An Investigation of Pattern Manifestations in Substance Abuse Impaired Nurses

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Submitted in partial fulfillment of the requirements for the Degree of Doctor of Nursing Science.
DEDICATION

This dissertation is dedicated to my husband
and best friend, Joe.
and my two terrific sons,
Shea and Brendan.
whose support and understanding assisted in the
completion of this life dream.
I thank them for their endless
prayers, patience, and encouragement.
I am blessed to have each one of you in my life
and I love all of you so much.
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ABSTRACT

An Investigation of Pattern Manifestations in Substance Impaired Nurses

Substance abuse impairment in nursing is a problem affecting both the profession and society. Many impaired nurses are not identified until symptoms are very apparent and patients are at risk. The purposes of this study were to investigate early risk factors that lead to substance abuse impairment, and to predict group membership between impaired (SI) and non-impaired (NSI) registered nurses. The theoretical framework for this study was a synthesis of Donovan’s multifactorial model of impairment (Donovan, 1986), and Rogers’ (1970, 1992) Science of Unitary Human Beings.

Data was gathered from 100 previously impaired (SI) and 100 non-impaired nurses (NSI). Nurses were found through the Internet. Three questionnaires were used: the Zuckerman Sensation Seeking Scale (SSS) (Zuckerman, 1974), the Efinger Alcohol Risk Survey (EARS) (Efinger, 1984), and the Children of Alcoholics Screening Test (CAST) (Jones, 1981). The CAGE questionnaire (Ewing, 1984) was used only for the NSI nurses as a screening tool to evaluate whether they were non-impaired, as defined in the study.

Pearson’s correlations demonstrated a significant relationship between scores on the EARS and SSS ($r = .37, p = .01$), and the EARS and CAST ($r = .51, p = .01$) for the SI nurses. For the NSI nurses, Pearson’s correlations demonstrated a significant relationship only between scores on the EARS and CAST instruments ($r = .31, p = .01$). Independent
t-test scores demonstrated the groups differed significantly on all three of the instrument total scores (SSS: \( t = 8.30, \; df = 181.6, \; p = .001 \)) (EARS: \( t = 18.71, \; df = 182.1, \; p = .001 \)) (CAST: \( t = 7.91, \; df = 185.7, \; p = .001 \)). Discriminant analysis indicated a correct prediction of 87% for SI membership and 95% for NSI membership, with an overall rate of 91%. EARS scores had the strongest correlation (.99) and was the best predictor of group membership, followed by SSS (.44) and CAST (.42) scores. The results indicated that the three variables can be used to identify early risk factors for substance abuse impairment. Identification of nurses at risk for impairment will allow for earlier intervention and possible prevention. Methods to reduce the number of modifiable risk factors are recommended.
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CHAPTER I
INTRODUCTION

Substance abuse impairment in the nursing profession has existed for at least the last 150 years. Historical research done by Church (1985) reported that intoxication on the job was a common occurrence during the mid nineteenth century when Florence Nightingale began her work. Nurses were dismissed from their jobs for drunkenness.

The problem of nurses with substance impairment gained increased awareness in the 1980s when the American Nurses’ Association (ANA) first addressed the issue. The ANA (1984) defined an impaired nurse as one who “has impaired functioning which results from alcohol or drug misuse and which interferes with professional judgment and the delivery of safe, high quality care” (p. 18). Research on impairment increased during the 1980s but focused on identification, attitudes about, effects, and consequences of impairment (Hendrix, Sabritt, McDaniel, & Field, 1987; LaGodna & Hendrix, 1989; Markey, 1994; Tranburger, 1991). There was little focus on the antecedents that lead to impairment or interventions that can be taken to prevent nurses from becoming impaired. The few studies that have identified antecedents of substance abuse impairment (Burns, 1991; Haack, 1985), have not differentiated early from late antecedents.

This study was designed to identify nurses who had early manifestations that may lead to substance abuse impairment. This knowledge could lead to an increased understanding of when to intervene through counseling and education. Identification
of those at risk for impairment will allow for earlier intervention and possible prevention of nurses becoming substance impaired. Methods to reduce the degree or number of antecedents could be implemented. Continuing education as well as nursing school curricula could be adapted to include more content on early identification and prevention of substance abuse impairment.

The instruments that were used in this study measure early manifestations of impairment rather than late signs (Efinger Alcohol Risk Survey, 1984; Jone’s Children of Alcoholics Screening Tool, 1984; Zuckerman Sensation-Seeking Survey, 1975). People with early manifestations of substance abuse impairment have less stigma attached to them than people with later manifestations of impairment. Judgmental attitudes are usually lower toward those with early manifestations than they are towards those with later manifestations (Bissel & Haberman, 1984). When asked to identify early manifestations of impairment within themselves, people are usually less defensive about identifying early manifestations than they are in identifying later manifestations (Efinger, 1984). Denial of early manifestations is usually lower in those who are fearful regarding their risk for substance abuse impairment.

**Purposes of the Study**

The purposes of this study were to investigate early risk factors that lead to substance abuse impairment, and to discriminate between impaired and non-impaired registered nurses based on those identified risk factors.
Statement of the Problem

Nurses are at high risk for substance impairment. Kabb (1984) found the incidence of nurse’s substance impairment to be 50% higher than the general population. Whether nurses are at higher risk than the general public continues to be debated. The statistics are varied as to the prevalence of substance impairment in nurses, and range from 5% to 20%. While there are no accurate statistics about the prevalence of substance abuse among nurses, the incidence of impairment has been estimated in one study to include 5% to 6% of all nurses, which is similar to the rest of the population (Sullivan, Bissel, & Williams, 1988). Buxton and Jessop (1985) found that 8% to 10% of nurses are substance dependent, while Curtin (1987) estimated that between 10% and 20% of all practicing nurses suffer from substance abuse. According to Naegle (1988), the regulatory activities of state boards of nursing show that impaired practice has been identified increasingly as the reason for disciplinary action such as suspension or termination of licensure. The debate continues as to whether nurses have the same or a higher rate of impairment than the average population.

Many nurses who become impaired are not identified until symptoms are very apparent and patients are at risk. There is a lack of research and knowledge about the early risk factors leading to impairment in nursing. If the profession of nursing is to move toward prevention and early detection of substance abuse impairment, nurses must be knowledgeable about risk factors and their assessment in nurses and student nurses.
Research Questions

The following research questions were addressed:

1. What are the relationships among early risk indicators, sensation seeking behaviors, and parental drug/alcohol history in substance impaired nurses?

2. What are the relationships among early risk indicators, sensation seeking behaviors, and parental drug/alcohol history in non-impaired nurses?

3. Do impaired and non-impaired nurses differ in pattern profiles for early risk indicators, sensation seeking behaviors, and parental drug/alcohol history?

4. Do pattern profiles for early risk indicators, sensation seeking behaviors, and parental drug/alcohol history distinguish between impaired and non-impaired nurses?

Conceptual Framework

No one theory adequately explains the phenomena of substance abuse impairment. Theoretical explanations have consistently attempted to understand the unique relationship of individuals to their environment that results in maladaptive responses and impairment. The phenomenon of substance abuse impairment is complex and there is no one identified set of risk factors or characteristics that account for substance abuse impairment.
The framework for the present research study is based on a synthesis of Donovan's multifactorial model of impairment (Donovan, 1986) and Rogers' (1970, 1992) Science of Unitary Human Beings. This framework centers around the premise that individual factors cannot predict the onset of substance abuse impairment. Only through interaction of characteristics and risk factors (individual, family, social, psychological, environmental, etc.) can the phenomenon of impairment occur (Naegle, 1988). Multiple risk factors and characteristics influence the diverse patterns that evolve within each individual. Substance abuse impairment is a complex phenomenon.

**Donovan Multifactorial Model**

Donovan (1986) described a multifactorial model of impairment that acknowledges all research-supported risk factors for impairment, but allows for them to be dynamic, flexible, and varying in importance when contributing to impairment. Risk factors in the model include heredity, family history, gender, psychological deficits, antisocial personality, ego weakness, and sociocultural factors (Donovan, 1986). There are various ranges or degrees of impairment along a continuum. Individuals share common characteristics and risk factors, but development, progression, and severity vary on the continuum. The multifactorial model proposes that there is no linear causality. Risk factors are not rigidly constant, and individuals have unique combinations of contributing factors. The model explains a series of etiological patterns with the outcome being substance abuse impairment. Individuals may
manifest a complexity of contributing factor patterns as they develop substance abuse impairment.

The multifactorial model also includes mediating factors which can impede or encourage the development of impairment. Mediating factors in the model are identified as the environment (social class, adoption, etc.), family dynamics, personality (ego weakness, antisocial personality), and interactional patterns. Mediating factors can be changed or moderated to either maintain impairment or to protect against becoming impaired. Donovan proposes that personality, heredity, and environmental factors should be included in the same research study since it is the dynamic relationship among these dimensions that needs to be studied.

Rogerian Science of Unitary Human Beings (SUHB)

The present research study is also supported by Rogerian theory based on the belief that impairment occurs in a continuous process within an individual, not as a result of a singular cause. The individual is an open system continuously evolving and developing a diverse pattern. Impairment is a manifestation occurring within this process.

Martha Rogers’ SUHB allows for a wide range of manifesting characteristics in substance abuse impairment (Rogers, 1970; Rogers, 1992). In Rogers’ model, people and the environment are irreducible, pandimensional energy fields integral to one another. Person is defined by Rogers as an open system, that is, “an irreducible, indivisible, pandimensional energy field identified by patterns and manifesting
characteristics that are specific to the whole and which cannot be predicted from knowledge of the parts” (Rogers, 1992, p. 29). Individuals and their associated manifestations must be understood in totality, not as part of a network or as a division.

Environmental and human systems are open systems identified by patterns, or distinguishing characteristics, of the energy field. The nature of the pattern changes continuously, and each human field pattern is unique and integral with the environmental field. The model includes the concept of “developmental diversity” for the individual with pattern changes not determined in a cause and effect manner but evolving as the human energy field expands and becomes increasingly complex.

Rogers has not interpreted substance abuse in her conceptual framework, but according to Naegle (1988), this theoretical perspective would define substance abuse as a manifestation of the pattern and organization of a unique energy field of the individual unitary being. The diverse patterns of substances and their quantity, interacting with patterns of the unique human field, and in a pattern of frequency of use is explained by Rogers’ Principle of Integrality. Integrality is about the connectedness of energy fields through continuous mutual process.

Compton (1988) was one of the first nursing authors to explore the concept of addiction from a Rogerian point of view. She presented an example of a heroin addict, conceptualizing the addict as a high-frequency, diverse human energy field with a low-frequency, impoverished environmental field (Compton, 1988). Drug use provides an alternative way to participate in the mutual process. Getting “high” is conceptualized
as a means to increase an individual’s awareness of the pandimensional nature of reality. Compton described the integral nature of the individual and the environment with examples of the increasing diversity that occur in each because of addiction.

Individuals make choices which affect their well-being. Often choices lead to higher risk behaviors and determine an individual’s pattern manifestations. Risk factors in the environment are influential forces in process with the human field. Risk factors and characteristics influence the pattern manifestations of each human energy field. The focus of research is to understand the individual’s unique pattern and to identify early pattern manifestations of a nurse with substance abuse impairment. Identification of these early risk patterns would help the nursing profession and society lead to a change in pattern toward healthy life choices. Knowledge of early risk patterns would allow nurses to choose to avoid these patterns and could possibly prevent the development of substance abuse impairment.

**Synthesis of the Two Models: Donovan and Rogers**

Donovan (1986) described a multifactorial model that includes varying patterns of impairment development. Individuals have a unique pattern of contributing factors with the phenomenon of substance abuse impairment. Although impaired nurses may share common characteristics, they vary in development, progression, and severity. There is a dynamic relationship among the many dimensions of impairment. The diverse patterns of substance use and individual interactions help explain a person’s
unique pattern manifestations. Risk factors vary between individuals and no specific combination contributes to the occurrence of impairment.

The concepts of wholeness, patterning, human and environmental fields, and mutual process that occur with individuals as different pattern manifestations emerge can be explained based on Rogers' Science of Unitary Human Beings (1970, 1992). Once a pattern of substance impairment is understood, a focus can be made on changing the pattern field toward health and healing. Donovan focuses on identifying the field manifestations of substance abuse impairment which are based on pattern profiles. Early manifestations of substance abuse impairment can be changed once they are identified and understood.

Both Rogers' SUHB and Donovan's Multifactorial Model focus on the whole individual rather than the study of specific parts or factors. Mutual process of the individual and environment, with varying individual patterns, is also a commonality which can be seen in Figure 1. The challenge of research is to identify the pattern manifestations of substance abuse impairment that exist, so the nursing profession can help nurses to change the pattern of their interactions with the environment toward health and healing. For nursing to care for substance abuse impaired nurses, members of the profession must focus on early identification and how to change the pattern of the person and environment to achieve maximum health potential of the person. Intervention should be directed toward assisting nurses to mobilize their resources so that the pattern of the person-environment mutual process can be changed toward
harmony and the integrity of the person improved. This research study will attempt to identify those early risk factors which can then be used to help nurses change their pattern to prevent problems with substance impairment.

The variables which will be investigated in the study are based on the conceptual frameworks of Rogers' and Donovan. The instruments in the study were chosen based on the risk factors in the conceptual framework. The sensation-seeking scale is based on environment, personality, psychological and sociological factors. The Children of Alcoholics Screening Tool is based on family dynamics, personality, interaction, heredity, ethnic and cultural factors. Efinger's Drug/Alcohol Risk Survey is based on all of the factors in the framework: environment, personality, family dynamics, interaction, heredity, psychological, sociological, cultural and ethnic (See Figure 1). Sensation-seeking, family history and feelings of growing up in substance abuse, and early risk indicators are being investigated since they have had minimal focus in the literature and in past research studies. The knowledge base of nursing needs to expand through investigations of early risk indicators, so education and prevention of substance abuse impairment can become the focus of the profession.
Figure 1. Diagram of Synthesis of Donovan and Rogers' Models
Definitions

Early Risk Indicators are predictors of substance abuse that occur early in a person's life or in the initial drinking experiences, measured by scores on the Efinger Alcohol Risk Survey (EARS) (Efinger, 1984). Examples of these 13 predictors include: having feelings of shyness and then feeling more outgoing with the first drink or drug, a strong positive response to the first drinking or drug experience, having an drug abusing or alcoholic parent or grandparent, not wearing a seat belt, lack of energy and not being able to enjoy leisure time, isolation, feeling uncomfortable, and not being able to ask for help.

Impaired Registered Nurses is an individual nurse who personally admits to self and others as to having abused drugs and/or alcohol which has resulted in some degree of substance abuse impairment for the user. In addition the nurse was licensed, currently or in the past, to practice professional nursing in the United States in accordance with the provisions established by the State Board of Nurse Examiners for each state (Bureau of Professional and Occupational Affairs, 1983).

Non-impaired Registered Nurses is an individual nurse who is currently licensed to practice professional nursing in the any state in the United States in accordance with the provisions established by the State Board of Nurse Examiners of that state (Bureau
of Professional and Occupational Affairs, 1983), and who denies substance abuse impairment when screened by the CAGE questionnaire.

**Parental Drug/Alcohol History** is the nurse subject’s report that one or both parents have an alcohol or drug abuse history. Alcohol and/or drug use by parents, and feelings of the nurse that resulted from this, was measured by scores on the Children of Alcoholic’s Screening Test (CAST) developed by Pilat and Jones (1984-85).

**Pattern Profile** is a manifestation of the process and continuous interaction of an individual with life experiences and events including risk factors as well as mediating factors for substance abuse.

**Sensation Seeking Behaviors** are defined by “the need for varied, novel, and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experience” (Zuckerman, 1975, p. 10). Sensation seeking was measured by a total score on the Zuckerman Sensation Seeking Scale (SSS) (Zuckerman, 1975).

**Substance Abuse Impairment** is a diminished ability to reason and function in the professional role when under the influence of drugs or alcohol (ANA, 1984). Substances include drugs, alcohol, and medications alone or in any combination.

**Assumptions**

The assumptions upon which this study was based on are:

1. Professional nurses need to know the risk indicators leading to
substance abuse impairment.

2. Substance abuse impairment occurs on a continuum with varying degrees of impairment.

3. Subjects will understand the purpose of the study and the directions for completion of all the instruments.

4. Subjects who receive the questionnaires will be the actual persons who complete the questionnaires.

5. Subjects who complete the questionnaires will answer the questions honestly.

6. Subjects who complete the questionnaires will be registered or previously registered professional nurses.

Significance of the Problem

Nursing Practice

Substance impairment is a serious problem in the nursing profession as well as throughout American society. Statistics about the incidence of impairment have varied. Estimates of impaired nurses have ranged from 5% which is similar to the general population, to as high as 20% (Buxton and Jessop, 1985; Curtin, 1987; Kabb. 1984; Sullivan, Bissel, & Wiliams, 1988). According to Naegle (1988), the regulatory activities of state boards of nursing show that impaired practice has been identified increasingly as the reason for disciplinary action as suspension or
termination of licensure. The debate continues as to whether or not nurses have the same or a higher rate of impairment than the average population.

In recent years in the United States, increasing attention has been focused on the problem of impaired health care professionals. In 1984, the ANA addressed, for the first time, the issue of impaired nurses and defined substance abuse impairment as the diminished ability of a nurse to reason and function in the professional role when under the influence of drugs or alcohol (ANA, 1984). The ANA identified the need to foster substance use and abuse education among professionals, and to provide treatment to those seeking it. Although there are serious consequences of impairment for all affected, the consequences are more serious when the impaired person is a health professional. Impairment not only affects the individual nurse, but also affects the nursing profession, patients, families, co-workers, and society as a whole. When nurses steal medications, patients do not receive the medicines that they need. Impaired nurses have a risk of making errors which jeopardize patient safety. Co-workers work overtime for impaired nurses who call in ill. Impaired nurses are costly to health care institutions and society. The health and safety of society is affected by impaired nurses when their judgment and skills are compromised (Bissel & Haberman, 1984).

Nursing Administration

Nurse administrators need to be aware of the problem of impairment and be able to intervene as early as possible. Awareness of early pattern manifestations would allow
administrators to assess for substance impairment before it was a danger to the patient and health care institution.

Impairment is costly. The cost of impairment may include injury to the person and patients, theft, impaired decision-making, lost days of work, and treatment costs. A cost analysis by LaGodna and Hendrix (1989) showed that an impaired nurse identified with late symptoms can cost the employing agency up to $17,867.00 with the cost to the nurse being $31,953.00. The analysis included costs for counseling, investigation, termination, state nursing reporting procedures, treatment, replacement, and administrative costs. The longer the process continues, the more symptoms and cost that are incurred. Research showed that early recognition and treatment of an impaired nurse would be more cost effective than the termination and replacement of an experienced nurse (LaGodna & Hendrix, 1989; Sullivan, 1987a).

Nursing Education

Knowledge from research on impairment is also significant to education. Education can open the door for discussions about chemical dependency and impairment, what it is, attitudes about it, how to identify it. Education can discredit myths and stereotypes about addiction, as well as increase knowledge about the process of impairment and recovery.

Identifying risk factors and working toward prevention and early identification could help to identify nursing students as well as staff nurses who are at high risk. Once risk factors and tools for early identification are known, this information could
be incorporated into nursing curricula and continuing education programs. Education can be the avenue for prevention and early identification. Reducing the number of impaired, but functioning nurses, is necessary for the health and safety of society and the nursing profession.

**Nursing Research**

The failure to identify and treat nurses who are impaired represents a significant loss to the profession. In a study of 100 recovering nurses, Bissel and Jones (1981) found that most of those nurses graduated in the top third of their class, held advanced degrees, and held demanding and responsible jobs prior to becoming impaired.

Research has been done on the effects and consequences of nursing impairment (Beamer, 1991; Hutchinson, 1986), attitudes about impairment (Cannon & Brown, 1988; Hendrix, Sabitt, McDaniel, & Field, 1991; Markey, 1994), and the need for education about substances that cause impairment (Long & Gelfand, 1992; Markey, 1994; Tranbarger, 1991). Little research has been done on the indicators and process of impairment in student nurses and nurses. Some research has been done on known factors of impairment, for example, depression (Haack, 1985) and low self-esteem (Burns, 1991). A major issue to be determined is the etiology of and early risk factors for nursing impairment. Learning more about the early factors of impairment would help the nursing profession focus on prevention, or at least have earlier intervention strategies for nurses who are at high risk for impairment. Intervention and education
could begin with nursing students and also occur in continuing education for staff nurses.

**Nursing Science**

Continuing research on impairment is significant to nursing science since the results generate new knowledge about the phenomenon. The intent of this study is not to examine a specific factor in a linear causal model as past studies have done. The intent of this research study is to identify early risk factors that nurses interact with and encounter in their process as they develop substance abuse impairment. Results of this study will increase the understanding of nurses as human beings, their life process of interactions, and the influencing risk factors that exist in the phenomenon of impairment. Knowledge emerging from this study could then be used creatively to promote the health and safety of nurses and society. Impaired nurses must be identified before society is affected or injured. Education and interventions to reduce or remove early risk factors could be incorporated in nursing schools and into institutions where nurses are employed.

