been answering deal with the subject of stress. We would like to know, how interested are you in participating in a stress-management program?

☐ very interested
☐ somewhat interested
☐ not at all interested

APPENDIX H

Center for Epidemiologic Studies Depression Scale

CES - D Scale

Instructions: This is a list of the ways you might have felt or behaved. How often have you felt this way during the past week.

	Rarely or none of the time	Some or a little of the time	Occasionally or a moder- ate amount of the time	Most or all of the time
During the past week:	Less than 1 Day	1-2 Days	3-4 Days	5-7 Days
1. I was bothered by things that usually don't bother me.				
2. I did not feel like eating, my appetite was poor.				
3. I felt that I could not shake off the blues even with help from my family or friends.				
4. I felt that I was just as good as other people.				
5. I had trouble keeping my mind on what I was doing.				
6. I felt depressed.				
7. I felt that everything I did was an effort.				
8. I felt hopeful about the future.				
9. I thought my life had been a failure.				
10. I felt fearful.				
11. My sleep was restless.				

	Rarely or none of the time	Some or a little of the time	Occasionally or a moder- ate amount of the time	Most or all of the time
During the past week:	Less than 1 Day	1-2 Days	3-4 Days	5-7 Days
12. I was happy.				
13. I talked less than usual.				
14. I felt lonely.				
15. People were unfriendly.				
16. I enjoyed life.				
17. I had crying spells.				
18. I felt sad.				
19. I felt that people dislike me.				
20. I could not get "going".				

APPENDIX I
Life Satisfaction Index-A

The Modified Life Satisfaction Index A (LSIA-A)

Instructions: Indicate whether you agree or disagree with the following statements.

	Agree	Disagree	Uncertain
1. I am just as happy as when I was younger.			
2. These are the best years of my life.			
3. My life could be happier than it is now.			
4. This is the dreariest time of my life.			
5. Most of the things I do are boring or monotonous.			
6. Compared to other people, I get down in the dumps too often.			
7. The things I do are as interesting to me as they ever were.			
8. I have made plans for things I'll be doing a month or year from now.			
9. Compared to other people my age, I make a good appearance.			
10. As I grow older, things seem better than I thought they would be.			
11. I expect some interesting and pleasant things to happen to me in the future.			
12. I feel old and somewhat tired.			
13. As I look back on my life, I am fairly well satisfied.			
14. I would not change my past even if I could.			
15. I've gotten pretty much what I expected out of life.			
16. When I think back on my life, I didn't get most of the important things I wanted.			
17. In spite of what people say, the lot of the average man is getting worse, not better.			
18. I have gotten more of the breaks in life than most of the people I know.			

	Rarely or none of the time	Some or a little of the time	Occasionally or a moder- ate amount of the time	Most or all of the time
During the past week:	Less than 1 Day	1-2 Days	3-4 Days	5-7 Days
19. I was happy.				
20. I talked less than usual.				
21. I felt lonely.				
22. People were unfriendly.				
23. I enjoyed life.				
24. I had crying spells.				
25. I felt sad.				
26. I felt that people dislike me.				
27. I could not get "going".				

APPENDIX J

Index of Psychological Well-being

IPWB

Instructions: Here is a list that describes some of the ways people feel at different times. How often do you feel each of these ways?

	0 Never	1 Sometimes	3 Often
1. Very lonely or remote from other people			
2. Bored			
3. On top of the world			
4. Vaguely uneasy about something without knowing why			
5. Depressed or very unhappy			
6. Particularly excited or interested in something			
7. So restless you had to move about			
8. Pleased about having accomplished something			

APPENDIX K

Summary Letter from Physician

Dear Ms. _____ DATE OF REPORT: _____

Thank you very much for participating in the "Rehabilitation Research and Training Center in Community-Oriented Services for Persons with Spinal Cord Injury." Based upon our examination and laboratory studies, the following findings were noted. The recommendations are presented on a system-by-system basis.

This summary reflects areas identified in our screening studies which may warrant further medical evaluation or treatment. Our studies and examinations, although relatively comprehensive, admittedly do not cover all potential problems areas, nor are the evaluations necessarily complete. Similarly, this report does not outline every normal and/or abnormal finding; rather, it represents an effort to alert you to the problem areas which may need to be pursued.

