A QUESTIONNAIRE TO ASSESS KNOWLEDGE OF SEASONAL AFFECTIVE DISORDER AMONG NURSES IN AN URBAN MANITOBA CITY

By

Linda Levitt R.N. B.N.

A Thesis

Submitted to the Faculty of Graduate Studies

in Partial Fulfilment of the Requirements

for the Degree of

MASTER OF NURSING

Faculty of Nursing

University of Manitoba

Winnipeg, Manitoba, Canada

THE UNIVERSITY OF MANITOBA

FACULTY OF GRADUATE STUDIES

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Abstract

The purpose of this research was to develop and field test an instrument to determine nurses' knowledge about health risk assessment and illness prevention techniques for Seasonal Affective Disorder (SAD).

An exploration of the literature for tools related to SAD revealed there have not been any instruments developed to test individuals' knowledge of SAD.

A comparative descriptive design, using survey methodology was selected for instrument development. Following the steps of content validation outlined by Anastasi (1968) and Farrell and Scherer (1983), the questionnaire was generated in the following manner. An extensive review of the literature was undertaken to identify the various elements of SAD that have been investigated by researchers. Once the list had been generated, the second step in the process was undertaken. This involved consultation with subject matter experts to assist with content validation. Using feedback from these individuals, the SAD Knowledge Questionnaire or SKQ was developed.

The theoretical framework used to guide the development of the instrument was a dynamic model which was made up of two components. The interior portion illustrated the problem of SAD, and was the writer's creation. The exterior portion of the framework incorporated the variables needed to guide knowledge assessment. The latter portion of the model was adapted from McCloskey's (1989a) model of job effectiveness.

Psychometric analyses were carried out to determine the SKQ's ability to accurately measure nurses' knowledge of SAD. Discriminate validity was achieved by the selection of three groups of participants. The Kruskall-Wallis test revealed statistically significant results within each subsections of the SKQ. Reliability was assessed through the use of the test-retest method, with results affirming the stability of the questionnaire. Internal reliability of the questionnaire was confirmed by the use of the Kuder-Richardson 20. Factor analysis did not identify subscale scores as independent factors.

This study identified a lack of knowledge of SAD among nurses. Nurses who worked in the area of mental health had more exposure to this illness than their counterparts. The majority of all respondents received their information from newspaper and magazine articles. Implications for nursing education, practice, research and the nursing profession are discussed.

In summary, there is beginning support that the SKQ is a reliable and valid tool which can be used for the assessment of knowledge of SAD among health care professionals. In order for this tool to be used with clinical confidence further reliability and validity testing is recommended.

Acknowledgements

This study would not have been possible without the assistance, encouragement, support, and guidance of many individuals who merit recognition.

Dr. Pat Farrell, my Chairperson, has been a source of inspiration and knowledge. Her professionalism, expertise, and support were vital in the course of this study.

Dr. Ina Bramadat and Dr. Mark Landers, my committee members, who generously gave of their time, assisting with both content and editing. I am proud to have been one of your students.

Thank you to Jean Burrows, Chair, Nursing, Red River Community College, for her effort and support in encouraging my educational development.

My deepest gratitude to everyone who participated in the study. Without your participation, this research could not have been completed.

A special thanks to Llwellyn Armstrong, who helped with the statistical portion of the study. She was always willing to answer questions whenever they arose.

My heartfelt appreciation to all my colleagues who generously offered moral and professional support. A special thanks to Donna Meder and Lois Tessier for their computer expertise. To Veryl Tipliski for always keeping me "newsworthy" To Sandy Romanow for offering guidance along the path and Sonia Jablonski Praznik for her listening ear and support this past summer.

To my sister Beth Goldenberg, friends Shelley, Carol, Marlene and Maureen for always being there, and Dr. Stanley Hyman for the use of his binding equipment.

A special tribute to my parents Esther and Joe Roman, who fostered the importance of higher education.

To my children, Matthew, Leanne and Sari, who stood by me at all times and often had to accommodate my erratic lifestyle.