Impairment does not occur suddenly, but develops over time. It involves many characteristics and indicators which have been identified through empirical research. Identifying those at risk for becoming impaired would be an asset to nursing, health care, and society. Understanding the early pattern manifestations of impairment would lay the foundation for education and identification (Burns, 1991; Efinger, 1984).

Prevention strategies and teaching strategies could be developed for nurses and student
nurses who are identified as high risk (Bry, 1983; Markey, 1994). Interventions could also focus on reduction of risks. Identification of risks may lead to effective intervention. If substance abuse was prevented or at least identified early, there could be much less risk of harm to society (Efinger, 1984).

**Summary**

This study was designed to identify nurses who have early manifestations that may lead to substance abuse impairment. To answer the research questions, a descriptive design was used to investigate the pattern profiles of substance abuse impaired nurses. Substance abuse impairment is a significant problem for all areas of nursing and is a affliction not yet well understood or researched.
CHAPTER II

REVIEW OF LITERATURE

Introduction

The research that has been done on substance abuse impairment in nursing focuses primarily on prevalence, attitudes, and later risk factors. Exploring early risk factors is still in the early stages. The review of literature revealed some of the diverse theories about impairment, and the evolution of research as investigations progressed from identifying prevalence and attitudes, to identifying antecedents and risk factors.

Some of the theoretical explanations which have been used to explain substance impairment include environmental theories, personality and interactional theories, behavioral and learning theories, and multicausality theories. Most research has focused on identifying single causative factors and evaluates middle to late stage risk factors.

This research study examined early risk indicators and explored a multidimensional factor approach in the development of impairment. The review of literature on risk factors with impairment is separated into general studies about risk factors, early risk factors with impairment, sensation seeking as a risk factor, family drug/alcohol use history, and multidimensional factors related to impairment. Many of the research studies on impairment investigate more than one variable and could be included under more than one category in the review of literature. These results are included in the category of the research study’s primary variable.
Although the term “impaired nurse” is a relatively recent concept in nursing, the phenomenon of substance abuse is not new. On the job intoxication was evident during Nightingale’s nursing reform in 1854 when she referred to the problem of impairment and to nurses being dismissed for being “dead drunk” (Woodham-Smith, 1980, p.16).

Church (1985) conducted a historical review of substance abuse in the nursing literature from 1900 to 1985, and found only three articles from 1900 to 1955. After 1955, the topic appeared only occasionally until the 1980s. Publications were limited to studies of small samples, and included self-reports of personal experiences (Janet, Elaine, Claire, & June, 1974; Jones, 1967).

In the 1970s literature also began to focus on moralistic views about impairment and hospital intervention. Some studies reflected nurses’ negative attitudes about addiction (Cornish & Miller, 1976; Schmid & Schmid, 1973). Other authors discussed recommendations for hospitals on how to handle impaired nurses (Darity, 1979; Webb, 1976). Impairment of nurses was beginning to become a concern to health care professionals.

**Theories of Substance Abuse Impairment**

Most theories describe separate, distinct segments of the phenomena of substance abuse impairment and focus on a specific population or behavior. The majority of theories discuss alcohol and drug abuse together as substance impairment. In *Theories on drug abuse* (Lettieri, Sayers, & Pearson, 1980), 43 models or theories about
substance abuse were presented. For the purpose of this study, only the more general models and theories will be summarized and presented in the following categories: Substance Abuse Models, Environmental Theories, Personality Theories, Behavioral and Learning Theories, and Multicausality Theories.

Substance Abuse Model

Although there are many substance abuse models in the literature, the two primary models are the adaptive model (Alexander, 1987) and the disease concept model (Jellinek, 1960). The adaptive model conceptualizes impairment as a way of coping and is depicted as an organized set of causal relationships. Impairment begins with inadequate support and a family history of illnesses. Substance use is adopted as a substitution to provide meaning and organization to the individual's life, and to provide the support that the individual perceives is absent.

The disease model (Jellinek, 1960) explains that there is the development of tolerance, physical dependence, and loss of control. The individual first becomes susceptible, then addicted, and finally self-destructive. Susceptibility is attributed to genetics and psychological damage that occurred during childhood.

Environmental Theories

Environmental theories emphasize the facilitation of the role of environmental factors in determining substance abuse in vulnerable populations. The environment determines the amount of risk for becoming impaired and includes social,
psychosocial, and family environment. Family environment includes acceptability of use and family pressures and influences to use. Aspects of vulnerability include low self-esteem, biological predisposition, availability, social position, and ability of the individual to cope effectively with life (Coleman, 1980; Cahalan, 1970; Smart, 1980; Steffenhagen, 1980; Tarter & Edwards, 1987;)

**Personality Theories**

Personality theories explain how personality traits predispose an individual to substance abuse impairment. The theories explain that impairment is often a response to fear of failure (Einstein, 1983; Misera, 1980).

**Behavioral and Learning Theories**

Behavioral and learning models expand on social learning theory and the role of modeling through learned behavior. Positive and negative reinforcement, the individual’s past learning and expectations, the feeling of relief experienced when a person uses drugs and/or alcohol, and the resulting physical dependency which develops are all used to explain the concept of impairment (Collins & Marlatt, 1983; Frederick, 1980; Harford, 1984; Winick, 1980).

**Multi-Factor Theories**

Multi-factor theories explain substance abuse impairment with a multiple causality approach. Some of the theories include genetics, environmental, learning theory, and motivational theory. These models explain impairment as having multiple antecedents
with varying degrees of consequences (Ausubel, 1980; Pattison & Kaufman, 1982; Schuckit, 1980).

These theories all purport to explain the phenomenon of substance abuse impairment. Theories about substance abuse impairment have been viewed from anthropology, sociology, psychology, and medicine. Research on impairment has almost always focused on cause and effect (Beckman, 1980; Segal, et al, 1982; Trinkoff & Storr, 1994). Studies have explored what characteristics cause impairment and usually demonstrate a linear relationship. Substance abuse research has rarely been inclusive enough to consider multiple factors. As a result, most research on impairment has been based on unidimensional theoretical interpretation or explanations that are derived from a limited number of factors (Freund, 1984; Goodwin, 1981; Steffenhagen, 1980).

**Incidence and Prevalence of Impairment**

In the 1980s research was conducted to identify the incidence and prevalence of impairment in nursing. The number of impaired nurses is very difficult to estimate. Reliability of surveys is limited due to denial, fear of legal and occupational reprisal, and lack of agreement about the operational definition of impairment. Although little research had been conducted in the area, it was widely reported that health professionals, particularly nurses and physicians, experienced impairment at a rate disproportionately higher than the general public, 30 to 50 percent greater than the general population (Bluestone, 1986; Caroselli-Karinja & Zboray, 1986; Hendrix, et
al., 1987; Pennsylvania Nurses Association, 1994; Talbott, 1987). Supporting data for these statements was not presented. The belief that nurses have a higher rate of impairment, has since been asserted to not be true (Bissell & Haberman, 1984; Smardon, 1998; Sullivan, Bissel, & Williams, 1988). The debate continues due to the difficulty in reliably knowing the rate of substance abuse in nursing. Denial and fear affect the reliability of accurate prevalence rates.

There are also research studies that support that the prevalence rate in nurses is similar to the general population. Population-based studies suggest that, similar to physicians, nurses are not more prone to impairment than others outside of the nursing profession (Haack, 1988; Trinkoff, Eaton, & Anthony, 1991). McAuliffe and colleagues (1984), while studying physicians, also investigated nursing students and found that they did not differ from other college women in their use of drugs. The sample consisted of 358 nursing students which was an adequate sample size for this comparative study. The study was the first to compare nursing students with any other health care professional on degree of substance use. A limitation of the study was that the most common drug of abuse, alcohol, was not included. The study also compared two disparate groups and did not account for differences in age or the fact that one group was students and the other professionals. Gender differences were also not discussed.

There may be differences in risk factors for impairment within nurses depending on type of clinical setting. One study (Trinkoff & Storr, 1994) indicated a greater use of
controlled substances by nurses in critical care settings than in noncritical care areas. It was noted in the study that critical care areas provide easier access to drugs.

The studies identified above included non-random samples which preclude generalization to all nurses or nursing students (Haack, 1988; McAuliffe et al., 1984; Trinkoff, Eaton, & Anothony, 1991). To date, no large scale, randomized study has been done to assess the incidence and prevalence of substance impairment within the nursing profession as a whole.

In 1975 the American Medical Association (AMA) sponsored its first national conference on the “Disabled Doctor” and began an assistance program for impaired physicians. Then in 1984, the American Nurses Association defined impairment, described the problem, and presented information to assist state nurses’ associations in setting up assistance programs for impaired nurses.

Since 1984, the American Nurses Association has continued to estimate that about 6% to 8% of the registered nurse population has a substance-related problem (ANA, 1984, 1989). The most concrete data on prevalence of impairment in nursing comes from examining disciplinary action taken by state licensing boards. The American Nurses Association (1984) reported that 68% of all state board actions over a 12-month period stemmed from impaired functioning related to substance abuse. Since that time, actual percentages have not been published. Similarly, Sullivan (1987a) reported a survey of state boards of nursing which found that 67% of all disciplinary actions were related to substance abuse. Such statistics result in underestimation of
the problem because impairment severe enough to warrant action by a State Board of Nursing comes late in the illness.

The number of cases of nurses seen at the level of the regulatory boards is believed by nursing leaders to be only the "tip of the iceberg". In a descriptive study of 100 nurses in substance abuse recovery, Bissell and Jones (1981) found that only 3% had ever been reported to their State Board of Nursing. These 100 nurses were not in early stages of impairment or difficult to identify. Whether the prevalence of impairment is actually less than or greater than what is reported in the literature, there has been an increasing recognition by the nursing profession since the 1980's that the problem must be addressed.

With the ANA action, the nursing literature began to reflect a growing concern for the well being of the impaired nurse (Green, 1989; Hutchinson, 1987). Nurses began to focus on education as a way to change moralistic attitudes about impairment. Many descriptive studies explored the attitudes toward impairment of those who work with impaired nurses, such as other non-impaired nurses, administrators and managers, and student nurses.

Attitudes Toward Impairment

Hendrix, Sabbitt, McDaniel, and Field (1987) surveyed 1,600 randomly selected nurses to determine whether perceptions of impaired nurses differed by position (administrative or staff) or by the type of impairment (alcohol, drug, or emotional distress). Of those surveyed, 1,047 or 65% responded. The Perceptions of Nursing
Impairment Inventory, developed for the study, identified nine underlying structural components which characterized impairment. Factor analyses were performed and a Cronbach alpha reliability coefficient of at least .80 was obtained for each factors’ set of items.

Analyses of variance and covariance by Hendrix and colleagues (1987) revealed that supervisors were more likely than staff nurses to perceive a need for disciplinary action in responding to cases of nursing impairment ($F = 7.21, \ df = 592, 1; \ p < .01$). This difference remained statistically significant with the effects of age, experience, and education taken into account. Differences in attitudes existed according to respondents’ job position. Supervisors favored disciplinary action more often than staff nurses, whereas staff nurses more often believed in the effectiveness of treatment. Differences in attitude also were found by type of impairment. Discipline was recommended more often by respondents when impairment was due to alcohol or drug abuse rather than to emotional distress.

Hendrix and colleagues’ study was the first of its kind and resulted in an instrument that was tested to establish validity and reliability. A factor analysis was computed on 32 Likert-type items in the original survey questionnaire and revealed an underlying structure of nine dimensions characterizing attitudes toward impairment. Strengths of the study included the large sample size, the use of a randomly selected sample, and a response rate of 65%.
Cannon and Brown (1988) conducted a descriptive study to measure the attitudes of nurses toward substance abuse in general and also toward impaired nurses. Chappell’s Substance Abuse Attitude Survey (SAAS), a 42 item Likert type questionnaire was used. The instrument was administered to 382 female and 14 male registered nurses in Oregon. The results indicated that nurses were generally optimistic about substance abuse and recovering impaired colleagues. Seventy-seven percent of the nurses were willing to confront them, 67% favored their return to practice after treatment, and 85% would accept them as co-workers if they were hired after being treated.

Smith (1992), in a descriptive correlational study, explored attitudes among nurse managers \((n = 119)\) and assistant nurse managers \((n = 95)\) toward impaired colleagues using the Perceptions of Nursing Impairment Inventory \((N = 214, \text{ response rate } = 62.6\%)\). Smith used the disease model (Jellinek, 1960) as a theoretical framework. The instrument was valid and reliable with a Cronbach alpha reliability coefficient of .82. The instrument was used in 60 previous studies (Smith, 1992) on different nursing populations throughout the country. The instrument has only face validity since it has not been formally standardized.

Smith’s study (1992) revealed no significant differences in attitudes between nurse managers and assistant nurse managers in all but one category. Both groups tended to have supportive attitudes toward impaired recovering colleagues. Assistant nurse managers demonstrated a more disciplinary orientation toward impairment within nursing \((p < .05)\). Racial or ethnic origin had the most influence on nurse managers’
attitudes toward impaired colleagues. The Philippine/Oriental group demonstrated a stronger need to know when a colleague was impaired or receiving treatment than the Black American group and the Caucasian group. The Philippine/Oriental group exhibited less belief in the treatability of impairment and displayed a stronger belief in impairment as a personality weakness than the Caucasian group. The Black American group did not demonstrate significant differences on any scores.

Markey (1994) explored attitudes of nurses toward substance abuse in nurses using the Substance Abuse Attitude Survey and the Perceptions of Nursing Impairment Inventory (N = 452). Data were analyzed using factor analysis and multiple regression. Overall nurses held positive attitudes toward substance abusing people and toward substance abusing impaired nurses. Nurses (93%) felt that substance abuse was an illness, not a weakness, and were supportive of treatment. Nurses 51 years of age and older were less judgmental toward people with a substance abuse problem than were younger nurses (F = 2.36, df = 377.2; p < .05). Staff nurses age 20 to 39 (45.8%) were most likely to support the treatment perspective than nurses in the other age groups. The study showed a need for substance abuse education in nursing schools and the workplace. Nurses who attended more continuing education hours about substance abuse (χ² = 15.36, df = 4, p < .01) were more likely to condone lifelong abstinence in impaired coworkers and patients, and were less judgmental. Nurses who had substance abuse education in their basic nursing programs viewed
substance abuse more as a treatable disease ($\chi^2 = 26.05, \text{ df } = 4, p < .001$) than those who had little or no such education.

Wennerstrom and Rooda (1996) also used the Perceptions of Nursing Impairment Inventory to measure the attitudes of 79 junior baccalaureate nursing students toward substance impaired nurses. Students expressed favorable attitudes toward the treatability of impairment and the potential for recovering nurses to successfully regain full function within the profession. Education was identified by the students as the most effective tool for prevention and intervention, with 92% stating that their basic nursing programs did not provide adequate education related to substance abuse. About 75% of the respondents viewed substance impairment as an illness with 25% feeling that impairment was a personality weakness. The instrument had previous Cronbach alphas greater than .82, and in this study the Cronbach alpha was .70, indicating the instrument had a lower internal consistency reliability in this study.

Lachicotte and Alexander (1990) investigated nurse administrators’ attitudes toward nursing impairment and their response to the problem ($N = 30$). Two instruments were used: the Attitudes Towards Nurse Impairment Inventory (Tolor & Tamerin, 1975) and the Methods for Subjects Dealing with Nurse Impairment Questionnaire (developed by the authors). Respondents more often believed that substance abuse was caused by psychologic ($r = .42, p < .01$), physical ($r = .32, p < .01$), or genetic factors ($r = .26, p < .01$) rather than moral weakness ($r = -.15$,}
Administrators with positive beliefs about etiology more often favored an assistive rather than punitive approach \((r = .41, \ p < .01)\). Marginal reliabilities (.35 to .76) of the Attitudes Towards Nurse Impairment Inventory subscales weakened the conclusions. The researchers used Johnson’s Behavioral Systems Theory and the Nadler-Tushman Congruence Model as a theoretical framework, but did not report the method used to acquire the small sample.

The Rogerian framework proposes that continuous change is inevitable and that the nurse’s role is to assist clients with their knowing participation in change (Rogers, 1970). “The purpose of nursing is to promote health and well-being for all persons wherever they are” (Rogers, 1992, p. 6). Based on Rogers’ science of unitary human beings, Barrett (1988) developed a Personalized Nursing Practice Model. The first phase of the model is pattern manifestation appraisal and is described using “the consciousness rainbow” (Barrett, 1988). This teaching tool explicates pattern manifestations associated with behavior, feeling, and attitude choices. Barrett (1988) defined pattern manifestation appraisal which is the first phase of the model as the “continuous process of identifying manifestations of the human and environmental fields that relate to current health events” (Barrett, 1988, p. 50).

The first phase of Barrett’s Personalized Nursing Practice Model utilizes a mechanism for pattern manifestation appraisal called the consciousness rainbow (Andersen, 1986). The rainbow consists of three rings: choices, pattern manifestations, and being. Choices represent behaviors, attitudes, and perceptions
chosen by people. Pattern manifestations include the characteristics of alertness and range from “in the moment” to complete unawareness. Being, not-being, and well-being are represented by pastels, blackness, and vivid colors. People make choices in every pattern of being as they have experiences. They can deny the experience or see the experience as an opportunity for learning. The more people choose to experience the moment and feel the experience, the further into the colorful part of the rainbow they are, since they are entering the colorful, pandimensional world of light and love.

The second phase of Barrets’ Personalized Nursing Practice Model, deliberative mutual patterning, utilizes the Personalized Nursing LIGHT Model designed by Andersen (1986). The second phase, “deliberative mutual patterning is the continuous process whereby the nurse with the client patterns the environmental field to promote harmony related to health events” (Barrett, 1988, p. 50).

The Personalized Nursing LIGHT Model assists clients to experience “the now”, to learn from it, and to develop specific goals and actions to achieve an improved sense of well-being. The Model consists of Loving the client, Intending to help, Giving care gently, Helping the client improve well-being, and Teaching them the process of how to improve their well-being. The goal is for nurses to use the LIGHT Model during practice to assist clients to achieve maximum well-being within their potential.

Studies have been done testing the Personalized Nursing LIGHT Model, which show that by addressing well-being directly, pattern manifestations such as behavior, attitudes, and situations change for the better (Andersen, 1986; Andersen & Smereck,
1992: Andersen, Smereck & Braunstein, 1991). Andersen (1987) applied the Personalized Nursing LIGHT Model with chemically dependent women offenders. Seventeen impaired women in prison were treated using the LIGHT Model. They received 20 group treatment sessions in prison followed by four nursing visits in their homes for follow-up. The 17 treated women were compared to a group of 19 impaired but untreated women offenders. Results showed that the treated women improved significantly in areas of drug use and family/social status. They also showed some improvement in the areas of medical status, legal status, and psychiatric status.

These studies suggest that more experienced nurses and nurse supervisors held more negative attitudes toward impairment than those with less experience, and that education has the most significant impact on influencing attitudes toward impaired nurses. Choice can affect feeling, behavior and attitude. Choices and attitude can lead to higher risk or lower risk behaviors. One factor not explored in the research studies was whether personal or professional experience with impaired nurses had an affect on attitudes. Studies on nurses’ attitudes regarding impaired colleagues have been primarily descriptive. Studies evaluating interventions need to be done to evaluate the effect different interventions have on nurses' attitudes towards impairment and treatment.

Research about attitudes and substance abuse were the first studies to be conducted. These studies began to show the need for an increase in education about substance abuse in nursing programs as well as continuing education. As these studies
continued, other nursing studies were beginning that identified antecedents and characteristics of impairment.

**Risk Factors**

Several researchers have suggested risk factors or identified characteristics of impaired nurses (Burns. 1991; Sullivan. 1987a, 1987b). Some risk factors, such as depression, stress and low self-esteem, have been well documented by empirical research. The review of literature on risk factors will first present general studies on risk factors, and then include other factors that have not yet been extensively studied, including early risk factors, sensation seeking, family history of impairment, and multidimensional influences that increase the risk of impairment.

**General Studies on Risk Factors for Impairment**

Bissell and Jones (1981) interviewed 100 recovering white nurses. Sixty-two percent were dependent on alcohol only, 23% used alcohol and other non-narcotic drugs, and 15% noted both alcohol and narcotic use. The respondents reported high academic achievement in nursing school and numerous consequences, such as physical symptoms and failing grades, as a result of their drinking and drug use. This group of nurses had similar percentages of addiction when compared to a physician study group, but a higher number of suicide attempts than physicians (31% versus 15.5%). At follow-up interviews 5 years later, 79% had remained abstinent (Bissel & Haberman, 1984). This was one of the first descriptive studies on nursing impairment,
although the results cannot be generalized. The researchers used a sample of
convenience, and the group gave self reports of their substance use and recovery.