As you know, if you choose, we will send your physician copies of our findings and of this report. It is our hope that you will discuss your findings and our recommendations with him or her. Certainly you or your physician may feel free to contact me if you have any questions concerning these matters.

Head, eyes, ears, nose and throat:

Cardiovascular:

Pulmonary:

Gastrointestinal:

Genitourinary:

Skeletal:

Neuromuscular:

Skin:

Hematologic:

Endocrine/Metabolic:

Nutritional Status:

Psychologic:

[Office Use: Summary Index ____]

Participant's Name _____

Comments/Recommendations:

Based on these findings, the following recommendations are made:

Again, thank you very much for your participation in our study.

Sincerely,

Rebecca R. Clearman, M.D.
Assistant Professor, Baylor College of Medicine
Telephone: 799-5000

APPENDIX L

Human Subjects and Agency Approval

TEXAS WOMAN'S UNIVERSITY
DENTON DALLAS HOUSTON
HUMAN SUBJECTS REVIEW COMMITTEE - HOUSTON CENTER

EXEMPT FROM HSRC REVIEW

If it is the decision of the research committee (for student research) or the department coordinator (for faculty research) that the proposed research is exempt from expedited or full review by the Human Subjects Review Committee (HSRC), please complete the following form. A copy of this properly signed form must be submitted to the chairman of the HSRC.

Principal investigator: Susan Kay Runchuck
Social Security Number: 314-54-6368
Title of the research: Perceived Control and Health-Promoting Behaviors as Predictors of Life Satisfaction and Well-being Outcomes of Women with Long-term Spinal Cord Injury

Cord Injury

1. Give a brief description of the study (use continuation pages or attachments, if necessary). Describe the procedure that relates to the subjects' participation, i.e., what will the subjects do or what will be done to them.

The data for this study was collected in a prospective federally funded study at The Institute for Rehabilitation and Research under their Human Subjects Approval as a paid pre-doctoral fellow as part of a fellowship program in Rehabilitation Research. The data for the dissertation is analyzed retrospectively.

2. What are the potential risks to the human subjects involved in this research or investigation (use continuation pages if necessary)? Since the dissertation uses previously collected data, no subject identifiers or subject numbers are included for data reduction purposes. All data are in a locked research cabinet at the Rehabilitation Research Office with data analysis to be performed on their computers to protect the integrity of the data. These safeguards protect against subject breach of confidentiality risk

I certify that this research meets the requirements for being exempt from review by the HSRC as specified in the Human Subjects Program Guideline (March 1986, revised). Three committee members sign for paper or thesis, and all committee members sign for the dissertation research.

Dorothy Harnick Chairman, research committee, Date 3-05-91
Robin Buehler committee member
Terrell H. Harnick committee member
_____ committee member
_____ committee member

or, in the case of faculty research

_____ Department Coordinator, Date _____

Department _____

Date received by HSRC Chairman _____	Initials _____
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HSRC Houston
Fall 1990

TEXAS WOMAN'S UNIVERSITY
COLLEGE OF NURSING
DENTON, TEXAS 76204

DALLAS CENTER
1810 INWOOD ROAD
DALLAS, TEXAS 75235

HOUSTON CENTER
1130 M. D. ANDERSON BLVD.
HOUSTON, TEXAS 77030

AGENCY PERMISSION FOR CONDUCTING STUDY*

THE Institute for Rehabilitation and Research

GRANTS TO Susan Kay Nunchuck

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

Perceived Control and Health-Promoting Behaviors as Predictors of Life
Satisfaction and Well-being Outcomes of Women with Long-term Spinal
Cord Injury

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 to meet - to - final draft of

Date: January 21, 1991

Susan Kay Nunchuck
Signature of Student

M. Farber
Signature of Agency Personnel

Donna M. Nunchuck, Ph.D.
Signature of Faculty Advisor

* Fill out and sign three copies to be distributed as follows: Original-Student;
First copy - agency; Second copy - TWU College of Nursing.

/bc