My greatest thanks is extended to my husband Elliot Katz, who constantly encouraged, inspired and provided unconditional love and support. Without you, this study would not have been brought to completion.

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CHAPTER ONE

Statement of the Problem

As seasons change and days become shorter, many individuals experience alterations in mood and behaviour. Seasonal changes in behaviour, including physiological fluctuations, have been recognized since ancient times. Hippocrates (430-370 BC) and Esquirol (1772-1840) have both been cited by Lahaie (1990) as early historical examples of individuals who attempted to understand the influences of light on well being. Rosenthal (1993) makes reference to Shakespeare and Keats who observed a connection of seasons and moods, writing about them in poetry and songs (p.3). Kasper, Rogers, Yancey, Schultz, Skewer, & Rosenthal (1989a) used the term "seasonality" to describe the impact that seasonal variables have on such criteria as mood, energy, sleep length, appetite, food preference, or the wish to socialize with others (p.823). At one end of the spectrum are those individuals with few, if any symptoms. A middle group may suffer from what is commonly known as "the winter blues" or "February blahs". At the far end of the spectrum are those individuals with Seasonal Affective Disorder (SAD), whose changes in mood and behaviour produce significant problems in their lives.

Although this syndrome may be linked to a form of depression, the essential features of the disorder are the regular occurrence of symptoms usually with a fall winter onset and spring summer remission (Rosenthal, Sack, Gillin, Lewy, Goodwyn & Davenport,

1984). Some of the documented symptoms include decreased activity with lethargy and fatigue, increased anxiety and irritability with related work or interpersonal difficulties, decreased libido, pre-menstrual difficulties, hypersomnia with impaired quality of sleep and daytime drowsiness, increased appetite and carbohydrate craving, and often weight gain (Hellekson, Kline & Rosenthal,1986; Hensley & Rogers, 1987; Morin, 1990; Rosenthal, Genhart, Jacobsen, Skewer & Wehr, 1987; Rosenthal & Wehr, 1987).

The single unique characteristic of SAD, as compared to other depressive disorders, is the individual's response to sunshine or artificial light and to climate. Suppression of light affects individuals with SAD in a negative manner often precipitating depression. This depression is often treated successfully by means of light used as a therapeutic agent, otherwise known as phototherapy (Zal, 1991). Numerous researchers (Lewy, Sack, Singer, & White, 1987; Rosenthal, 1989; Wehr, Jacobsen, Sack, Arendt, Tamarkin & Rosenthal, 1986) have documented that the incidence and severity of SAD symptoms increase with distance from the equator, becoming more severe as one moves further north. Many of these individuals report relief when they travel to warm, southern, climates. They have learned to "follow the sun" to avoid their symptoms (Rosenthal, 1989; Rosenthal & Wehr, 1987; Zal, 1991).

James, Wehr, Sack, Parry and Rosenthal (1985), and Rosenthal (1993) report that the majority of individuals diagnosed with SAD are women, outnumbering men by a ratio of one to four. The onset of symptoms typically manifests between 20 to 40 years of age.

However, SAD can occur in all age groups illustrated by case histories among children, adolescents, and the elderly. Prior to the publication of the DSM-111-R, the majority of researchers in SAD used the criteria for winter depression suggested by the National Institute of Mental Health (NIMH). The group that developed these criteria was led by Dr. Norman Rosenthal, and these criteria are now referred to as "Rosenthal criteria" (Bauer & Dunner, 1993). (Appendix A). Subsequently, through consultation with Dr. Rosenthal and others at the NIMH, the current form of the criteria as they appear in the DSM-1V-R was developed. The disorder is defined in the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders - Fourth Revision (APA), (1994). The diagnostic criteria for SAD includes the following four specific criteria, in addition to the criteria for major affective disorders:

1. Regular temporal relationship between onset of mood disturbance and a particular 60 day period of the year, beginning between early October and the onset in November. This does not include cases of seasonally related psychosocial stressors such as regular winter unemployment (APA, 1994; Bauer & Dunner, 1993; Morin, 1990).