Sullivan (1987a) studied the characteristics of substance impairment among nurses
through a descriptive study. A national convenience sample of 139 recovering nurses
completed a mailed questionnaire. Results showed that impaired nurses have a family
history of alcoholism (61%) and depression (64%), have experienced sexual abuse and
trauma (54%), have been academically and professionally successful (73%), and have
extensive medical histories (65%). Chi square analyses revealed that subjects who
reported taking drugs from the hospital and who reported acts of negligence were more
likely to report job loss ($\chi^2 = 9.56; df = 1; p < .01$) and license disciplinary action by
their nursing board ($\chi^2 = 11.88; df = 3; p < .01$). This was the first published study to
include a history of sexual problems as a variable. Instrument validity and reliability
was not reported. Questionnaire response rate was not available since the surveys
were distributed to organizations and individuals who had access to the population.
The results cannot be generalized to the nursing population due to the small national
non-random sample.

Sullivan (1987b) later surveyed 1,000 nurses randomly selected from state board of
nursing listings which included Maine, Tennessee, Missouri, Nevada, Idaho, and
Maryland. Of the 1000 questionnaires mailed to nurses, 661 (30% ) of the nurses
responded. After screening for substance abuse by using the CAGE questionnaire
(Jones, 1981), and eliminating those who did not answer the CAGE questions.
subjects remained in the non-impaired category. This group was then compared to the group of 139 recovering nurses from the previous survey. The research variables included family history, education, sexuality, and current life situation. There were significant differences ($p < .001$), in the recovering group that included: being male ($\chi^2 = 21.74, \ df = 3$), alcoholic or drug abusing family member ($\chi^2 = 50.99, \ df = 2$), depression in biological family ($\chi^2 = 15.26, \ df = 2$), sexual problems ($\chi^2 = 53.15, \ df = 1$), homosexuality ($\chi^2 = 64.83, \ df = 2$), history of depression ($\chi^2 = 115.85, \ df = 3$), current employment in nursing ($\chi^2 = 21.08, \ df = 2$), and physical health problems ($\chi^2 = 14.02, \ df = 2$). The groups did not differ significantly in academic achievement. Again, validity and reliability of the tool was not reported, but the sample was randomly selected.

Burnout, depression, and stress have also been suggested as risk factors for substance abuse impairment. Haack (1985, 1988) studied burnout and impairment among 89 nursing students using a two-year, longitudinal ‘cohort’ design. The purpose of the study was to determine if burnout increased during the years in school, and if burnout, depression and substance abuse could be mediated by social support and personal attribution style. Burnout was measured by the Maslach Burnout Inventory; depression by the Center for Epidemiologic Studies Depression Scale; alcohol consumption by self report of number of drinks and days of consumption in the last month; and social support by a social support scale by Garner, Wilsnack, and Slotnick.
Findings indicated that alcohol consumption increased significantly between the sophomore and junior years ($t(36) = 2.22, \ p < .05$), but not between the junior and senior years. Student's feelings of burnout increased with years of school ($F = 8.48, \ df = 2.280, \ p < .01$). Students also reported symptomatology that suggested they were at risk for clinical depression, but the level of depressive symptoms did not increase with years in school. The level of personal accomplishment was higher ($r = .29, \ p < .01$) and the level of depression lower ($r = -.33, \ p < .01$) for students who had greater social support and who reported active involvement in self-care coping strategies. Findings demonstrated that student nurses were at risk for impairment and that preventive strategies, such as increased social support and peer-student-faculty interaction activities, should be implemented with students. The potential for substance abuse continues with new graduates if support sources are depleted and they are unable to utilize healthy coping with job related stress. Identifying risk factors may help new graduates avoid the use and abuse of substances as a means of coping.

Bry (1983) theorized that the greater the number of risk characteristics, the more likely the chance of substance abuse impairment. The risk characteristics or manifestations that a person encounters may occur naturally as a part of their world or may occur as a result of their choice. Some characteristics can be more readily changed or modified while others are relatively unchangeable.
Bry, McKeon, and Pandina (1982) tested the hypothesis that extent of drug use was a function of the number of etiologic variables present. After surveying 1,960 high school students, each student was assigned to either the abstainers group (n=973), or the users group (n=987) based on a calculated drug use score. A highly significant linear relation was found. No specific combinations of variables accounted for significant proportions of variance in drug use. In fact, although 24 combinations of variables were found, no combination accounted for more than 21% of the subjects with multiple risk characteristics. Subjects who exhibited four risk factors proved to be four and a half times more likely to report very heavy drug use that those whose exhibited two or less risk factors.

Bry (1983) identified 10 psychosocial factors that are early predictors for drug abuse: "distance in the family, psychological stress, low self-esteem, low religiosity, high sensation seeking, misuse of a substance within the family, high use of drugs among peers, and early use of tobacco, alcohol, and drugs" (Bry, 1983, p. 223). The efficacy of these psychosocial risk characteristics were investigated in a three-year probability study of adolescents (N=446) by Bry, Pedraza, and Pandina (1988). Recruited randomly and initially assessed in 1979, the subjects were again assessed in 1982. The second assessment found that 100% of the youth who had displayed 5 to 6 risk factors and 75% who had displayed 4 risk factors, now reported heavy substance use yielding 90% positive predictive accuracy. Conversely, 93% of the youth with no risk factors in 1979 reported no heavy substance use by 1982. The findings of the
study supported the notion that the number of risk factors influences the chance of substance abuse.

**Early Risk Factors Leading To Impairment**

Most research on substance abuse impairment done in the 1980s examined middle to late stage risk factors as predictors of impairment. Only a few studies looked at early risk factors that could be identified so prevention could be initiated before the nurse or student became impaired.

Efinger (1984) developed an instrument to identify those at early risk for alcoholism. Data were collected from two criterion groups: 151 members of Alcoholics Anonymous and 164 non-alcoholics. All of the variables included in the final instrument were early predictors and were not typical of questionnaires that addressed quantity and frequency of drinking patterns. Determination of items that discriminated between the two criterion groups was accomplished using concurrent validity coefficients. Factor analysis on item clusters was done to reduce the number of variables. Scoring of the weighted items of the tool provided a correct classification of group membership in 91% of the cases and demonstrated a test-retest reliability of $r = .85$ and a validity coefficient of $r = .83$. Retest followed an interval of one week to two months. The final instrument included 13 items. The Efinger Alcohol Risk Survey (EARS) is used to predict early substance abuse. The EARS items are diversely structured: four items request that the respondent check all that apply; four items are multiple choice; and five items use a Likert type scale (two are 5 point and
there is one each of a 7, 6, and 3 point scale). Computer scoring of responses yields beta weights. The cutoff score for alcoholism risk is .0804. Scores at or above .0804 are classified in the alcoholic group, and scores below it are classified in the non-alcoholic group.

Burns (1991) investigated risk indicators for substance abuse among nurses to identify populations at risk. The study contrasted data from 86 nurses with a history of substance abuse with 82 randomly selected nurses from New Jersey who answered “no” to the screening tool for substance abuse. Burns used the EARS tool (Efinger, 1984), Hassles Scale (Kanner, Coyne, Schaefer, & Lazarus, 1981), Rosenberg’s Self-Esteem Scale (1965), Zuckerman’s Sensation Seeking Scale (1979b), and a question on the number of friends who abuse. The regression analysis demonstrated that scores on the EARS (Beta = -.304, r = -4.57) and self-esteem (Beta = -.363, r = -5.39) were the dominant variables and that sensation seeking (Beta = -.169, r = -3.36), hassles (Beta = -.107, r = -2.11), and peers (Beta = -.101, r = -2.264) were next in importance. The canonical correlation of .87 indicated a strong relationship between variables and the prediction of group membership. Classification results indicated a correct prediction of substance abuse group membership in 94.2% of the cases and correct non-substance abuse membership in 97.6% of the cases with an overall percent of 95.8% for grouped cases correctly classified. The discriminant analysis results strongly supported the significance of the five variables to determine the difference between the two groups.
A number of research studies have evaluated early risk factors as predictors of impairment. Most of the research has explored factors independently, rather than as a combined effect (Table 1).

Table 1

<table>
<thead>
<tr>
<th>EARLY RISK FACTOR</th>
<th>SOURCE</th>
<th>SAMPLE</th>
<th>FINDINGS</th>
</tr>
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<tbody>
<tr>
<td>Low self-esteem</td>
<td>Beckman, Day, Bardsley, &amp; Seeman (1980)</td>
<td>120 female alcoholics 120 male alcoholics</td>
<td>Women lower on self-esteem Women higher on anxiety, alienation and neuroticism</td>
</tr>
<tr>
<td>Depression</td>
<td>Weissman, Myers, &amp; Harding (1980) Haack (1985)</td>
<td>Longitudinal study. N = 720 277, 307 student nurses</td>
<td>6.7% were alcoholics. 70% of alcoholics had a psychiatric history. Have depression, but no increase with school year</td>
</tr>
<tr>
<td>Self-indulgent (Self-centered)</td>
<td>Hammond (1981)</td>
<td>357 alcoholic men</td>
<td>4 types of alcoholic behavior identified. All had genetic component. All were self-indulgent.</td>
</tr>
<tr>
<td>Genetics</td>
<td>Goodwin, Schulsinger, Hermansen, Guze &amp; Winokur (1973) Goodwin (1976)</td>
<td>55 men separated from parents at birth 100 sets twins</td>
<td>At least one parent was alcoholic for each man 25% higher risk if one parent was an alcoholic</td>
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<tbody>
<tr>
<td>Parental Drinking</td>
<td>Cotton (1979)</td>
<td>39 studies</td>
<td>Consistently higher rates in relatives of alcoholics</td>
</tr>
<tr>
<td></td>
<td>Wolin, Bennet, Noonan, &amp; Teitelbaum (1980)</td>
<td>25 families</td>
<td>Higher rate if rituals were disrupted by alcoholic parents</td>
</tr>
<tr>
<td></td>
<td>Bissell &amp; Haberman (1984)</td>
<td>214 male alcoholics 193 female alcoholics</td>
<td>35% had at least one alcoholic parent</td>
</tr>
<tr>
<td></td>
<td>Bissel &amp; Skorina (1987)</td>
<td>100 female alcoholic physicians</td>
<td>53% had one alcoholic parent 52% had one or more alcoholic siblings</td>
</tr>
<tr>
<td></td>
<td>Sullivan (1987a, 1987b))</td>
<td>139 recovering nurses with control group of 384</td>
<td>62% had an alcoholic family member 16% had one or more parents who died from alcoholism</td>
</tr>
<tr>
<td>Shyness</td>
<td>Beckman (1980)</td>
<td>120 female alcoholics, 120 male alcoholics &amp; control group</td>
<td>90% stated that they drank to escape and lose shyness</td>
</tr>
<tr>
<td>Frequent Illness</td>
<td>Levine, Preston, &amp; Lipscomb (1974)</td>
<td>12 alcoholic RNs</td>
<td>100% had a high incidence of medical difficulties and somatic complaints 65% hospitalized in last 5 years vs. 52% of control group 59% MD visit in last 5 years vs. 47% of control group</td>
</tr>
<tr>
<td></td>
<td>Sullivan (1987)</td>
<td>139 recovering nurses 384 control group</td>
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<tbody>
<tr>
<td>Dependent Personality</td>
<td>Rankin, Hodgson, &amp; Stockwell (1980)</td>
<td>2 groups of 11 alcoholics each. One group higher dependency score than other</td>
<td>The dependency group drank significantly faster than less dependent group</td>
</tr>
<tr>
<td>Learning Problems, Dyslexia</td>
<td>Tarter, McBride, Buonpane &amp; Schneider (1977)</td>
<td>50 severe alcoholics 50 less severe alcoholics 50 control group</td>
<td>The more severe group had much more brain dysfunction</td>
</tr>
</tbody>
</table>

Skinner, Holt, and Israel (1981) addressed the issue of early identification and presented arguments on why traditional approaches of middle to late identification of impairment are not satisfactory. Early identification of those that are at risk would allow for the implementation of educational and motivational programs which could significantly reduce the prevalence of impairment.

Sensation Seeking

According to Zuckman (1979a), sensation seeking is a behavior which involves a need to seek or obtain stimulation and exciting experiences. No studies were found that investigated sensation seeking solely as a risk factor for impairment. As previously cited, Burns (1991) investigated sensation seeking, in addition to other psycho-social factors, as a group predictor for substance abuse impairment.

Khavari and Mabry (1985) obtained data from 298 adult male and female members of labor unions to assess personality and attitude in predicting use of psychosedative
drugs. Instruments used included the Zuckerman Sensation Seeking Scales, the Eysenck Personality Inventory, The Marlowe-Crowne Social Desirability Scale, the Taylor Manifest Anxiety Scale, the Wisconsin Substance Use Inventory, and the Self-System Perception Questionnaire. Multiple regression and canonical correlation analyses were consistent in identifying predictors for use of psychosedatives. The value of the canonical correlation coefficient was $V = .456$, with the resultant coefficient of determination $V^2 = .208$. The multivariate F-value was 2.08 ($df = 56, 1091, \ p < .001$). Standardized weights were used to determine predictor variables. The predictor variables most strongly associated with the use of psychosedatives were negative Puritanic attitudes ($r = -.61$), disinhibition ($r = -.55$), and manifest anxiety ($r = -.43$). Less strongly associated predictors were boredom susceptibility ($r = -.26$), neuroticism ($r = -.14$), and sensation seeking ($r = -.09$).

Segal, Huba, and Singer (1980) discussed the notion that substance abuse is a function of a complex interaction of many factors, but not limited to personality characteristics and peer or parental relationships. The phenomenon is multidimensional involving situational, interpersonal, and intrapersonal elements. They examined data from a convenience sample of 1,095 college freshman in a series of studies over one year. The students completed the Personality Research Form, the Imaginal Process Inventory, the Sensation Seeking Scales, Locus of Control, and the Alcohol-Drug Use Inventory. All the instruments used were reliable and valid. Through discriminant
analyses (p < .01) subjects were correctly classified into one of four groups 65% of the time: nonusers, alcohol users only, marijuana users only, and polydrug users.

Segal, Cromer, Hobfoll, and Waserman (1982) examined reasons for drug use among a sample of 92 male juveniles at a state residential facility. Participants completed the Alcohol-Drug Use Research Survey, the Interest and Preference Inventory, and the State-Trait Anxiety Scale. Through factor analyses four reasons for substance use were identified: to gain expanded awareness, to feel mellow and creative, to obtain a new and exciting experience, and to gain insight and understand things better. The third reason, to obtain a new and exciting experience, is similar to Zuckman’s sensation seeking. According to Zuckman (1979a), sensation seeking is a behavior which involves a need to seek or obtain stimulation and exciting experiences. Segal (1983) stated that substance use by most youth appears to be separate from deviant behavior and most emotional distress and is often discussed in the literature as a precipitator of impairment. The four motives for drug use identified by Segal and his associates are to achieve expanded awareness, drug effect (“to feel mellow”), sensation seeking, and to achieve insight. The analysis of reasons for marijuana use indicated that four factors were obtained ($\chi^2 = 150.8$, df = 55, p < .05). The analysis of reasons for use of stimulants yielded a three factor solution ($\chi^2 = 225.7$, df = 55, p < .05). The factor analysis of reasons for using hallucinogens showed that a three factor solution was derived ($\chi^2 = 45$, df = 55, p < .05). And the factor analysis of the
reason for use of depressants obtained a four factor solution ($\chi^2 = 271.5$, $df = 53$, $p < .05$).

Galizio, Rosenthal and Stein (1983) administered the Sensation Seeking Questionnaire to 100 volunteer college students from an introductory level psychology course. In addition to the questionnaire they completed a drug use survey and generated a list of events they believed to be reinforcers. Drug use was positively related to scores on all subscales of the Sensation Seeking Scale ($r = .53$, $p < .05$). The sample was a small sample of convenience and reliability and validity of the instrument were not presented.

In summary, the sensation seeking research concluded that sensation seeking is a factor that is predictive for substance use. Sensation seeking is an early predictor, but has not always been found to be one of the highest predictors of substance abuse impairment.

Growing Up In An Impaired Family

A review of 39 studies involving the families of 6,251 alcoholics and 4,083 non-alcoholics indicated that the incidence of alcoholism is substantially higher in relatives of alcoholics than in relatives of non-alcoholics (Cotton, 1979). One study ($N = 40$) reported that if one family member was an alcoholic, 82% of the time there were one or more alcoholics in the family (Lucero, Jensen, & Ramsey, 1971). Another study
(N = 60) found that 50% of the alcoholics reported alcoholism in both parents (Rathod & Thomson, 1971). Cotton found that approximately one-third of the alcoholics had at least one parent who was an alcoholic (1979, p.103). In addition, all four of Goodwin’s retrospective studies on the hereditary nature of alcoholism strongly support a genetic predisposition to alcoholism (1971, 1973, 1976, 1977). These so-called “adoption studies” have shown that children with alcoholic parents who are adopted to non-alcoholic homes have a higher rate of alcoholism than those from non-alcoholic parentage. Goodwin (1979) also investigated the hereditary factor in twin and genetic marker studies. He found inconsistencies and recommended the research category of “Familial alcoholism”. The features of familial alcoholism include family history of alcoholism, early onset of alcoholism, severe symptoms, and absence of other psychopathology. Children of one alcoholic parent were more likely to develop alcoholism in later life if family rituals surrounding dinner time, evenings, holidays, weekends, vacations, and visitors were disrupted by heavy parental drinking (Wolin, Bennet, Noonan, & Teitelbaum, 1980).

Family history studies have also been done in nursing. It has been suggested (Haack & Harford, 1984) that nurses and other health care workers are more likely than other professionals to be children of alcoholics. As children, they accepted the “caretaker” role and assumed responsibility for a parent who could not adequately meet family obligations. This person cared for younger siblings and nursed the family through illnesses and dilemmas. Children in this caretaker role also tend to get good
grades and try to please adults. They use their success to show that everything really is all right. These children often married alcoholics and were at greater risk for becoming chemically dependent themselves (Goodwin, 1981).

In a study conducted with health care professionals, Bissell and Haberman (1984) reported on 407 recovered alcoholics, 73% of whom worked in health care, and revealed that 36% of the sample had at least one alcoholic parent. An unexpected finding and one that could not be explained was a marked difference between men and women, with 29% of the men having an alcoholic parent as opposed to 41% of the women. Nurses had the highest percentage of alcoholic relatives (46%) compared to physicians (29%), attorneys (27%), and dentists (24%). Of the 407 professionals studied, 120 had alcoholic fathers, 48 had alcoholic mothers, and 26 reported that both parents were alcoholic. Those who reported that both parents were dependent also reported that their own addictive processes began at an earlier age. A report by Bissell and Skorina (1987) on 100 alcoholic female physicians and medical students revealed that 56% of them had an alcoholic parent.

The striving for success through good grades and high achievement has been a theme identified in a few studies. Bissell and Haberman (1984) who examined 407 recovered alcoholic professionals, 73% of whom worked in health care, found that all the professional groups showed a marked tendency to graduate in the upper third of their classes. The results were not as definitive for nursing, since the diploma graduate nurses had not been given their class rank. Brennan (1983) interviewed 50 abstinent
alcoholic nurses in New Jersey. Fifty six percent had at least one alcoholic parent and 86% had ranked in the top third of their nursing class. Reed (1986) reports on 26 chemically dependent nurses. Nine (35%) had a chemically dependent parent and 69% were in the upper third of their class.

Sullivan (1987b) studied 139 chemically dependent nurses and compared them to 522 nurses who were not chemically dependent. Both groups reported success in school, 64% graduated in the upper fourth of their nursing classes. In the chemically dependent (CD) group, 48% said that family difficulties had forced them to assume parental roles during childhood compared to only 22% of the control group. Heavy drinking by parents was reported by 32% of the CD nurses and only 10% of the control group. An alcoholic family member was identified by 62% of the CD group, but by only 28% of the non-chemically dependent nurses.

Dean and Edwards (1989) investigated the prevalence of adult children of alcoholics (ACOAs) and their characteristics in a sample of 223 baccalaureate nursing students. The sample was one of convenience. Results indicated that 33.1% of the sample were ACOAs. Seventy-five percent of the ACOAs were firstborn or lastborn children, compared to 62% of the nonalcoholics. There were three characteristics that the two groups differed most significantly on: difficulty having fun (p = .026), difficulty accepting praise (p = .027), and accused of being controlling (p = .048). When under stress, both groups had similar drinking patterns; it was interpreted that
ACOAs alter their drinking patterns to successfully function when stressed. This was the only ACOA research found on nursing students.

Significance of family history was also seen in a study on risk factors. Mynatt (1996) developed a model of contributing risk factors for developing chemical dependency through a retrospective study done on 236 nurses from the West Virginia Peer Assistance Program. The nurses served in the program from 1989 through 1993. Data was obtained from review of intake records, health histories and other chart information. Findings indicated that the nurses came from chaotic families with alcohol and drug abuse, suffered victimization, and all had low self-esteem. Chemical use began in 55% of the participants during their teen years. Participants obtained their chemicals from more than one source. Fifty percent obtained their chemicals from the hospital, 42% from the street, and 49% from home. Dependent relationships were prevalent and many were in a relationship that supplied them with their chemical of choice. Most nurses used chemicals to numb physical and/or emotional pain. Mynatt suggested that the model be used to develop prevention and intervention strategies.

In summary, alcoholic parentage appears to influence both the predisposition to substance abuse impairment and the age that regular use commences. Even when nurses themselves are not impaired, there appears to be a high number of nurses with a family history of impairment. Family history has been shown as a potential risk factor worthy of further research into its predictive value.
Multiple Factors

Another predominant aspect in research on substance abuse has been multiple etiology causation (Vaillant & Clark, 1983). Causes and risk factors leading to alcoholism or impairment are often referred to in the literature as “multivariate” (Caddy, 1983; Freund, 1984). Bry (1988) described her belief that the number of risk factors increases the chance of substance abuse. Although described differently - number of risk factors, multivariate, and multidimensional, all agree that no one risk factor leads to impairment, rather that it is the combination of factors that increase the risk of impairment.

Bry, McKeon, and Pandina (1982) tested the hypothesis that extent of drug use was a function of the number of etiological variables present. After surveying high school students (n = 987) and comparing them to a control group (n = 973), a significant linear relation was found. No specific combination of risk factors accounted for the relation, but subjects who exhibited four risk factors were four and a half times more likely to report heavy substance use than the control group.

Bry, Pedraza, and Pandina (1988) completed a three year probability study with 446 randomly recruited adolescents. Subjects were assessed once and then again three years later. Findings indicated that in the second assessment: 100% of the adolescents who had displayed 5 to 6 risk factors and 75% of the adolescents who had 4 risk factors were reporting heavy substance use. Ten psychosocial factors were considered to be risk factors: distance in family, psychological stress, low self-esteem, low
achievement motivation, disregard for rules, low religiosity, high sensation seeking, misuse of a substance within the family. High use of drugs among peers, and early use of tobacco, drugs, and alcohol. The study supported Bry's concept that the number of risk factors increases the chance of substance abuse impairment.

Segal (1986) also supports the concept of multidimensionality of drug-taking behavior and the interdependence of risk factors. He has investigated drug of choice, reason for use, personality, and social factors as risk factors that need to be considered. Segal, Huba, and Singer (1980) investigated 854 college students to determine the extent that substance abuse criterion groups could be differentiated based on personality and inner self constructs. The study examined sensation seeking, locus of control, imaging processing, and drug-alcohol use. Results indicated that it was possible to differentiate the correct classification of substance use in 60% to 65% of the cases. Sensation seeking was the single best discriminating variable: for male students \((F = 24.04, df = 497, 496; p < .05)\), and for female students \((F = 49.87, df = 596, 595; p < .05)\). The findings suggested that a complex, multidimensional relationship exists between alcohol/drug use and personality.

Donovan (1986) presented a multifactorial model of alcoholism and substance abuse impairment. The model is developed from an extensive review of the literature and discussed the potential arguments of such a model, such as including factors which only predispose versus cause. The multifactorial model encompasses personality factors, hereditary factor, sociocultural factors, psychostructural factors,
and environmental variables. He concludes with a recommendation that personality, family history, and environmental factors all be included in one study rather than continuing to look at risk factors separately. Research based on Donovan’s model was not found in the literature.

**Synthesis of the Literature**

The review of literature on substance abuse impairment demonstrated the evolution of research in this field. Studies first explored prevalence of impairment, then attitudes about impairment, followed by identifying antecedents and characteristics of impaired nurses. Many of the research studies focused on middle to late stage risk factors, with very few exploring early risk indicators. The review also presented research on sensation seeking and family history as risk factors, as well as a multifactorial approach to substance abuse impairment.

Authors generally agree that substance abuse is a prevalent problem in the United States, and that nurses are as prone to the use and abuse of substances as the rest of society. The actual number of impaired nurses is difficult to estimate due to denial, fear of legal and occupational reprisal, and lack of agreement about what and when impairment occurs. In 1984, the American Nurses Association estimated that 6% to 8% of registered nurses are impaired (ANA, 1984).

Research about nurse’s attitudes toward impairment reveals a variety of responses depending on the sample studied. Nurses are generally positive and hopeful about substance abuse and recovering impaired colleagues. Attitudes of nurse managers vary
from being supportive to favoring disciplinary action rather than treatment. Research on attitudes demonstrates that the more education nurses have on substance abuse impairment, generally the more understanding and optimistic are their attitudes.

Research on known risk factors such as depression, stress, low self-esteem, and dependent personality are already known to have an influence on substance impairment in nurses. Early characteristics of impairment have not been studied by many researchers. There are some early risk factors which have been briefly studied but which need more focus. Early risk factors which still need to be investigated include sensation seeking, feelings and attitudes of growing up in an impaired family, shyness, low religiosity, frequent illness, and the caretaker role. One study by Efinger (1984) described the development of an instrument for identifying early risk indicators of impairment. Characteristics included in the instrument are social support, leisure time, medical history, religious support, friendships, and family history of alcoholism.

Sensation seeking has been investigated as a risk factor of substance abuse impairment in other disciplines, but not in nursing. Many studies reveal that one reason for substance use is the need to seek or obtain stimulating and exciting experiences. There is a need to explore sensation seeking behavior as a risk factor with impaired nurses.

Most researchers agree that substance abuse impairment is multifactorial - that a combination of factors increases the risk for impairment. No one risk factor has been found to initiate the process of impairment.
The question remains, however, as to what early characteristics nurses encounter which influence whether or not they become impaired. More research is needed to identify these early risk indicators in nurses which have only been studied once or twice. Some factors such as use of leisure time and reactions to stress are more adaptable than others and could possibly be changed through awareness and education. Prevention, education, and early intervention could be initiated with nurses and student nurses once early manifestations are identified. The goal is to reduce the phenomena and prevalence of impairment in nursing. Impaired nurses are not only a risk to themselves and to their patients, but also to society as a whole. Early risk patterns need to be identified.
CHAPTER III

METHODOLOGY

The research design, sample, instruments, and procedure for data collection are discussed in this chapter. A description of the instruments used in the study is presented, as well as information on validity, reliability, and scoring.

Research Design

The study used descriptive correlational and comparative designs to investigate the pattern profiles of substance abuse impaired nurses. These designs were used to explore relationships, similarities, and differences between the impaired and non-impaired nurse groups. The purposes of this study were to investigate early risk factors that lead to substance abuse impairment, and to discriminate between impaired and non-impaired registered nurses based on those identified risk factors. A modified Dillman Total Design Method (1978) was followed for conducting a mailed survey. The research questions addressed in the study were:

1. What are the relationships among early risk indicators, sensation seeking behaviors, and parental drug/alcohol history in substance impaired nurses?

2. What are the relationships among early risk indicators, sensation seeking behaviors, and parental drug/alcohol history in non-impaired nurses?
3. Do impaired and non-impaired nurses differ in pattern profiles for early risk indicators, sensation seeking behaviors, and parental drug/alcohol history?

4. Do pattern profiles for early risk indicators, sensation seeking behaviors, and parental drug/alcohol history distinguish between impaired and non-impaired nurses?

Sample Selection

Sample selection occurred from August 1999 through January 2000. Two groups were sampled: substance impaired nurses (SI) (n = 100) and non-impaired nurses (NSI) (n = 100). Nurses were invited to participate in the convenience samples through snowballing technique. The Internet was used to locate nurses for both the SI and NSI samples. Nurses were self identified for each group. For the SI sample, the researcher communicated with nurses in nursing and addiction related chat rooms (Nurses In Recovery, Nurses Anonymous), and in on-line open alcoholics anonymous meetings. Nurses who sent an email to the researcher saying they were previously impaired and in recovery were invited to be in the SI group. The website addresses where SI nurses were found included:

http://members.aol.com/ansaab/ansa.htm

http://www.nnsa.org/

http://dmoz.org/society/support_groups/nurses
http://www.ixpres.com/jgintz/nurse

http://www.tktucker.net/nir/

http://www.alcoholics-anonymous.org/

http://www.homestead.com/internationalnurseanony/INA.html

http://www.insidetheweb.com/messageboard/mbs.cgi/mbmb98502

The NSI group was also a convenience sample obtained through snowballing technique. The researcher invited registered nurses in nursing chat rooms or on nursing related discussion groups on the Internet to participate (NURSENET, NURISINGED, NURSERES). National nursing organizations and nursing discussion groups were found on the Internet by typing in Nursing Organizations in search engines. Some of the web addresses and Listserves used to locate NSI nurses included:

http://www.allnurse.com/Nursing_Associations/Nursing/USA


NURSENET@LISTSERV.UTORONTO.EDU

NURSERES@LISTSERV.KENT.EDU

NURSEWRITE@LISTSERV.DARTMOUTH.EDU

ONCO.NURSE@LISTSERV.ACOR.ORG

NURSING-C1@LIST.UVM.EDU

NLEADER98@ITSSRVI.UCSF.EDU

GLOBALRN@ITSSRVI.UCSF.EDU
Nurses who emailed the researcher and said they had never abused drugs or alcohol were invited to be in the NSI group. The five item CAGE questionnaire (Appendix F) was used to determine that the nurses who volunteered for the NSI group were, in fact, not impaired. Answering yes to any two of the five CAGE questions, eliminated the prospective NSI subject from the study, as was the case with five of the potential subjects. The CAGE questionnaire was included in the survey mailed to the NSI nurses only. The SI nurses did not receive the CAGE questionnaire and membership in the SI group was based on self-report.

**Sample Size**

A power analysis was computed to determine needed minimum sample size. Using a power of .80, a two-tailed level of significance of .05, and a moderate effect size of .5, power tables indicated the need for a minimum of 90 subjects per group (Light, 1990; Lipsey, 1990).

A power of .80 was used since it is considered to be a minimally acceptable power and would yield a beta risk of .20. A moderate effect size of .5 was chosen based on a combination of factors. The reported reliability of the instruments used in this study was high, ranging from .83 to .98 on each of the research instruments. Also, previous correlational studies on the same topic which were reported in the literature used a moderate effect size.

Questionnaires were mailed to both the impaired and non-impaired nurses through the U. S. Postal Service. A total of 190 packets of questionnaires were sent to
impaired recovering nurses and 102 questionnaires were returned for a response rate of 54%. Two questionnaires were eliminated since some pages were not completed. The number of useable questionnaires from NSI nurses in the study was 100. A total of 176 questionnaires were mailed to non-impaired nurses and 108 questionnaires were returned for a response rate of 61%. Three questionnaires were eliminated for incomplete data and five questionnaires were eliminated since the nurses responded yes to two or more of the five CAGE questions. The number of useable questionnaires from SI nurses in the study was 100. Snowballing technique was used until the needed sub-samples were obtained. The data collection process occurred over a 6 month time period from August 1999 through January 2000.

**Description of the Sample**

Descriptive statistics were used to analyze the demographic data provided by the study participants. Patterns, and similarities and differences were identified between the impaired and non-impaired nurses by comparing frequencies and percentages for categorical data (e.g., gender, marital status, education) and measures of central tendency and dispersion for continuous data (e.g., age, number of years as an RN). Demographic data included age, gender, education, employment status, dominant hand, current area of clinical practice, specific education received about substance abuse, ethnic and racial backgrounds, countries family originally came from, number of siblings and sibling position, marital status, history of cigarette smoking, religious participation and preference.
Of the SI nurses, 87% were female with a mean age of 45 (SD = 8.43), 39% were first born and 15% the only child. The SI nurses had a high percentage of German, Irish, and English ethnic backgrounds. SI nurses were primarily Caucasian (95%), and a high number of them were divorced (37%). Only 50% of the SI nurses were married. Nineteen percent of the SI nurses were left-handed and 40% had a history of smoking. Of the 100 SI nurses, 7% had a master’s degree in nursing, 27% had a baccalaureate degree in nursing, 15% had an associate degree in nursing, and 40% had a diploma in nursing. Of the SI nurses sampled, 45% had had some continuing education on addiction and/or alcoholism, ranging from 3 to 40 hours with a mean of 17.6 (SD = 43.84). The number of other impaired nurses that the SI nurses indicated they knew ranged from 1 to 100 with a mean of 17.1 (SD = 19.90).

Of the NSI nurses, 93% were female with a mean age of 41.7 (SD = 8.37) and 39% were first born and 7% were the only child. Exactly the same number of NSI nurses (39) were first born as was reported by the SI nurses. The NSI nurses had a high percentage of German, Irish, and English ethnic background. Similar to the SI nurses, 95% of NSI nurses were primarily Caucasian, 71% were married and 13% were divorced. The NSI nurses included 6% who were left-handed and 9% who smoked. Of the 100 NSI nurses, 23% had a master’s in nursing, 41% has a baccalaureate degree in nursing, 6% had an associate degree in nursing, and 26% had a diploma in nursing. Of the NSI nurses sampled, 38% had had some continuing education on addiction and/or alcoholism, ranging from 2 to 40 hours with a mean of 3.68 (SD = 7.87). The
number of impaired nurses that the NSI nurses indicated they knew ranged from 0 to 12 with a mean of 1.6 (SD = 2.09).

Table 2 presents percentages of subjects’ responses for categorical variables for both the impaired and non-impaired nurses: gender, family position, ethnic background, racial background, marital status, dominant hand, smoking, education, employment, current position, clinical area, if any continuing education on substance abuse, and religious affiliation and attendance. Table 3 presents descriptive statistics for all continuous variables for both the impaired and non-impaired nurses: age, number of siblings, number of packs of cigarettes smoked per day, years employed as an RN, number of continuing education hours on substance abuse, and number of nurses known who are impaired.

Table 2


<table>
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<th>VARIABLE</th>
<th>% SI (n = 100)</th>
<th>% NSI (n = 100)</th>
</tr>
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<th>% NSI (n = 100)</th>
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<tr>
<td>Doctorate in Other Field</td>
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<tr>
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<tr>
<td>Yes</td>
<td>75</td>
<td>96</td>
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<tr>
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<td>Administration</td>
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<td>Clinical</td>
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<td>80</td>
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<td>Education</td>
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<tr>
<td>Research</td>
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<td>Clinical Area</td>
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<td>Cardiac Intensive Care</td>
<td>6</td>
<td>6</td>
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<tr>
<td>Chemical Dependency</td>
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<td>0</td>
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<tr>
<td>College Health</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Community Health</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Corrections</td>
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<td>2</td>
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<td>Dialysis</td>
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<tr>
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<td>5</td>
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Table Continues
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<tr>
<th>VARIABLE</th>
<th>% SI (n = 100)</th>
<th>% NSI (n = 100)</th>
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<td>Endocrinology</td>
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<td>Family Practice</td>
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<td>Geriatrics</td>
<td>8</td>
<td>6</td>
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<tr>
<td>Intensive Care</td>
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<td>14</td>
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<tr>
<td>Medical-Surgical</td>
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<td>13</td>
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<tr>
<td>Obstetrics</td>
<td>9</td>
<td>1</td>
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<tr>
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<tr>
<td>Not Applicable</td>
<td>25</td>
<td>11</td>
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**Education on Addiction/Alcoholism**

- Yes: 45% (SI) vs. 38% (NSI)
- No: 55% (SI) vs. 62% (NSI)

**Religious Affiliation**

- Catholic: 34% (SI) vs. 33% (NSI)
- Jewish: 3% (SI) vs. 3% (NSI)
- Muslim: 0% (SI) vs. 0% (NSI)
- Protestant: 41% (SI) vs. 59% (NSI)
- Other: 11% (SI) vs. 4% (NSI)
- None: 11% (SI) vs. 1% (NSI)

**Attendance at Religious Services**

- Daily: 0% (SI) vs. 0% (NSI)
- Weekly: 41% (SI) vs. 52% (NSI)
- Monthly: 20% (SI) vs. 18% (NSI)
- Holidays Only: 10% (SI) vs. 20% (NSI)
- Never: 29% (SI) vs. 10% (NSI)
Table 3

Measures of Central Tendency & Variation for all Continuous Variables: Age,

Siblings, Amount Smoked, Years Employed, Amount of Continuing Education, and

Number of Nurses Known Who Are Impaired

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>MEAN</th>
<th>S. D.</th>
<th>MEDIAN</th>
<th>RANGE</th>
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<td>Age</td>
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<tr>
<td>SI</td>
<td>45.04</td>
<td>8.43</td>
<td>45.00</td>
<td>25 - 67</td>
</tr>
<tr>
<td>NSI</td>
<td>41.74</td>
<td>8.37</td>
<td>42.00</td>
<td>24 - 66</td>
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<td>No. of Siblings</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>2.28</td>
<td>1.75</td>
<td>2.00</td>
<td>0 - 9</td>
</tr>
<tr>
<td>NSI</td>
<td>2.77</td>
<td>2.32</td>
<td>2.00</td>
<td>0 - 12</td>
</tr>
<tr>
<td>No. Cigarettes Smoked Per Day</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>8.40</td>
<td>11.40</td>
<td>0.00</td>
<td>0 - 40</td>
</tr>
<tr>
<td>NSI</td>
<td>1.00</td>
<td>5.80</td>
<td>0.00</td>
<td>0 - 20</td>
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<td>Years Employed as an RN</td>
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<td></td>
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<tr>
<td>SI</td>
<td>17.42</td>
<td>9.11</td>
<td>17.50</td>
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<tr>
<td>NSI</td>
<td>15.69</td>
<td>8.71</td>
<td>16.00</td>
<td>1 - 34</td>
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<tr>
<td>No. of Continuing Education Hours</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>17.63</td>
<td>43.84</td>
<td>0.00</td>
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<tr>
<td>NSI</td>
<td>3.68</td>
<td>7.87</td>
<td>0.00</td>
<td>0 - 45</td>
</tr>
<tr>
<td>No. of Impaired Nurses Known</td>
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<tr>
<td>SI</td>
<td>17.11</td>
<td>19.90</td>
<td>10.00</td>
<td>1 - 100</td>
</tr>
<tr>
<td>NSI</td>
<td>1.58</td>
<td>2.09</td>
<td>1.00</td>
<td>0 - 12</td>
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Instrumentation

The research instruments included a total of 83 questions in addition to 19 questions on demographics, and took approximately 25 minutes to complete. The first three pages of the questionnaire consisted of demographic data (Appendix A) and was developed by the researcher. The remainder of the questionnaire included 40 questions from the Zuckerman Sensation-Seeking Scale (1975) (Appendix B), 13 questions from the Efinger Early Risk Survey (1984) (Appendix C & Appendix D), and 30 questions from the Children of Alcoholics Screening Tool (Jones, 1981) (Appendix E).

Demographic Data Questions

Demographic data questions were based on the review of literature. Variables included age, gender, education, employment status, current area of clinical practice, specific education received about substance abuse, ethnic background, smoking history, dominant hand, marital status, religious participation and preference. Impaired nurses were asked their length of time in recovery, if they were in recovery.

Zuckerman Sensation-Seeking Scale (1975).

Description

The Sensation Seeking Scale (SSS) was developed to measure differences in optimal levels of stimulation and arousal. Sensation-seeking is “a trait defined by the need for varied, novel, and complex sensations and experiences and the willingness to
take physical and social risks for the sake of an experience” (Zuckerman, 1979b, p.10).

The first published form of the Sensation Seeking Scale (SSS) contained only a General Scale (Zuckerman, et al., 1964). The second version, SSS Form V (Zuckerman, 1979a), was based on more extensive factor analyses and contains 40 items which give the participant a choice of two answers. The SSS Form V was used in this study. The SSS contains four subscales: a) thrill and adventure-seeking; b) experience-seeking; c) disinhibition; and, d) boredom susceptibility. Each subscale is comprised of 10 items (Appendix B).

The Thrill and Adventure Seeking (TAS) subscale consists of items expressing desires to engage in sports or activities involving some physical risk such as mountain climbing, parachute jumping, scuba diving, or speeding in a car. TAS is represented by questions 3, 11, 16, 17, 20, 21, 23, 28, 38, and 40. The Experience Seeking (ES) subscale contains items describing the desire to seek new experiences through the mind and the senses, by living in a nonconforming life style with unconventional friends, and through travel to distant places. The ES subscale is represented by questions 4, 6, 9, 10, 14, 18, 19, 22, 26, and 37.

Items on the Disinhibition (DIS) subscale describe the need to disinhibit behavior in the social setting by drinking, partying, and seeking variety in sexual partners. The DIS subscale is represented by questions 1, 12, 13, 25, 29, 30, 32, 33, 35, and 36. Boredom Susceptibility (BS) items indicate an aversion for repetitive experience of
any kind including routine work and dull, predictable people. Other items indicate a restless reaction when things are unchanging (Zuckerman & Neeb, 1979). The BS subscale is represented by questions 2, 5, 7, 8, 15, 24, 27, 31, 34, and 39.

Validity

The construct validity of the SSS is well established. Zuckerman (1974) presented a summary of studies showing that the Sensation Seeking Scale has construct validity for a variety of reported experiences and behaviors. The four subscales of the Sensation Seeking Scale have been examined to assure that the scales measure the constructs they purport to measure. Zuckerman, et al. (1972) reported that the SSS was tested in seven studies and two replications using undergraduate students. The SSS was related to the MMPI and the Figure Preference Scales. The correlations were related to an uninhibited, nonconforming, impulsive, dominant type of extraversion, but did not correlate to scales which measure a friendly type of sociability. The SSS was related to openness to new experiences and to reported experience with sex, drugs, and alcohol.

The Sensation Seeking Scale (SSS) has also been examined for convergent validity. There are only a few other measures which have been developed to measure the optimal level of stimulation or a similar construct. The most similar test is the Change Seeker Index (CSI) (Garlington & Shimota, 1964). Farley (1971) and Loofy and Baranowski (1971) reported correlations of .63 and .67 between the SSS and the CSI in undergraduate samples. Myers (1972) reported a correlation of .54 for Navy
recruits. From these results, the SSS and the CSI are convergent, but not identical in what they are measuring.

Myers (1972) developed a Thrill Seeking scale with items similar to the Thrill and Adventure Seeking items in the SSS. The Thrill Seeking scale correlated .73 with the SSS. The construct Level of Stimulation, in the SSS, has been examined and compared with scores in the Need to Change instruments.

Zuckerman and Link (1968) found correlations of .43 and .46 between the SSS and the Gough-Heilbrun Adjective Check List Need to Change scale, and the Edwards Personal Preference Need to Change scale. The SSS was positively correlated with autonomy, change, and exhibitionism scores, and negatively correlated with deference, nurturance, orderliness, and affiliation scores on both the Gough-Heilbrun and the Edwards scales. The SSS correlated positively with Hypomania (MMPI) and Liability, and negatively with Self-Control and Field Dependency.

Pearson (1970) developed a Novelty Experiencing Scale with four subscales: External Sensation, Internal Sensation, External Cognitive, and Internal Cognitive. The SSS was highly correlated with the External Sensation Scale ($r = .68$), showed a significant but low correlation with the Internal Sensation Scale ($r = .20$), but did not correlate significantly with the other two subscales.

Other validity data have been summarized in publications by Zuckerman (1978, 1979, 1983, 1984). An updated summary of over 400 articles on sensation seeking
describing the research and theoretical developments in sensation seeking from 1979 to 1993 has been published by Zuckerman (1994).

**Reliability**

All the scales of the SSS, with the exception of the Boredom Susceptibility, have shown acceptable internal consistency and test-retest reliability. The SSS was examined for cross-national and cross-sex reliability in English and American samples (Zuckerman, Eysenck, & Eysenck, 1978). Three of the four factors clearly met the criterion of factor reliability. Thrill and Adventure Seeking, Experience Seeking, and Disinhibition all showed significant and reasonably high resemblance between the four national and sex samples with coefficients ranging from .62 to .86. Boredom Susceptibility factor was fairly similar in English males and females, but showed no correspondence in American males and females, and two of the four cross-national comparisons showed weak significance ($p < .06$). The reliabilities of the Total Score ranged from .83 to .86 (Zuckerman & Neeb, 1979).

The Cronbach’s alpha reliability of the SSS was .84 for American males and .85 for American females (Zuckerman, 1979a). The test-retest reliability coefficient was .94 over a three week interval.

In this study the internal consistency reliability remained satisfactory. The Cronbach’s alpha calculated for the SSS was .78.
Scoring

The total SSS score is based on the sum of the four factor scores. In addition to the total score, each of the four subscales can also be totaled. “The four subscales are moderately intercorrelated (.26 to .47) justifying their combination in a total score” (Zuckerman & Neeb, 1979). Each subscale has a possible score of 0 to 10. The total score could range from 0 to 40 and was used in the data analysis. A score of 0 means very low to no sensation seeking behavior. A score of 40 means a very high level of sensation seeking behavior.


Description

EARS was developed to predict early substance abuse. The EARS instrument consists of 13 items that identify early predictors of substance abuse. Two versions were used in this study. The content is identical except that the first version asks questions for nurses who have been impaired but are now in recovery (Appendix C). The second version asks the same questions, but for non-impaired nurses who are not in recovery (Appendix D). The items are grouped into categories of medical history, use of leisure time, and social support. The EARS items are diversely structured: four items request that the subject check all that apply (questions 1, 6, 10, & 11), four items are multiple choice (questions 2, 5, 8, & 9), and five items use a Likert-type scale (four are 5-point: questions 3, 4, 12 & 13, and there is one 3-point: question 7).
Burns (1991) modified the EARS instrument to reflect general substance abuse. The word "alcohol" was expanded to alcohol/drug/medication. The generalizability from alcoholism to substance abuse was based upon the common mechanisms of alcohol and drug abuse as evidenced by theories of drug abuse, progression of addiction, and the evidence of polydrug (alcohol and drug) use.

Validity

In the process of instrument development (Efinger, 1984), a sample of men and women were screened for alcoholism and then compared with members of Alcoholics Anonymous (AA). Determination of items that discriminated the two criterion groups was accomplished using concurrent validity coefficients. Factor analyses on various item clusters were done to reduce the number of variables in the EARS instrument.

In the Burns (1991) study, substance abuse group membership was correctly predicted in 94.2% of the cases and non-substance abuse membership was correctly predicted in 97.6% of the cases. The overall percent for grouped cases correctly classified was 95.8%, reflecting evidence of instrument validity. Although other variables were examined, the EARS tool was the dominant variable in measuring differences between impaired and non-impaired nurses. The results supported the inter-relatedness of substance abuse, and the high validity of the instrument.

In the present research study, a discriminant analysis indicated a correct prediction of substance impaired nurses in 87% of the cases and correct membership for 95% of
the non-impaired nurses. The EARS instrument again was the strongest predictor with a correlation of .99 between the impaired and non-impaired nurse groups.

**Reliability**

Efinger (1984) performed a discriminant analysis during instrument development to determine the item weights. Scoring of the weighted items of the EARS tool provided a correct classification of group membership in 91% of the cases and demonstrated a test-retest reliability of \( r = .85 \) after three months, and a validity coefficient of \( r = .83 \). Internal consistency reliability ranged from .53 to .91. In the present study, the EARS instrument had a Cronbach’s alpha internal consistency reliability of .86.

**Scoring**

The EARS items are diversely structured: four items request that the subject check all that apply, four items are multiple choice, and five items use a Likert-type scale (four are 5-point and there is one 3-point scale). The total score is calculated from adding the points of all 13 items. The EARS tool provides a total raw score ranging from 29 to 286, with higher scores indicating higher risk. The total score was used in the data analysis for this study.

**Children of Alcoholics Screening Test (CAST) (Jones, 1981).**

**Description**

The instrument was first developed to identify children of alcoholics. The CAST is a 30-item inventory that measures feelings, attitudes, perceptions, and experiences...
related to a parent’s drinking behavior using a yes/no response format (See Appendix E). The instrument measures: a) emotional distress associated with a parent’s use or abuse, b) perception of drinking-related marital discord, c) attempts to control a parent’s drinking, d) efforts to escape from alcoholism, e) exposure to drinking-related family violence, f) tendencies to perceive their parents as alcoholic, and g) desire for help. The tool was used to assess feelings and attitudes of impaired and non-impaired nurses who grew up with a family history of impairment.

Validity

Previous studies show support for the validity of the CAST instrument. Support for discriminant validity (Jones, 1983; Sheridan, 1995; Staley & El-Guebaly, 1991) and factorial validity (Sheridan, 1995; Staley & El-Guebaly, 1991) have been reported. Sheridan (1995) computed a principal components factor analysis which suggested that the CAST measures a single uniform dimension. The CAST showed the highest ability to differentiate between adult children of alcoholics and non-adult children of alcoholics of all the six instruments tested, with a discriminant validity coefficient of .82. Analyses also provided strong support for construct validity.

Jones (1983) provided evidence of concurrent validity of the CAST by correlating total CAST scores with subjects’ estimates of the amount their parents drank and the number of days in a week their parents drank, and reported significant, positive correlations ($r = .63$ and $r = .42$; $p < .01$). Pilat and Jones (1984-85) reported a
validity coefficient of .78 in their study predicting children of alcoholic group membership.

Dinning and Berk (1989) examined CAST's relationship to several measures of family environment and to a measure of social maladjustment. High CAST scores were found to be related significantly to low family cohesion ($r = -0.19$, $p < .01$), high family conflict ($r = 0.14$, $p < .01$), and low overall family support ($r = -0.17$, $p < .01$). CAST scores were not related significantly to family expressiveness or to social maladjustment.

Reliability

Previous studies show support for the reliability of the CAST instrument. Alpha coefficients have been reported from .88 to .98 suggesting excellent internal reliability consistency (Clair & Genest, 1992; Dinning & Berk, 1989; Jones, 1983; Sheridan, 1995; Staley & El-Guebaly, 1991).

In an adult sample of 81 subjects a Spearman-Brown split-half reliability coefficient was .98 (Pilat & Jones, 1984-84). Jones (1983) also tested reliability. The Spearman-Brown split-half reliability coefficient was computed separately for a group of 82 children of clinically diagnosed alcoholics and a control group of 133 children, as well as these two groups combined. Reliability coefficients of .98 were obtained in all three cases.

Clair and Genest (1992) reported internal consistency reliability estimates of .90 and .88, with a test-retest reliability coefficient of .88 which was assessed over an 8
week interval. CAST scores were also unrelated to other measures which examined adjustment, general family environment, and anxiety.

Staley and El-Guebaly (1991) did an item analysis of the CAST which showed that the instrument possesses a high level of internal consistency, indicating consistent responding to the CAST items. The item-total scale correlations were generally significant, and each of the 30 CAST items significantly discriminated self-identified adult children of alcoholics from control subjects.

The present study also suggested an excellent internal reliability consistency. The alpha reliability for the present study was .97.

**Scoring**

CAST is scored based on the yes/no answers. “Yes” answers are given one point, and “no” answers receive a score of 0. All “yes” answers are tabulated to yield a total score. The total score could range from 0 to 30 and a cutoff score of 6 or greater is recommended for the identification of children of alcoholics (Pilat & Jones, 1984-85). The total score was used in data analysis in this study. There is no reverse scoring for any of the questions.

**CAGE Questionnaire (Ewing, 1984).**

**Description**

CAGE is an acronym for a 5-item questionnaire that was designed as a screening instrument for the presence of substance-related problems. The tool was originally
developed by Ewing (1984) with only four questions focusing on trying to Cut down on use of alcohol. Annoyance by criticism from others about alcohol use, Guilty feelings about alcohol use, and using alcohol as an Eye-opener in the morning. A modified CAGE tool has been used in research to screen for substance abuse rather than just for alcohol (Burns, 1991; Efinger, 1984; Sullivan, 1987). (See Appendix F for the modified CAGE tool). The fifth question added to the CAGE tool is about eagerness for the first drink or use of drugs in the evening.

Validity and Reliability

The CAGE questionnaire is described as a simple, sensitive, and specific screening test for alcohol abusers. The test, with a cutoff score of two or more indicating a positive test result, has been demonstrated to have a sensitivity of 75% to 91% and a specificity of 77% to 96% when used for the detection of alcohol abuse (Beresford, et al., 1990; Bernadt et al., 1982; Busch et al., 1987; Liskow, et al., 1995; Mayfield, et al., 1974).

In a study by Bush et al. (1987), when a positive CAGE test result was defined as one affirmative response, the sensitivity was reported to be 85% with the specificity 89%. The CAGE questionnaire identified 70% of the alcohol abusers, whereas physicians identified only 27% of these patients. Using two affirmative response in this study, lowered the sensitivity slightly but raised the specificity to 96% and the predictive value of a positive test result to 82%.
Bernadt, et al. (1982) also showed the sensitivity and specificity of the CAGE questionnaire. A comparison was made between lab tests, and interviews using the CAGE questionnaire. Lab tests only detected one third of the alcoholics, whereas the CAGE tool detected 93%.

A study by Beresford et al. (1990) compared screening using the CAGE questionnaire and lab testing. Again the CAGE tool was highly sensitive at 76%, specific at 94%, and had a predictive power of 87%.

Mayfield et al. (1974) examined the validity of the CAGE questionnaire and found that using two or three positive responses yielded a rather impressive correlation coefficient ($r = .89$), but that only 37% of alcoholics were appropriately identified when using four positive responses ($r = .65$). The researchers recommended using a two or three item positive response as the accepted criterion. The present study used a two item positive response as the criterion.

In a study that examined the value of the CAGE questionnaire in detecting alcoholism in a walk-in clinic, the sensitivity was found to be 86% with the specificity 93% when one or more yes responses were used as defining criteria. The predictive value was 78% for one positive response, 86% for two positive responses, 93% for three positive responses, and 100% for four positive responses (Liskow, et al., 1995).

**Scoring**

The five question scoring is based on answers to yes/no questions. “Yes” answers are given one point, and “no” answers receive a score of 0. Total scores could range
from 0 to 5. The scores were only used to determine if a non-impaired nurse qualified to be in the non-impaired sample. Any non-impaired nurse with a score of 2 or greater was eliminated from the sample.

**Procedures for Data Collection**

The researcher applied for and received approval for the use of human subjects in research from the Widener University School of Nursing Research Committee (Appendix G). Permissions to use the instruments were received from the copyright holders (Appendices H, I). The data were collected from substance impaired (SI) and non-substance impaired (NSI) registered nurses by using a mailed survey to each nurse’s home. The CAGE questionnaire was included for the NSI nurses. Nurses answering yes to any two of the five questions were eliminated from the sample.

SI nurses were contacted through nursing support groups and on-line chat rooms on the Internet (Nurses in Recovery, open AA meetings). NSI nurses were contacted through nursing chat rooms as well as nurse related discussion groups on the Internet (for example: NURSENET, NRSINGED, NURSERES). Both the SI and NSI nurses were requested to send their U. S. Postal Service mailing address to the researcher by email. The researcher then sent questionnaires to the nurses through the U. S. Postal Service. Pre-addressed, stamped envelopes were provided for convenient return to the researcher. Nurses who completed the questionnaire were asked to give other impaired and non-impaired nurses the mailing address or work phone number of the researcher so other interested nurses could contact the researcher to also participate.
A cover letter accompanied the research instruments. Separate cover letters were used, one for the SI nurses (Appendix J) and one for the NSI nurses (Appendix K). The purpose of the research was explained in the letter. The nurses were asked to write their responses directly on the research instruments. Signed consent forms were not used due to the confidentiality of the data. Consent was implied by the nurses' completing and returning the questionnaires. Anonymity and confidentiality were maintained since the names of the nurses did not appear on any of the instruments. Once questionnaires were returned, names and addresses of the subjects were destroyed.

Nonresponse bias was avoided by: a) keeping the demands on the subjects to a minimum - the questionnaire took less than 25 minutes to complete; b) fully informing the respondents about the study in the cover letter; c) providing easily understood directions; d) enclosing a pre-addressed, stamped envelope with the instrument for easy return; e) making subjects aware of the importance of their participation; and f) providing a telephone number for subjects to contact the researcher (Dillman, 1978). One reminder email was sent to all nurses to increase response rate, although the researcher had no knowledge as to which nurses had already returned the questionnaires. Results of the study were made available upon request and confidentiality was assured. Raw data and completed research questionnaires were secured in a locked file cabinet in the researcher’s home.
Delimitations

The delimitations of this study were:

1. The impaired nurse and non-impaired samples were samples of convenience. A convenience sample is a nonprobability sample without randomization, therefore, generalizability of findings beyond the sample may be limited.

2. Self-report of behavior, feelings, and attitudes could potentially reflect socially desirable responses or individual biases.

3. Although other risk factors are identified in the literature, the risk factors analyzed in this research study were sensation seeking behaviors, effects of parental drug/alcohol history, and early risk indicators.

4. Subjects were self identified as SI or NSI nurses.

Summary

This chapter has described the research design, sample, instrumentation, and the procedure for data collection that were used in this study. The study used a descriptive and correlational design to investigate the pattern profiles of substance abuse impaired nurses. Two groups were surveyed: 100 impaired nurses and 100 non-impaired nurses. The nurses were found on the Internet and questionnaires were distributed through the U. S. mail. Descriptive statistics were used to analyze the demographic data of both groups.
CHAPTER IV
FINDINGS AND RESULTS

Introduction

The purposes of this study were to investigate early risk factors that lead to substance abuse impairment in registered nurses and to discriminate between impaired and non-impaired registered nurses based on those identified risk factors.

The theoretical framework for this study was based on a synthesis of Donovan's multifactorial model of impairment (Donovan, 1986), and Rogers' (1970, 1992) Science of Unitary Human Beings. Donovan's model explains varying patterns of impairment development. Although individuals may have common characteristics, they vary in development, progression, and severity of impairment. Rogers' model explains concepts of wholeness, patterning human and environmental fields, and mutual process that occur with individuals as different manifestation patterns emerge. Once pattern manifestations are identified and understood, efforts can focus on changing the pattern of the field toward health and healing.

Survey questionnaires were mailed to impaired nurses and non-impaired nurses. Three questionnaires were used to identify early risk factors: the Zuckerman Sensation Seeking Scale (Zuckerman, 1974) (Appendix B), the Efinger Alcohol Risk Survey (Efinger, 1984) (Appendices C & D), and the Children of Alcoholics Screening Test (Jones, 1981) (Appendix E). The CAGE questionnaire (Ewing, 1984) (Appendix F) was used for the non-impaired nurses as a screening tool to evaluate whether they...
were, in fact, non-impaired as defined in this study. Demographic data were analyzed to examine similarities differences between the impaired and non-impaired nurse samples.

This chapter contains a description of the findings for each of the research questions, and a summary of the results of the data analyses.

**Findings Related to the Research Questions**

Data analysis was performed to answer each of the research questions. A Bonferroni correction was used so as to control for escalation of statistical significance due to multiple computations. Statistics were tested for significance at \( p \leq .016 \).

**Research Question 1**

What are the relationships among early risk indicators, sensation seeking behaviors, and parental drug/alcohol history in substance abuse impaired nurses?

Pearson’s correlations were used to evaluate the strength and direction of the relationships between the three variables which make up the impaired nurses’ profiles. A two tailed test was used since the direction of the relationship was not predicted in advance. The Pearson’s Correlations demonstrated a moderate relationship between scores on the EARS and SSS \((r = .37, \ p = .01)\), and the EARS and CAST scores \((r = .51, \ p = .01)\). The \( r^2 \) for the EARS and SSS scores was .14, which indicated that the EARS and SSS shared 14% of their variance, with 86% of their variance unrelated. The shared variance for the EARS and CAST scores was 26% \((r^2 = .26)\) with 74% of
the variance being explained by other variables. The results indicated that there were significant relationships between EARS scores and the other two variables. However, SSS and CAST scores were not significantly related. In addition, shared variance between the EARS and CAST scores was higher than the shared variance between the EARS and SSS scores. Table 4 presents the correlations.

Table 4

Pearson Correlations for EARS, SSS, and CAST Scores for Impaired Nurses (SI)

(N =100)

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>EARS</th>
<th>CAST</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSS</td>
<td>.37 *</td>
<td>.25</td>
</tr>
<tr>
<td>EARS</td>
<td></td>
<td>.51 *</td>
</tr>
</tbody>
</table>

* p < .001 level (2-tailed)

Research Question 2

What are the relationships among early risk indicators, sensation seeking behaviors, and parental drug/alcohol history in non-impaired nurses?

Pearson’s correlations were used to explain the strength and direction of the relationships between each of the identifying variables which make up the non-impaired profiles. A two-tailed test was used since the direction of the relationship was not hypothesized in advance. The Pearson’s Correlations demonstrated a moderate relationship between the EARS and CAST scores (r = .31, \( p = .01 \)). There were no
significant relationships with any of the other variables. The shared variance for the EARS and CAST scores was 9%. For the NSI nurses, the Pearson’s Correlation demonstrated a significant moderate relationship between the subject’s scores on the EARS and CAST instruments with 9% shared variance. Table 5 presents the correlations.

Table 5

Pearsons Correlations for EARS, SSS, and CAST Scores for Non-Impaired Nurses (NSI) (N = 100)

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>EARS</th>
<th>CAST</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSS</td>
<td>.15</td>
<td>-.04</td>
</tr>
<tr>
<td>EARS</td>
<td>.31*</td>
<td></td>
</tr>
</tbody>
</table>

* p < .001 level (2 - tailed)

Research Question 3

Do impaired and non-impaired nurses differ in pattern profiles for early risk indicators, sensation seeking behaviors, and parental drug/alcohol history?

The impaired and non-impaired nurses differed in pattern profiles for all three variables. Means and standard deviations were calculated for each of the three instrument scores for the two groups. Independent t-tests were used to test the significance of the difference between the impaired and non-impaired groups. Since the assumption of homogeneity of variance was not met, unequal variance t-tests were computed. The results demonstrated that the two groups differed significantly on all
three scores \((p \leq .001)\). Table 6 summarizes the means, standard deviations, and independent t-test scores demonstrating the differences between the SI and NSI nurses.

Table 6

Means, SD, and t-Test Comparing Scores of the Substance Impaired \((n = 100)\) and Non-Substance Impaired \((n = 100)\) Nurse Groups on SSS, EARS, and CAST

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>df</th>
<th>2-tailed p</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSS:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>10.18</td>
<td>4.04</td>
<td>8.30</td>
<td>181.6</td>
<td>.001</td>
</tr>
<tr>
<td>NSI</td>
<td>6.02</td>
<td>2.96</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EARS:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>154.80</td>
<td>18.32</td>
<td>18.71</td>
<td>182.1</td>
<td>.001</td>
</tr>
<tr>
<td>NSI</td>
<td>112.20</td>
<td>13.51</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAST:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>13.50</td>
<td>9.51</td>
<td>7.91</td>
<td>185.7</td>
<td>.001</td>
</tr>
<tr>
<td>NSI</td>
<td>4.01</td>
<td>7.31</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Research Question 4

Do pattern profiles for early risk indicators, sensation seeking behaviors, and parental drug/alcohol history distinguish between impaired and non-impaired nurses?

Discriminant analysis was used to determine which pattern profiles could accurately predict subject membership in the impaired and non-impaired groups. Classification results indicated a correct prediction of SI membership in 87% of the cases and correct NSI membership in 95% of the cases with the overall prediction of 91% for grouped cases correctly classified. A summary of the discriminant analysis is presented in Table 7.
Table 7

**Discriminant Analysis of EARS, SSS, and CAST with Group Prediction of Impaired Versus Non-Impaired Nurses (N = 200)**

<table>
<thead>
<tr>
<th>Actual Group Membership</th>
<th>Predicted Group Membership</th>
<th>n</th>
<th>NSI</th>
<th>SI</th>
<th>p values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impaired (SI):</td>
<td></td>
<td>100</td>
<td>13%</td>
<td>87%</td>
<td>.001</td>
</tr>
<tr>
<td>Non-Impaired (NSI)</td>
<td></td>
<td>100</td>
<td>95%</td>
<td>5%</td>
<td>.001</td>
</tr>
</tbody>
</table>

Percent of grouped cases correctly classified 91%

The discriminant analysis results strongly supported the significance of the three variables as predictors of the impaired (SI) and non-impaired (NSI) nurses. Scores on the EARS had the largest correlation and were the strongest predictor of group membership (.99) followed by SSS (.44) and CAST scores (.42). The variables were significant at $p \leq .001$. The discriminant analysis showed that 36% of the variance was not explained by group differences. There was a discriminant function of .80 which indicated that 64% of the variance in group membership was explained by the EARS, SSS and CAST scores together. Since EARS is a combination of early risk indicators, the scores on the EARS were expected to be the best predictor overall but was significantly stronger than the other two. Scores on the SSS and CAST were similar in strength in predicting group membership. Overall, although each variable predicted group membership, the discriminant analysis indicated that the linear combination of the three variables was significantly better able to distinguish between the impaired and non-impaired nurses than any one variable alone.
Summary of Findings for Research Questions

Inferential statistics were used to analyze data for the research questions. Pearson’s Correlations demonstrated a significant relationship between scores on the EARS and SSS ($r = .37, \ p = .01$), and the EARS and CAST scores ($r = .51, \ p = .01$) for the impaired nurses. For the non-impaired nurses, the Pearson’s Correlations demonstrated a significant relationship only between the EARS and CAST scores ($r = .31, \ p = .01$). Independent t-test scores demonstrated the impaired and non-impaired groups differed on all three of the instrument total scores (SSS: $t = 8.30, \ df = 181.6, \ p = .001$) (EARS: $t = 18.71, \ df = 182.1, \ p = .001$) (CAST: $t = 7.91, \ df = 185.7, \ p = .001$). Discriminant analysis strongly supported the significance of the three variables as predictors of the impaired and non-impaired nurses. Classification results indicated a correct prediction of SI membership in 87% of the cases and correct NSI membership in 95% of the cases with an overall percent of 91% for grouped cases correctly classified. Early risk indicators had the largest correlation and was the strongest predictor (.99) followed by sensation seeking (.44) and family history (.42).

The results indicate that the three variables studied (sensation seeking, early risk indicators, and family history) can be used to identify early risk indicators for substance abuse impairment in nurses. Although substance abuse impairment is a complex and continuous process, impaired nurses share some common characteristics and patterns. As patterns are identified and understood, nursing interventions can focus on changing the patterns toward health and healing.
Additional Analyses

Demographic Data

Additional analyses were computed on the demographic data using one way analysis of variance (ANOVA) with post-hoc Schéffe tests. ANOVAs were calculated to explore differences between and within demographic data on the SI and NSI nurses, and the Schéffe was then done to identify where the differences existed. The Schéffe was used since it is a more stringent and conservative post-hoc pairwise measure when comparing groups (Norusis, 1994).

Comparison Within the SI Nurses

For the SI nurses, being an only child had significantly higher scores on the CAST total score than the middle and youngest children $F(3, 196) = 4.92, p = .003$, however, they did not differ in CAST scores from the SI nurses who were the first born child. The SI nurses who never attended religious services had a significantly higher score on both the EARS $F(3, 196) = 6.10, p = .001$ and CAST $F(3, 196) = 5.05, p = .002$ than those who attended services on holidays only or weekly. The SI nurses who were left handed had significantly higher scores on all three variables than those who were right handed: EARS: $F(2, 197) = 5.70, p = .004$, CAST: $F(2, 197) = 5.65, p = .004$, SSS: $F(2, 197) = 6.01, p = .003$.

The SI nurses who claimed to have no religion had significantly higher scores on the EARS total score than did the nurses who were Protestant $F(4, 195) = 4.99$, 

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p = .001. The divorced SI nurses had a significantly higher score on the EARS total score than the married SI nurses F(3, 196) = 4.19, p = .007.

Comparisons Within the NSI Nurses

One way analysis of variance (ANOVA) with post-hoc Schéffe tests were also performed on demographic data from the NSI nurses to explore for differences. No significant differences were found between any of the variables for the NSI nurses.

Comparison Between SI and NSI Nurses

Chi-square analyses were done to assess differences in demographic characteristics of the SI and NSI nurses. The chi-square analyses showed that there were significant differences between the SI and NSI nurses in marital status, dominant hand, smoking, educational degree, employment, religion, and religious service attendance. The SI nurses had a significantly higher incidence of being only children, of being divorced, of smoking, and being left-handed. The SI nurses had a higher incidence of diploma and associate degree nurses, whereas the NSI nurses had significantly more baccalaureate and masters prepared nurses. There was also a significantly higher number of NSI nurses employed when compared to the SI nurses. The SI and NSI nurses did not differ significantly on ethnic background, racial background, number of siblings, current position in nursing, or area of employment.

T-tests were done to assess for differences between SI and NSI nurses in continuous demographic variables. The t-tests showed that there were significant
differences between the SI and NSI nurses in number of continuing education hours about substance abuse and number of impaired nurses known.

Table 8 presents the Chi-square analyses on all categorical demographic variables.

Table 9 presents the t-tests done on all continuous demographic variables.

Table 8

Summary of Significant Chi-Square Analyses on Demographic Data of the Impaired and Non-Impaired Nurses (N = 200)

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\chi^2$</th>
<th>df</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital Status</td>
<td>.279</td>
<td>3</td>
<td>.001</td>
</tr>
<tr>
<td>Dominant Hand</td>
<td>.197</td>
<td>2</td>
<td>.002</td>
</tr>
<tr>
<td>Smokers</td>
<td>.333</td>
<td>1</td>
<td>.001</td>
</tr>
<tr>
<td>Highest Degree</td>
<td>.339</td>
<td>7</td>
<td>.002</td>
</tr>
<tr>
<td>Whether Employed</td>
<td>.298</td>
<td>1</td>
<td>.001</td>
</tr>
<tr>
<td>Religion</td>
<td>.273</td>
<td>5</td>
<td>.005</td>
</tr>
<tr>
<td>Religious Service Attendance</td>
<td>.265</td>
<td>3</td>
<td>.003</td>
</tr>
</tbody>
</table>

Table 9

Summary of Significant t-Test Analyses on Demographic Data of the Impaired and Non-Impaired Nurses (N = 200)

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>df</th>
<th>2-tailed p</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. Continuing Education Hours</td>
<td>SI</td>
<td>17.63</td>
<td>43.84</td>
<td>3.1</td>
<td>196</td>
</tr>
<tr>
<td></td>
<td>NSI</td>
<td>3.68</td>
<td>1.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Impaired Nurses Known</td>
<td>SI</td>
<td>17.11</td>
<td>19.90</td>
<td>7.8</td>
<td>198</td>
</tr>
<tr>
<td></td>
<td>NSI</td>
<td>1.58</td>
<td>2.09</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Additional Subject Responses

A small number of the total sample of nurses (n = 6) included written responses in addition to answering the questions. Four of the responses were from SI nurses and 2 were from NSI nurses. All six were in response to the sensation seeking questionnaire which gave a choice of two forced choice answers. Although the questionnaire directions requested the nurses to only answer the questions with the choices provided, some nurses provided additional narrative responses. The nurses expressed the need to support their choices with explanations, stating that they at times felt uncomfortable choosing one of the forced responses. The comments explained that at times they felt one way but at other times they may have felt differently. Some of the written explanations included:

"I answered the questions as honestly as possible. There were times I wanted to select more than one option because I feel differently at different times".

"I felt uncomfortable selecting only one answer for some of these questions. I wanted to pick both choices because I sometimes feel both ways".

Comparison of Pattern Profiles in SI and NSI Nurses

The three variables used to explore substance abuse pattern profiles in this study were sensation seeking, early risk indicators, and family history. For sensation seeking (SSS), both the SI and NSI nurses were well below the possible midpoint score, although the SI nurses had a higher mean than the NSI nurses. For early risk
indicators (EARS), the SI nurses were above the possible midpoint score and the NSI nurses were well below the midpoint score. The observed range of EARS scores for the SI nurses was moderately higher than for the NSI nurses. And finally, for the family history (CAST) scores, although both groups of nurses were below the possible midpoint of 15, the SI nurses had a much higher mean and median score than the NSI nurses. Table 10 presents a comparison of the mean, standard deviation, median and range of scores for the SI and NSI nurses on all three variables. Figure 2 then shows a comparison of the same mean scores of the three variables in a graphic representation.

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Mean (S.D.)</th>
<th>Median</th>
<th>Possible Midpoint</th>
<th>Possible Range</th>
<th>Observed Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>10.2 (4.04)</td>
<td>10</td>
<td>20</td>
<td>0 - 40</td>
<td>0 - 19</td>
</tr>
<tr>
<td>NSI</td>
<td>6.0 (2.96)</td>
<td>6</td>
<td>20</td>
<td>0 - 40</td>
<td>0 - 13</td>
</tr>
<tr>
<td>EARS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>154.8 (18.3)</td>
<td>157</td>
<td>128.5</td>
<td>29 - 286</td>
<td>114 - 204</td>
</tr>
<tr>
<td>NSI</td>
<td>112.2 (13.5)</td>
<td>111</td>
<td>128.5</td>
<td>29 - 286</td>
<td>84 - 156</td>
</tr>
<tr>
<td>CAST</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>13.5 (9.5)</td>
<td>14</td>
<td>15</td>
<td>0 - 30</td>
<td>0 - 30</td>
</tr>
<tr>
<td>NSI</td>
<td>4.0 (7.3)</td>
<td>2</td>
<td>15</td>
<td>0 - 30</td>
<td>0 - 28</td>
</tr>
</tbody>
</table>
Figure 2

Comparison of Mean Scores on SSS, EARS, and CAST for the SI and NSI Nurses

Summary

The results indicated that the three variables studied (sensation seeking, early risk indicators, and family history) can be used to identify early risk indicators for substance abuse impairment in nurses. Demographic data were evaluated using descriptive statistics. Pearson's Correlations demonstrated a significant relationship between scores on the EARS and SSS, and the EARS and CAST scores for the impaired nurses. For the non-impaired nurses, the Pearson's Correlations
demonstrated a significant relationship only between the EARS and CAST scores. Independent t-test scores demonstrated the impaired and non-impaired groups differed on all three of the instrument total scores. Discriminant analysis strongly supported the significance of the three variables as predictors of the impaired and non-impaired nurses. Classification results indicated a correct prediction of SI membership in 87% of the cases and correct NSI membership in 95% of the cases with an overall percent of 91% for grouped cases correctly classified. Scores from the EARS had the largest correlation and were the strongest predictor followed by scores from the SSS and CAST.
CHAPTER V

DISCUSSION, LIMITATIONS, CONCLUSIONS, RECOMMENDATIONS, AND SUMMARY

The purposes of this study were to investigate early risk factors that lead to substance abuse impairment, and to discriminate between impaired and non-impaired registered nurses based on those identified factors. Data were collected from 100 impaired and 100 non-impaired registered nurses who lived in the United States.

This chapter focuses on a discussion of the study findings, limitations of the investigation, conclusions, and recommendations for future research on substance abuse impairment in nurses.

Discussion

The results of this study demonstrated that early risk indicators including sensation seeking and family history can effectively discriminate between impaired and non-impaired nurses. SI membership was correctly predicted in 87% of the cases. NSI membership was correctly predicted in 95% of the cases. Overall prediction rate was 91% for both the SI and NSI groups. All three variables were strong predictors of substance abuse impairment. Early risk indicators was the strongest of the three followed by sensation seeking and family history. Correlations demonstrated a moderate relationship between scores on the EARS and SSS, and scores on the EARS
and CAST instruments for the impaired nurses. There was a moderate relationship between scores on the EARS and CAST instruments for the non-impaired nurses.

**Early Risk Indicators**

Findings of this study showed that the scores on the EARS instrument was the strongest predictor of group membership for the SI and NSI nurses. t-tests demonstrated that the SI and NSI nurses differed significantly on EARS scores. Early risk indicators were studied by using the EARS instrument which was developed by Efinger (1984). Since the EARS instrument incorporates family history and sensation seeking, this could explain the relationship or shared variance that the EARS scores had with SSS and CAST scores for the SI nurses. The EARS instrument incorporates some family history and sensation seeking items, in addition to many other factors such as social support, depression, when a person began using drugs/alcohol, peer influence, degree of shyness, medical symptoms, how leisure time is utilized, and amount of stress.

There were no other research studies in the review of literature that investigated the same three variables explored in this study. Bry, McKeon, and Pandina (1982) tested the hypothesis that extent of drug use was a function of the number of etiologic variables present. No specific combinations of variables accounted for significant proportions of variance in drug use. Subjects who exhibited four risk factors proved to be four and a half times more likely to report very heavy drug use that those whose exhibited two or less risk factors. These findings are relevant to the present study.
The EARS instrument is a combination of risk variables and was the strongest predictor of impairment. These results also support the theory by Bry (1983) and research by Bry, Pedraza, and Pandina (1988) that the greater the number of risk factors, the more likely the chance of substance abuse impairment. The number of variables rather than any specific combination of variables, was the important factor that these researchers believed needed to be investigated.

Some of the early risk indicators which were effective in distinguishing between groups in this study were also identified by Sullivan (1987b) as being significant. Sullivan completed a mailed survey with impaired and non-impaired nurses, and found that family history, current employment in nursing, and physical health problems were all significant risk factors. These same indicators were also significant in the present study. Family history of alcoholism was measured by the CAST instrument and was significantly different between the SI and NSI nurses in this study. In the present study, employment and physical health problems were part of the EARS survey. The overall EARS scores also demonstrated a significant difference between the SI and NSI nurses.

The EARS instrument is the only tool at the present time that incorporates various early potential risk factors for substance abuse impairment. The EARS instrument has only been used in two previous studies prior to the present study. The first study was conducted by the author of the tool, Effinger (1984) and the second was by Burns (1991). The prediction rates in the present study are similar to both the results of
Efinger (1984) and Burns (1991). Efinger (1984) developed EARS to identify those at early risk for alcoholism. Data were collected from two criterion groups: 151 members of Alcoholics Anonymous and 164 non-alcoholics. Scoring of the weighted items of the tool provided a correct classification of group membership in 91% of the cases. Burns (1991) investigated risk indicators for substance abuse among nurses to identify populations at risk. Classification results indicated a correct prediction of substance abuse group membership in 94.2% of the cases and correct non-substance abuse membership in 97.6% of the cases with an overall percent of 95.8% for grouped cases correctly classified.

**Sensation Seeking**

The results of this study showed that scores from the Sensation Seeking Scale were the second strongest predictor of group membership for the SI and NSI nurses. These results supported previous research that identified sensation seeking as an early risk factor of substance abuse impairment, but not the most significant variable. The literature discusses personality as a significant variable in the development of substance abuse impairment. Perhaps SI nurses who are sensation seekers, enjoy the challenge and risk of taking substances that alter perceptions and sensations. It may also be possible that nurses who enjoy sensation seeking are also risk takers. The sensation seeking may have a negative effect on decision-making about the use and abuse of drugs and alcohol.
Khavari and Mabry (1985), Segal, Huba, and Singer (1980), and Segal, Cromer, Hobfield, and Waserman (1982) all included sensation seeking as a variable in their studies when examining reasons for use of drugs and alcohol. Similar to this study, sensation seeking was always a significant variable in predicting group membership, but was never the strongest variable. As a predictor variable, sensation seeking was rated as having a moderate to low predictive value.

Findings of this study also demonstrated a moderate relationship between scores on the SSS and the EARS instruments with a shared variance of 14%. The variance can be explained since Efinger (1984) incorporated a few sensation seeking questions into the EARS instrument. Sensation seeking is a factor that is predictive for substance abuse impairment, and although it may be an early predictor, it has not been found to be one of the highest predictors for impairment.

Family History

Data analysis in this study also supported the notion that family history has a role in the development of substance abuse impairment. SI and NSI nurses differed significantly on the CAST (family history) instrument scores. The scores on the CAST was a significant predictor variable for group membership, but had the weakest predictive value of the three instruments. EARS scores had a much higher predictive value and SSS scores were slightly higher than the CAST scores.

The results of this study agreed with the body of literature that supports the concept that growing up in an impaired family increases the risk of the individual developing
substance abuse impairment. There was some family history of substance abuse in the NSI nurses, although the family history of substance abuse impairment was not as high with NSI nurses as it was with SI nurses.

A review of 39 studies by Cotton (1979), which involved families of alcoholics and non-alcoholics, indicated that the incidence of substance abuse impairment was substantially higher in relatives of alcoholics than in relatives of non-alcoholics. Goodwin (1971, 1976, 1977, 1979) also conducted retrospective studies on the nature of alcoholism and impairment. His conclusions also supported the notion that substance abuse impairment is a family disease and that family history increases an individual's risk of developing substance abuse impairment.

Other studies also found that family history is a risk factor. Bissel and Haberman (1984) studied recovering alcoholic health care professionals and found that nurses had higher percentage of alcoholic relatives compared to the other professionals. In addition, Brennan (1983) studied alcoholic nurses and found that more than half had at least one alcoholic parent. Sullivan (1987b) reported that 62% of the SI nurses in her study had an alcoholic family member compared to only 28% of the NSI nurses. Dean and Edwards (1989) investigated the prevalence of adult children of alcoholics and their characteristics in a sample of 223 baccalaureate nursing students. Results indicated that 33.1% of the sample were adult children of alcoholics although the students were not considered to be impaired.
An interesting and unexpected finding from the present study was that the NSI nurses had higher than expected scores on the CAST instrument and that the scores on the CAST and EARS had a 9% shared variance for the non-impaired nurses. Family history studies have also been done with nurses who were not impaired. It has been suggested (Haack & Harford, 1984) that nurses and other health care workers are more likely than other professionals to be children of alcoholics. As children, they accepted the “caretaker” role and assumed responsibility for a parent who could not adequately meet family obligations. This person cared for younger siblings and nursed the family through illnesses and dilemmas. Children in this caretaker role also tended to get good grades and tried to please adults. They used their success to show that everything really was all right. These children often married alcoholics and were at greater risk for becoming chemically dependent themselves (Goodwin, 1981).

Although a family history of substance abuse impairment was higher in SI nurses than NSI, the findings of these studies supported the results of this investigation, that NSI nurses may still have a family history of substance abuse impairment. The 9% shared variance between CAST and EARS reflects the family history questions in the EARS instrument.

Very few research studies have explored family history of substance abuse in nurses, particularly NSI nurses. This may be one of the areas that needs continued exploration. Family history may be a significant predictor of impairment, but may also have a higher incidence in non-impaired health care professionals as well.
Pattern Profiles of Substance Abuse Impairment

The pattern profiles identified in this research study are composed of the three variables studied: sensation seeking (SSS), early risk indicators (EARS), and family history (CAST). These variables effectively predicted group membership in 91% of the cases. EARS provided the most thorough profile of substance abuse impairment in nurses, since it was the strongest predictor. Scores on the SSS and CAST were significant predictors, but not as strong as scores on the EARS. In this study, the SI nurses had higher scores on all three variables than the NSI nurses.

EARS scores for the SI and NSI nurses in this study were comparable to the EARS scores reported for these two groups in the study by Burns (1991). The Burns study was the only investigation in the literature that explored similar variables. Based on the results of these two studies that have explored early risk indicators for substance abuse impairment, early risk factors seems to be a variable worthy of continued investigation. In both studies, the EARS scores have been the strongest predictor of group membership for SI and NSI nurses. If the profession of nursing is able to identify early risk indicators rather than later symptoms, many nurses may be prevented from becoming substance abuse impaired.

Demographic Data

The demographic data of this study revealed subject similarities and differences to the demographic data in prior research studies. O'Brien (1996) investigated 139
chemically impaired nurses and found similar demographic data concerning level of
education and marital status. O'Brien's study found that 60% of the impaired nurses
had diplomas or associate degrees in nursing. Results in this study were similar with
55% of the SI nurses having diplomas or associate degrees compared to 32% of the
NSI nurses. In Sullivan's study (1987b) 60% of the SI nurses had BSN degrees or
higher. The results indicated that nurses who were not impaired may have focused
more on furthering their education. NSI nurses may have had more finances, better
priorities, and more time for education when their focus was not on becoming
impaired.

Other findings revealed by O'Brien (1996) were that 41% of the impaired nurses
were divorced or separated, 44.4% were married, and 14.1% were single. These
results were similar to this study which found 40% of the SI nurses divorced or
separated, 50% were married, and 10% were single. Sullivan (1987b) only presented
data for impaired nurses who were married, but the results were also similar with a
rate of 48%. A higher incidence of divorce and separation may be related to their
impairment history but may also have an affect on available support systems in
recovery.

The Burns study (1991) findings differed from this study's findings in that Burns
found no difference between the impaired and non-impaired nurses in sibling position
and educational preparation. In the present study, chi-square analysis showed a
significant difference between the SI and NSI nurses in educational degrees and sibling
position. The SI nurses had a significantly higher incidence of being only children, and of having diploma and associate degree nurses. No other studies have investigated sibling position.

Burns also reported that the impaired nurses had an even higher rate of unemployment than in the present study. The impaired nurses had an unemployment rate four times higher than the non-impaired nurse group. In the present study, 75% of the impaired nurses were employed with 96% of the non-impaired nurses presently employed in nursing.

In the present study, mean age for the SI nurses was similar to O'Brien's (1996) findings, but in Sullivan's (1987b) study the SI nurses were generally younger. Impairment in young nurses indicates the need to focus on substance abuse education and awareness while nurses are students.

The present study sample was composed of 87% females and 13% males. O'Brien had 21% males, Sullivan (1987b) had 12%, and Beamer (1991) had 8% male SI nurses. Since the U. S. Population of Registered Nurses includes only 4.3% males (U.S. DHHS, 1992), the current gender distribution is unusual and high for males.

Race has been another variable investigated in previous research. Haack (1985) found that race was significantly related to drinking in nursing students, such that white nursing students drank more than non-white nursing students. In the present study, there was no identifiable association between race and substance abuse; however, the SI nurses were 95% Caucasian and 5% non-Caucasian, while the NSI
nurses were 94% Caucasian and 6% non-Caucasian. O’Brien (1996) reported 89.6% Caucasian and 9.4% non-Caucasian in her sample. The U. S. DHHS reported (1992) that 90% of nurses in the U. S. are “white” and 10% are “non-white”.

Only one other study included data on religious preference or participation in SI nurses (O’Brien, 1996). The data varied from the present study in that O’Brien’s sample had fewer Protestants and Catholics, but had a higher percentage of SI nurses with no religion. In the present study more than half of the SI nurses attended church weekly, whereas in the O’Brien study, over one third of the SI nurses never attended religious services. Further research needs to be done in this area since only two studies have explored this variable. Initial indications may show a relationship between lack of church attendance and participation in religion and an increased risk of impairment.

Theoretical Framework - Donovan and Roger’s Models

Since the results of this study indicated that all three variables discriminated between impaired and non-impaired nurses, the results support the conclusion that substance abuse impairment is a complex phenomenon and cannot be attributed to any one variable or to a small number of variables. Donovan (1986) presented a multifactorial model of alcoholism and substance impairment that is supported by the results of this study. The model encompasses personality factors, heredity, sociocultural factors, psychostructural factors, and environmental variables. The present study incorporated this model into the framework following Donovan’s
recommendations that personality, family history, and environmental factors all be investigated in one study, rather than exploring risk factors separately. The combined approach of investigating early risk indicators, sensation seeking, and effects of family history has shown that, in this study, these variables can effectively discriminate between impaired and non-impaired nurses.

The present results also support Rogerian theory (Rogers, 1970; Rogers, 1992) which proposes that impairment is a continuous process within an individual and not the result of a singular cause. The individual is an open system continuously evolving a diverse pattern in mutual process within the environment. Impairment is a human field manifestation occurring within this process. Although impaired nurses may share common characteristics, they vary in development, progression, and severity. The diverse patterns of substance use and abuse help to explain a person’s unique pattern manifestations. Research must focus on the whole individual rather than specific parts or factors, and examine the mutual process that occurs within the individual and environment. As patterns of substance abuse impairment are identified and understood, the focus of nursing intervention can be on changing the pattern of the human and environmental fields toward health and healing. Identifying patterns of risk allows for earlier interventions, before nurses become impaired.

Nursing interventions will need to focus on the variables that can be changed. With substance abuse impairment, there are modifiable and non-modifiable risk indicators. The most significant non-modifiable factor is family history of substance abuse.
impairment. Although nurses cannot change their genetic make-up, awareness and education can provide them with the choice of whether they should use drugs or alcohol. Other possible modifiable risk factors include level of sensation seeking, use of leisure time, support systems, coping mechanisms, levels of stress and anxiety, and feelings of shyness, depression, aggression, and guilt. Nursing interventions could focus on changing these modifiable risk factors as nurses attempt to move human and environmental fields towards health and healing.

**Methodological Issues**

The need to preserve anonymity and confidentiality had an influence on the methodology of this study. When the names and addresses were received from nurses over the Internet, nurses were assured of anonymity and confidentiality. As a result, no record was kept of nurses who received questionnaires and the questionnaires were not numbered or marked in any way. Subjects were instructed not to include a return mailing address on the envelope when returning the questionnaires to the researcher. When nurses mailed back the questionnaires there was no way of identifying who had returned them and who had not. As a result, follow up reminders could not be sent only to those who had not yet responded. One general email reminder was sent to all email addresses in hopes of increasing response rate, but there was no way of tracking who had already responded. Not having a method of follow-up for those who did not respond may have affected the overall response rate of the study.
Another item of interest was that many of the nurses used their first name and last initial when they forwarded their name and address to the researcher. The subjects obviously were concerned about maintaining their anonymity by not including their last name. The concern over anonymity may have influenced the honesty of subject's responses and/or their willingness to participate.

The questionnaires included in the survey were all forced choice responses with no opportunity for more detailed answers. Some of the nurses \((n = 6)\) felt the need to write on the backs of the questionnaires in an attempt to explain their answers by providing rationale. All six of the nurses commented on the SSS questionnaire expressing that they often felt somewhere in between the two choices and had a difficult time selecting only one choice.

**Limitations**

The sample obtained for this research study was one of convenience. A sample of convenience limits the generalizability of the study results since it is non-random, and not a representation of the whole population. There was no way of knowing if the 100 impaired nurses surveyed in this study were an accurate representation of the population of impaired nurses, or if the 100 non-impaired nurses surveyed were representative of non-impaired nurses.
Another potential limitation is that the present study was biased by race, gender, and age. The sample was predominantly female, white, and middle-aged, but these factors are representative of U. S. nurses in general.

Conclusions

The results of this investigation can have a significant and positive influence on the nursing profession. A step has been taken toward identifying early risk factors of substance abuse impairment. The following conclusions are drawn from the findings:

- The SI and NSI nurses differed significantly on all three variables: early risk indicators, sensation seeking, and family history. The three instruments used to explore these variables (EARS, SSS, and CAST) can be used together to identify nurses who have early risk factors of substance abuse impairment.
- The EARS instrument includes some questions about family history and sensation seeking. This could explain the percentage of shared variance between the EARS and CAST, and EARS and SSS instruments used in this study.
- The three instruments used in this study can predict group membership of impaired and non-impaired nurses. The EARS instrument is the strongest predictor of the three instruments.
- Demographic data such as sibling position, number of siblings, dominant hand, religious service attendance, marital status, smoking history, educational preparation, and amount of continuing education on substance abuse impairment
all showed significant differences between the SI and NSI nurses. These variables need further investigation.

- The NSI nurses had lower scores on early risk indicators and were at less risk for developing substance abuse impairment.
- NSI nurses sometimes had a history of family substance abuse, but their scores were lower for family history than the SI nurses.

**Recommendations**

The results of this study can have a significant and positive influence on the nursing profession. There are many research directions concerning substance abuse impairment in nurses yet to be explored. Only through further research, and promotion of changes in nursing practice and education, can nursing take a proactive role in reducing the risk of substance abuse impairment in nurses. The profession of nursing has the responsibility to focus on reducing risk of impairment and providing a better knowledge base for early recognition and intervention for those nurses who have substance abuse impairment. Recommendations for the future involve nursing education, nursing practice, and nursing research.

**Nursing Education**

Recommendations for nursing education include:

- Nurses and student nurses can be educated about modifiable and non-modifiable risk indicators for substance impairment. The most important non-modifiable risk
indicator is family history. Education could include research and statistics about the increased incidence of impairment in nurses that have a family history of substance abuse impairment. Awareness that family history may increase an individual’s own risk of impairment then gives nurses a choice as to whether they will use drugs and/or alcohol. Possible modifiable risk factors include level of sensation seeking, use of leisure time, support systems, coping mechanisms, levels of stress and anxiety, and feelings of shyness, depression, aggression, and guilt. Once educated about these potential risk factors, nurses would then have the choice of using methods to reduce these risk factors.

- Educational programs for reducing modifiable risk factors need to be implemented at all ages and levels of practice. Education can be a useful tool in preventing risk factors from beginning or to change risk factors that are already present.

- Educational programs need to be offered on methods to reduce modifiable risk factors of substance abuse impairment. Knowledge about substance abuse impairment and intervention needs to be communicated at all levels from student nurses to all health care members. The focus of education needs to be toward prevention and earlier identification. Once nurses are educated and aware, they then have choices to make just as if they are at high risk for any other disease.

- Nursing faculty need to evaluate the present education in their schools concerning substance abuse impairment. Faculty need to continuously update information
about substance abuse and impairment and evaluate to be sure it is being taught effectively.

- **Nursing faculty need to evaluate and possibly increase the focus and number of hours on substance abuse impairment in nursing curricula.** Nursing faculty have the opportunity to incorporate the topic throughout the educational process. The topic could be included in discussion and problem solving case studies for clinical conferences. Students need to be educated about the risk for development of substance abuse impairment in themselves as well as others. Discussion and role playing are two possible methods to teach students how to intervene for impaired co-workers.

- **Early risk factors need to be also taught in continuing education programs for staff nurses.** Education should include methods of identification and the most successful methods for intervention and treatment. The content taught needs to be continuously updated and improved upon as more is learned about identification, intervention, and treatment for substance abuse impairment.

- **Nurses and student nurses could be taught the importance of and how to use leisure time more productively, how to seek out positive support systems, how to develop healthy coping mechanisms, various methods to reduce stress and anxiety, and how to effectively deal with feelings of shyness, depression, aggression, and guilt.**

- **Continuing education should be implemented for practicing nurses so knowledge about addiction and alcoholism continues to be updated on a regular basis.**
Opportunities need to be provided for discussions about substance abuse impairment, what it is, attitudes about it, how to identify those with it, and how to intervene when a nurse is identified. Nurses should then be encouraged to attend continuing education so a more extensive effort can be made at preventing the development of substance abuse impairment.

**Nursing Practice**

Recommendation for nursing practice include:

- Nurses should be provided with the opportunity to complete an early risk indicator questionnaire. Results could be self-scored by the nurse and remain confidential. If the score on the questionnaire was high, the nurse would then have the choice of seeking out methods to lower risk of impairment.

- Practicing nurses need to be more aware of the impact that impaired nurses can have on patients, co-workers, and society. Education must be directed at teaching nurses to not protect an impaired nurse with whom they work, but rather how to initiate treatment for the SI nurse. Intervention is best when substance abuse impairment is in the early stages. Nurses who become aware of an impaired co-worker can make supervisors aware and assist the impaired nurse in making necessary counseling or medical appointments.

- Focus of knowledge about substance abuse and impairment should be provided for all educational levels of nurses and areas of employment. All working nurses need to know how to identify an impaired co-worker.
• Nurse administrators should evaluate present institutional policies that focus on substance abuse impairment. Administrators need to have policies that allow them to focus on prevention, early identification, and intervention for substance abuse impaired nurses.

• Administrators must evaluate the cost of late identification versus the cost of prevention and early identification of substance abuse impairment in nurses.

• Nursing administrators needs to focus on the cost of substance abuse impairment in nurses as well as retention of valuable nurses. Programs on prevention and early identification are more cost effective than long-term treatment costs. Retention of nurses is more cost effective than recruitment and orientation of new staff nurses.

Nursing Research

The focus of research on substance abuse impairment in the past has been on incidence and prevalence, attitudes about substance abuse impairment, and characteristics of substance abuse impairment once nurses have developed later symptoms of the disease. Few studies have examined early risk indicators and pattern profiles of the development of substance abuse impairment. As a result, continued research is needed to identify the complexity of early risk factors in nurses. Recommendations for research include:

• A longitudinal study should be conducted examining nursing students, new graduates, and then the same subjects as staff nurses to assess the risk factors encountered and the future development of substance abuse impairment. The
purpose would be to identify those at high risk and how risk factors progress or are mediated.

- **Evaluative research needs to be conducted on prevention and/or early detection strategies for nurses at risk.** Research needs to investigate the effect that counseling and education have on preventing or slowing the development of substance abuse impairment.

- **Specific research studies could be done to evaluate which methods are most effective in lowering risk factors and preventing the development of substance abuse impairment.** Potential methods that could be implemented and evaluated include education on successful coping strategies, development of effective support systems, effective dealing with feelings and behaviors, and/or stress reduction techniques.

- **The progression and severity of substance abuse impairment needs to be explored.** Research needs to continue evaluating which combination of early risk factors lead to substance abuse impairment in nurses, as well as which cause a faster progression with a higher severity of impairment.

- **Research is also needed to explore mediating factors such as social class, adoption, family dynamics, to see if they have any influence on reducing the development of substance abuse impairment in nurses.**

- **Future research studies could also evaluate nursing students and nurses who are at risk for becoming impaired, the implementation of various interventions, and then**
re-evaluation at future intervals to identify those that actually develop substance abuse impairment and which interventions were most successful.

- Research is also needed to investigate substance impaired nurses who re-enter nursing after treatment, exploring the barriers, cost, and factors leading to success or failure.

- Replication of this study needs to be done incorporating variations such as an increase in sample size, use of a random sample, and evaluating additional predictive factors such as impulsiveness, assertiveness, self-esteem, and personality traits.

- Future research studies could explore factors that maintain substance impaired nurses in recovery. Once nurses are identified and receive treatment, future studies need to explore which factors increase a nurses chance of staying in recovery.

- Qualitative research could be done to explore what recovering impaired nurses and their family or significant others believed lead to their level of impairment. Qualitative research would be useful in developing an understanding of the process of substance abuse impairment and the interventions that are successful in confronting a nurse’s denial of being impaired.

**Summary**

The results of this study demonstrated that early risk indicators including sensation seeking and family history can effectively discriminate between impaired and non-impaired nurses. Although substance abuse impairment is a complex and continuous
process, impaired nurses share some common characteristics and patterns. The individual is an open system continuously evolving a diverse pattern in mutual process within the environment. Substance abuse impairment is a human field manifestation occurring within this process and cannot be linked to a small number of variables. As patterns are identified and understood, the focus of nursing intervention can be on changing the patterns toward health and healing.

Identification of those at risk for impairment will allow for earlier intervention and possible prevention of becoming impaired. This knowledge can lead to counseling, education, and methods to reduce the number of risk factors. Continuing education as well as nursing school curricula should be adapted to include more content on early identification and prevention of substance abuse impairment. Interventions and methods can be implemented through education, nursing practice, and further research in this area.
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Appendix A
Demographic Data Form

1. Year of birth? ______

2. Are you _____male or
   _____female?

3. Number of siblings_____

4. What is your sibling position?
   ____first born
   ____middle child
   ____youngest child
   ____only child

5. List your ethnic background:
   ______________________________________
   ______________________________________
   ______________________________________

6. What is your racial background?
   ____African American
   ____Caucasian
   ____Asian / Pacific Islander
   ____American Indian / Alaskan Native
   ____Hispanic / Latino
   ____Other: _____________________________

7. Current marital status:
   ____single
   ____married
   ____separated
   ____divorced
   ____widowed

8. Are you _____Right-handed      _____Left Handed      _____Both
9. Do you smoke cigarettes? _____yes _____no. If yes, # packs per day? ______

10. Highest degree(s) held:

_____Diploma in nursing
_____Bachelor's in nursing
_____Bachelor's in other field
_____Master's in nursing
_____Master's in other field
_____Doctorate in nursing
_____Doctorate in other field

11. How many years have you been employed as an RN? _____

12. Are you employed in nursing now? ____yes ____no

13. What is your current position (education/administration/research/clinical, etc.)?

_______________________________

14. If you are employed in a clinical area, in which clinical area do you work?

_______________________________

15. Have you ever attended any continuing education programs on addiction/alcoholism?

_____yes

_____no

16. If yes, # of hours_______

17. What is your religious affiliation?

_____Catholic

_____Protestant

_____Jewish

_____Muslim

_____Other: ___________________

_____None

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18. How often do you attend religious services?
   ____ daily
   ____ weekly
   ____ monthly
   ____ holidays only
   ____ never

19. How many nurses do you know who are impaired (in or not in recovery)?
APPENDIX B

Zuckerman Sensation Seeking Scale

PART A

**DIRECTIONS:** Each of the items in PART A contains two choices, A and B. Please choose the one which best describes your likes or feelings **before you were in recovery.** Do not leave any items blank. There are no right or wrong answers. Be frank and give your honest appraisal of yourself.

1. A. I like “wild” uninhibited parties.
   B. I prefer quiet parties with good conversation.

2. A. There are some movies I enjoy seeing a second or even a third time.
   B. I can’t stand watching a movie that I’ve seen before.

3. A. I often wish I could be a mountain climber.
   B. I can’t understand people who risk their necks climbing mountains.

4. A. I dislike all body odors.
   B. I like some of the earthy body smells.

5. A. I get bored seeing the same old faces.
   B. I like the comfortable familiarity of everyday friends.

6. A. I like to explore a strange city or section of town by myself, even if it means getting lost.
   B. I prefer to have a guide when I am in a place I don’t know well.

7. A. I dislike people who do or say things just to shock or upset others.
   B. When you can predict almost everything a person will do and say he or she must be a bore.

8. A. I usually don’t enjoy a movie or play where I can predict what will happen in advance.
   B. I don’t mind watching a movie or play where I can predict what will happen in advance.

9. A. I have tried marijuana or would like to.
   B. I would never smoke marijuana.
10. A. I would not like to try any drug which might produce strange and dangerous effects on me.
   B. I would like to try some of the new drugs that produce hallucinations.

11. A. A sensible person avoids activities that are dangerous.
   B. I sometimes like to do things that are a little frightening.

12. A. I dislike “swingers” (people who are uninhibited and free about sex.)
   B. I enjoy the company of real “swingers.”

13. A. I find that stimulants make me uncomfortable
   B. I often like to get high (drinking liquor or smoking marijuana).

14. A. I like to try new foods that I have never tasted before.
   B. I order the dishes with which I am familiar, so as to avoid disappointment and unpleasantness.

15. A. I enjoy looking at home movies or travel slides.
   B. Looking at someone’s home movies or travel slides bores me tremendously.

16. A. I would like to take up the sport of water skiing.
   B. I would not like to take up water skiing.

17. A. I would like to try surf board riding.
   B. I would not like to try surf board riding.

18. A. I would like to take off on a trip with no preplanned or definite routes, or timetable.
   B. When I go on a trip I like to plan my route and timetable fairly carefully.

19. A. I prefer the “down to earth” kinds of people as friends.
   B. I would like to make friends in some of the “far out” groups like artists or “ punks.”

20. A. I would not like to learn to fly an airplane.
   B. I would like to learn to fly an airplane.

21. A. I prefer the surface of the water to the depths.
   B. I would like to go scuba diving.

22. A. I would like to meet some persons who are homosexual (men or women).
   B. I stay away from anyone I suspect of being “gay or lesbian.”
23. A. I would like to try parachute jumping.
   B. I would never want to try jumping out of a plane with or without a parachute.

24. A. I prefer friends who are excitingly unpredictable.
   B. I prefer friends who are reliable and predictable.

25. A. I am not interested in experience for its own sake.
   B. I like to have new and exciting experiences and sensations even if they are a little frightening, unconventional or illegal.

26. A. The essence of good art is in its clarity, symmetry of form and harmony of colors.
   B. I often find beauty in the “clashing” colors and irregular forms of modern paintings.

27. A. I enjoy spending time in the familiar surroundings of home.
   B. I get very restless if I have to stay around home for any length of time.

28. A. I like to dive off the high board.
   B. I don’t like the feeling I get standing on the high board (or I don’t go near it at all).

29. A. I like to date members of the opposite sex who are physically exciting.
   B. I like to date members of the opposite sex who share my values.

30. A. Heavy drinking usually ruins a party because some people get loud and boisterous.
   B. Keeping the drinks full is the key to a good party.

31. A. The worst social sin is to be rude.
   B. The worst social sin is to be a bore.

32. A. A person should have considerable sexual experience before marriage.
   B. It’s better if two married persons begin their sexual experience with each other.

33. A. Even if I had the money I would not care to associate with flighty rich persons like those in the “jet set.”
   B. I could conceive of myself seeking pleasures around the world with the “jet set.”
34. A. I like people who are sharp and witty even if they do sometimes insult others.
   B. I dislike people who have their fun at the expense of hurting the feelings of
      others.

35. A. There is altogether too much portrayal of sex in movies.
   B. I enjoy watching many of the “sexy” scenes in movies.

36. A. I feel best after taking a couple of drinks.
   B. Something is wrong with people who need liquor to feel good.

37. A. People should dress according to some standard of taste, neatness, and style.
   B. People should dress in individual ways even if the effects are sometimes
      strange.

38. A. Sailing long distances in small sailing crafts is foolhardy.
   B. I would like to sail a long distance in a small but seaworthy sailing craft.

39. A. I have no patience with dull or boring persons.
   B. I find something interesting in almost every person I talk to.

40. A. Skiing down a high mountain slope is a good way to end up on crutches.
    B. I think I would enjoy the sensations of skiing very fast down a high mountain
       slope.
APPENDIX C

Efinger Early Risk Survey – Impaired Nurses

PART 2 ANSWER ALL QUESTIONS AS INDICATED.

1. Which of the following conditions have you experienced, especially before recovery? Please check ALL that apply to you.

   - Stomach pain (gastritis)
   - Ulcers
   - Pancreatitis
   - Gall bladder problems
   - Liver problems
   - Frequent toothaches
   - Gum disease
   - Bruising easily
   - Diabetes
   - The flu
   - Premenstrual syndrome (irritability, swelling, headaches, etc.)
   - Insomnia
   - Frequent illness as a child requiring a physician and medications
   - Rape or sexual molestation
   - Migraine headaches
   - Anorexia (loss of appetite with weight loss)
   - Bulimia (eating and vomiting)
   - A bad cold
   - Spinal cord injury
   - Hypoglycemia

2. How much leisure time did you have in an average week while you were using drugs or alcohol? (Leisure time is the amount of time you have after you completed employment and/or household responsibilities). (Check the correct answer).
   
   ( ) 1-6 hours
   ( ) 7-12 hours
   ( ) one day
   ( ) two days
   ( ) more than two days

3. When you had leisure time, how often did you have these feelings or reactions? (Check the correct answer.)

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<thead>
<tr>
<th></th>
<th>Never</th>
<th>Almost Never</th>
<th>Sometimes</th>
<th>Frequently</th>
<th>Most of the time</th>
</tr>
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<tbody>
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<td>Bored</td>
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<tr>
<td>Lazy</td>
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<td>Lonely</td>
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<tr>
<td></td>
<td>Never</td>
<td>Almost Never</td>
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<tr>
<td>Tired</td>
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<td>Worried about work or school</td>
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<td>Anxious or “up tight”</td>
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<td>Relaxed</td>
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4. When you had leisure time, which of the following things did you do? (check how often you do them)

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**DIRECTIONS**: Please check the answers that apply to you and fill in the blanks.

5. Please describe your first drinking or drug experience.

   (  ) I have never had an alcoholic drink or taken a drug. If this is so, skip to question #7.

   (  ) I have no memories of my first drinking/drug experience.

   (  ) I do remember my first drinking or drug experience. I remember the following things:

   a. Age __________________
   b. Beverage(s) or drug(s) ________________________________
   c. Amounts ________________________________
   d. People I was with ________________________________
6. How did you feel the FIRST TIME YOU DRANK ALCOHOL OR DID DRUGS? (check all that apply.)

--- Good, liked the feeling
--- Self-confident
--- "High"
--- Less shy, more outgoing
--- Didn’t like it at all

--- Disappointed
--- Sick
--- “Threw up”
--- Don’t remember
--- Other

Specify: ________________

7. At the present time is there anyone in your family who is or was an alcoholic or abused drugs or medications or whom you think abuses alcohol, drugs, or medications? Please include deceased family members. Is there anyone whose heavy drinking or drug-taking behavior is a matter of concern? (PLEASE CHECK UNDER EACH CATEGORY FOR YOUR FAMILY MEMBERS OR OTHERS. WHEN THERE IS MORE THAN ONE PERSON IN A CATEGORY, WRITE THE NUMBER.)

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<td>Father</td>
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<td># of spouses or mates</td>
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<td>Self</td>
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<td>Sons</td>
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<td>Daughters</td>
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<td>Aunts</td>
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<tr>
<td>Sisters</td>
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<td>__________</td>
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<td>Brothers</td>
<td>__________</td>
<td>__________</td>
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</tbody>
</table>

8. Did you wear a seat belt before you were in recovery?
   ( ) Almost always
   ( ) Frequently
   ( ) Sometimes
   ( ) Almost never
9. Although we all have feelings of anxiety, sometimes the feelings are extremely intense. Intense anxiety, manifests itself in sudden, unexpected feelings of being scared; your heart beats very fast; the palms of your hands feel sweaty; you breathe very fast; and you may feel like you are going to die. These feelings are sometimes called an "anxiety attack."

Did you ever feel this anxious before you were in recovery?
(   ) Yes
(   ) No

If Yes, how often did you feel intense anxiety?

(   ) Once
(   ) A few times
(   ) Frequently
(   ) Very often
(   ) Almost all the time

10. Various stresses and losses occur in all stages of our lives. Please recall as carefully as possible if any of these stresses or losses occurred in your life. Please check if these stresses or losses have occurred. Indicate if this still bothers you enough to cause emotional pain.

   Check if you had these stresses

(   ) Awareness of parental alcoholism

   Check if you had these feelings

(   ) Feelings of shyness as a child
(   ) Feelings of depression

   Check here if this still causes you pain

(   ) Yes
(   ) Yes
(   ) Aggressive feelings
(   ) Other children in my family were more favored than I
(   ) Feelings of guilt related to religion
(   ) Yes
(   ) Yes

(   ) Yes
11. I have the following people I can count for help when I need it. (Check all the people you can count on for help.)

| ( ) Mother               | ( ) Co-workers       |
| ( ) Father              | ( ) Teachers         |
| ( ) Grandparents        | ( ) Classmates       |
| ( ) Brother(s)          | ( ) Minister, Priest, Rabbi (Religious advisor) |
| ( ) Sister(s)           | ( ) Counselor        |
| ( ) Spouse              | ( ) Psychiatrist     |
| ( ) Lover               | ( ) Family doctor    |
| ( ) Children            | ( ) Employer         |
| ( ) Friends             | ( ) Work supervisor  |
| ( ) Church organization | ( ) Social group, club, fraternity |
| ( ) Self-Help Group (NA, AA, etc.) | |

12. How frequently did you call upon any of these people for help in the past year?

| ( ) Never               |
| ( ) Once a year or less |
| ( ) Once a month or less|
| ( ) More than once a month |
| ( ) Once a week         |
| ( ) More than once a week |

13. In general, how comfortable do you feel about asking for help?

| ( ) Very uncomfortable |
| ( ) Uncomfortable      |
| ( ) Neither comfortable or uncomfortable |
| ( ) Comfortable        |
| ( ) Very comfortable   |

*Adapted from: Efinger Survey, 1984
APPENDIX D

Efinger Early Risk Survey – Non-impaired Nurses

PART 2 ANSWER ALL QUESTIONS AS INDICATED.

1. Which of the following conditions have you experienced? Please check ALL that apply to you.

   - Stomach pain (gastritis)
   - Ulcers
   - Pancreatitis
   - Gall bladder problems
   - Liver problems
   - Frequent toothaches
   - Gum disease
   - Bruising easily
   - Diabetes
   - The flu
   - Premenstrual syndrome (irritability, swelling, headaches, etc.)
   - Insomnia
   - Frequent illness as a child requiring a physician and medications
   - Rape or sexual molestation
   - Migraine headaches
   - Anorexia (loss of appetite with weight loss)
   - Bulimia (eating and vomiting)
   - A bad cold
   - Spinal cord injury
   - Hypoglycemia

2. How much leisure time do you have in an average week? (Leisure time is the amount of time you have after you completed employment and/or household responsibilities). (Check the correct answer).

   - ( ) 1-6 hours
   - ( ) 7-12 hours
   - ( ) one day
   - ( ) two days
   - ( ) more than two days

3. When you have leisure time, how often do you have these feelings or reactions? (Check the correct answer.)

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Almost Never</th>
<th>Sometimes</th>
<th>Frequently</th>
<th>Most of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bored</td>
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<td>Lazy</td>
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<td>Lonely</td>
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<tr>
<td></td>
<td>Never</td>
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<td>Tired</td>
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<td>Worried about work or school</td>
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<td>Anxious or “up tight”</td>
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<td>Relaxed</td>
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<td>Uncomfortable</td>
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4. When you have leisure time, which of the following things did you do? (check how often you do them)

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   b. Beverage(s) or drug(s) ____________________________

   c. Amounts ________________________________

   d. People I was with ________________________________

6. How did you feel the FIRST TIME YOU DRANK ALCOHOL OR DID DRUGS? (check all that apply.)

   ____ Good, liked the feeling                      ____ Disappointed
   ____ Self-confident                               ____ Sick
   ____ “High”                                       ____ “Threw up”
   ____ Less shy, more outgoing                      ____ Don’t remember
   ____ Didn’t like it at all                        ____ Other
                           Specify: ____________________
7. At the present time is there anyone in your family who is or was an alcoholic or abused drugs or medications or whom you think abuses alcohol, drugs, or medications? Please include deceased family members. Is there anyone whose heavy drinking or drug-taking behavior is a matter of concern? (PLEASE CHECK UNDER EACH CATEGORY FOR YOUR FAMILY MEMBERS OR OTHERS. WHEN THERE IS MORE THAN ONE PERSON IN A CATEGORY, WRITE THE NUMBER.)

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8. Do you wear a seat belt?
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   (  ) Frequently
   (  ) Sometimes
   (  ) Almost never

9. Although we all have feelings of anxiety, sometimes the feelings are extremely intense. Intense anxiety, manifests itself in sudden, unexpected feelings of being scared; your heart beats very fast; the palms of your hands feel sweaty; you breathe very fast; and you may feel like you are going to die. These feelings are sometimes called an “anxiety attack.”

Have you ever feel this anxious?
   (  ) Yes
   (  ) No

If Yes, how often have you felt intense anxiety?
   (  ) Once
   (  ) A few times
   (  ) Frequently
   (  ) Very often
   (  ) Almost all the time

10. Various stresses and losses occur in all stages of our lives. Please recall as carefully as possible if any of these stresses or losses occurred in your life. Please check if these stresses or losses have occurred. Indicate if this still bothers you enough to cause emotional pain.

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Check if you had these stresses

( ) Awareness of parental alcoholism

Check if you had these feelings

( ) Feelings of shyness as a child
( ) Feelings of depression
( ) Aggressive feelings
( ) Other children in my family were more favored than I
( ) Feelings of guilt related to religion

Check here if this still causes you pain

( ) Yes

11. I have the following people I can count for help when I need it. (Check all the people you can count on for help.)

( ) Mother
( ) Father
( ) Grandparents
( ) Brother(s)
( ) Sister(s)
( ) Spouse
( ) Lover
( ) Children
( ) Friends
( ) Church organization
( ) Self-Help Group (NA, AA, etc.)
( ) Co-workers
( ) Teachers
( ) Classmates
( ) Minister, Priest, Rabbi (Religious advisor)
( ) Counselor
( ) Psychiatrist
( ) Family doctor
( ) Employer
( ) Work supervisor
( ) Social group, club, fraternity

12. How frequently did you call upon any of these people for help in the past year?

( ) Never
( ) Once a year or less
( ) Once a month or less
( ) More than once a month
( ) Once a week
( ) More than once a week
13. In general, how comfortable do you feel about asking for help?

( ) Very uncomfortable
( ) Uncomfortable
( ) Neither comfortable
    or uncomfortable
( ) Comfortable
( ) Very comfortable

*Adapted from: Efinger Survey, 1984
APPENDIX E

Children of Alcoholism Screening Tool (C.A.S.T.)

PART 3
Please check (✓) the answer below that best describes your feelings, behavior, and experience related to a parent’s alcohol use. **If drugs were the problem rather than alcohol, substitute drugs for the word alcohol in each question.** Take your time and be as accurate as possible. Answer all 30 questions by checking either “Yes” or “No”.

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Questions</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>1. Have you ever thought that one of your parents had a drinking problem?</td>
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<td>2. Have you ever lost sleep because of a parent’s drinking?</td>
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<td>3. Did you ever encourage one of your parents to quit drinking?</td>
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<td>4. Did you ever feel alone, scared, nervous, angry, or frustrated because a parent was not able to stop drinking?</td>
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<td>5. Did you ever argue or fight with a parent when he or she was drinking?</td>
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<td>6. Did you ever threaten to run away from home because of a parent’s drinking?</td>
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<td>7. Has a parent ever yelled at or hit you or other family members when drinking?</td>
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<td>8. Have you ever heard your parents fight when one of them was drunk?</td>
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<td>9. Did you ever protect another family member from a parent who was drinking?</td>
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<td>10. Did you ever feel like hiding or emptying a parent’s bottle of liquor?</td>
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<td>11. Do many of your thoughts revolve around a problem drinking parent or difficulties that arose because of his or her drinking?</td>
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<td>12. Did you ever wish that a parent would stop drinking?</td>
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<td>13. Did you ever feel responsible for and guilty about a parent’s drinking?</td>
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<td></td>
<td>14. Did you ever fear that your parents would get divorced due to alcohol misuse?</td>
</tr>
</tbody>
</table>
15. Have you ever withdrawn from and avoided outside activities and friends because of embarrassment and shame over a parent’s drinking problem?

16. Did you ever feel caught in the middle of an argument or fight between a problem drinking parent and your other parent?

17. Did you ever feel that you made a parent drink alcohol?

18. Have you ever felt that a problem drinking parent did not really love you?

19. Did you ever resent a parent’s drinking?

20. Have you ever worried about a parent’s health because of his or her alcohol use?

21. Have you ever been blamed for a parent’s drinking?

22. Did you ever think your father was an alcoholic?

23. Did you ever wish your home could be more like the homes of your friends who did not have a parent with a drinking problem?

24. Did a parent ever make promises to you that he or she did not keep because of drinking?

25. Did you ever think your mother was an alcoholic?

26. Did you ever wish that you could talk to someone who could understand and help the alcohol related problems in your family?

27. Did you ever fight with your brothers and sisters about a parent’s drinking?

28. Did you ever stay away from home to avoid the drinking parent or your other parent’s reaction to the drinking?

29. Have you ever felt sick, cried, or had a “knot” in your stomach after worrying about a parent’s drinking?

30. Did you ever take over any chores and duties at home that were usually done by a parent before he or she developed a drinking problem?

TOTAL NUMBER OF “YES” ANSWERS.

APPENDIX F

The Cage Questionnaire

PART 4
Answer the following questions by marking an “X” next to the YES or NO response.

1. Have you ever felt the need to cut down on alcohol/drug/medication use? YES___ NO___

2. Have you ever felt annoyed by criticism of your alcohol/drug/medication use? YES___ NO___

3. Have you ever had guilty feelings about alcohol/drug/medication use? YES___ NO___

4. Do you ever take a morning eye-opener of alcohol/drugs/medicines? YES___ NO___

5. Are you frequently eager for the first drink/drug/medication of the evening? YES___ NO___

Appendix G

Widener IRB Approval
WIDENER UNIVERSITY
SCHOOL OF NURSING

Review of Research Proposal for the Protection of Human Subjects

NAME OF INVESTIGATOR Margaret Mary West

ADDRESS OF INVESTIGATOR

Northumberland, Pa. 17857

Phone Number (H) [REDACTED] (W) [REDACTED]

TITLE OF RESEARCH PROJECT "An Investigation of Pattern Manifestations in Substance Abuse Impaired Nurses"

This is to certify that the above referenced application which does propose activities involving human subjects, was reviewed in accordance with School of Nursing guidelines.

TYPE OF REVIEW [X] INFORMAL [ ] EXPEDITED [ ] FULL

ACTION [X] APPROVED AS SUBMITTED [ ] DISAPPROVED
[ ] APPROVED CONTINGENT ON REVISIONS
[ ] DEFERRED FOR SUBSTANTIVE CHANGES

If any part of the research procedure is changed during the study, a copy of the change must be submitted to the Research Committee.

COMMENTS/RECOMMENDATIONS

9/17/99 [REDACTED] (Signature, Chair, Research committee)
9-14-95 [REDACTED] (Signature, Reviewer)
9 - 17 -99 [REDACTED] (Signature, Reviewer)

11/94
MB/cab
Revised 6/21/95

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Appendix H

Efinger Permission for Instrument

Margaret Mary West has permission to use the Health Risk Appraisal instrument and the Efinger Alcohol Risk Survey (EARS) in her dissertation research.

Joan M. Efinger, D.N.Sc., R.N., CS  
Date: 2/2/99
Appendix I

Zuckerman Permission for Instrument

Margaret Mary West has permission to use the Sensation Seeking Survey (Form V) in her dissertation research.

Marvin Zuckerman

1/21/93

Date
Appendix J
Cover Letter to Substance Impaired Nurses

Dear Participant,

My name is Margaret Mary West and I’m a doctoral student at Widener University School of Nursing. I would like to invite you to participate in a research study to help identify the factors that nurses encounter which make them at risk for becoming substance impaired. The purpose of this study is to compare nurses who have been impaired with non-impaired nurses to identify what factors nurses encounter before they become impaired. Although you may not benefit directly from the results of the study, your anonymous participation will contribute significantly to the understanding of how substance impairment develops. By identifying these factors, the nursing profession may be able to better help student nurses or other nurses before they become impaired.

Your involvement will take approximately 25 minutes as you answer the questionnaire. There is no risk to you in any way by completing this questionnaire. At no point will you be identified in the study. CONFIDENTIALITY WILL BE STRICTLY MAINTAINED THROUGHOUT THE STUDY. I will be the only one with access to your mailing address. All names and addresses will be destroyed after the research data are entered into a computer file.

I hope you will agree to participate in the study. Please do not write your name on the questionnaire. Return the questionnaire to me by __________________________ (date) using the enclosed pre-addressed stamped envelope. Your completion and return of the questionnaire indicates your consent to participate in this study. You are free to withdraw from the study at any time, by contacting me. You may also choose not to participate. You will receive no money or gifts for participating in this study. If you have any concerns about the study or would like a summary of the completed results, please contact me at [ Email Address ] or at [ Phone Number ].

Thank you very much for your assistance.

Sincerely,

Margaret Mary West, R.N., M.S.N., DNSc (cand.)
Appendix K
Cover Letter to Non-Impaired Nurses

Dear Participant,

My name is Margaret Mary West and I’m a doctoral student at Widener University School of Nursing. I would like to invite you to participate in a research study to help identify the factors that nurses encounter which make them at risk for becoming substance impaired. The purpose of this study is to compare nurses who have been impaired with non-impaired nurses to identify what factors nurses encounter before they become impaired. Although you may not benefit directly from the results of the study, your anonymous participation will contribute significantly to the understanding of how substance impairment develops.

Your involvement will take approximately 25 minutes as you answer the questionnaire. At no point will you be identified in the study. CONFIDENTIALITY WILL BE STRICTLY MAINTAINED THROUGHOUT THE STUDY. I will be the only one with access to your mailing address. All names and addresses will be destroyed after the research data are entered into a computer file.

I hope you will agree to participate in the study. Please do not write your name on the questionnaire. Return the questionnaire to me by ___________(date)________ using the enclosed pre-addressed stamped envelope. Your completion and return of the questionnaire indicates your consent to participate in this study. You are free to withdraw from the study at any time. You may also choose not to participate. You will receive no money or gifts for participating in this study. There is no risk to you by completing the questionnaire. If you have any concerns about the study or would like a summary of the completed results, please contact me at [redacted] or [redacted].

Thank you very much for your assistance.

Sincerely,

Margaret Mary West, R.N., M.S.N., DNSc (cand.)