2. Full remissions or change from depression to mania or hypomania also occurring within a particular 60 day period of the year with depressive symptoms disappearing between mid- February to mid- April (APA, 1994: Bauer & Dunner, 1993: Morin, 1990).

3. At least three episodes of mood disturbance in three

separate years that demonstrate the temporal seasonal relationship defined in 1 and 2 above. Two of the years must be consecutive. (APA, 1994; Bauer & Dunner, 1993; Morin, 1990).

The incidence of SAD in northern regions of North America has been documented by Rosenthal (1989) to be at 10.2% of the population. In a more recent publication (1993), Rosenthal estimates that approximately 6% of the population suffers from SAD with another 14% having a milder form of the illness. Lahaie (1991), and Wurtman and Wurtman (1989) estimate these figures to be in the range of 0.1% (ratio of 1:1000). Studies in North America have shown that between 6-14% of individuals may suffer some form of seasonal depression, which is equivalent to a total number of ten million and twenty five million (Rosenthal, 1993). Similar numbers have been reported in the Southern Hemisphere (Boyce & Parker, 1988), with variable numbers in other parts of the world. The incidence of SAD rises within northern latitudes and is reported by Rosenthal (1989) to be higher in congruence with latitudinal changes within Canadian provinces. As the major population centres of Canada are distributed within close proximity of the United States border, the expected increase would be slightly higher for these major centres in Canada than has been postulated for major northern centres in the United States (Wurtman & Wurtman, 1989). Consequently, there is reason to believe that the scope of problem may be similar in Manitoba, when compared to other northern regions.

The consequences of SAD are significant and far reaching.

Appropriately named, SAD is a health problem for large numbers of individuals living in northern latitudes. Some of the effects include lowered levels of alertness, speed, efficiency, productivity, and safety. Furthermore, it is a major factor resulting in stress and burnout among afflicted individuals (Coffey, Skipper & Yung, 1988).

The literature clearly indicates that the majority of individuals diagnosed with SAD are women, with the onset of symptoms most commonly appearing during the second to third decade (Childs, 1990; Glod, 1991; Lahaie, 1990; Morin, 1990; & Rosenthal, 1987). Nurses who work shifts may be at risk for SAD due to decreased exposure to daylight hours and abnormal biological rhythms which shiftwork precipitates (Eastman, 1990; Monk, 1990).

Consequently, not only is it important for nurses to identify depressive characteristics in patients but also be able to comprehend the personal implications of SAD in themselves. Nurses could consider questioning patients about the 'seasonality' of their symptoms. This falls within the nursing domain of psychosocial assessment and prevention of illness.

It is generally recognized among nurses, that there is deficient knowledge about the problem of SAD (Bushnell & Ford, 1994; Glod, 1991; Hensley & Rogers, 1987; Lahaie, 1991; Morin, 1990). The extent and nature of this knowledge deficit has not yet been described. A lack of knowledge about SAD makes it difficult for nurses to recognize this syndrome within themselves and their patients, even though both are at risk in North America. Nurses who

comprise the largest sector of health care providers in the world (World Health Organization, 1978), and as 95% are female, are in an ideal position to identify this problem within themselves and their patients.

Nursing research on the problem is worth pursuing for several reasons. Knowledge of SAD symptoms and the recognition of these characteristics will enable nurses to encourage individuals to seek medical intervention. Individuals who suffer from this condition have traditionally been misunderstood and also have difficulty understanding their own predicament (Rosenthal, 1993). As the features of SAD are as much physical as psychological, individuals with this disorder might seek help from a family practitioner, a health clinic or a nurse. Many unnecessary tests could be avoided if the diagnosis of SAD was considered. Individuals who seek treatment for real or perceived symptoms are often left very frustrated, only to seek the opinion of another health care provider. The cost of this scenario could be significant in terms of health care dollars. It is important to remember that at present time, "there is no laboratory test for SAD" (Laliberte, 1990, p.86). The diagnosis is made on the basis of history alone. The advantages of being able to recognize that an individual may be afflicted with SAD go much further than the alleviation of symptoms. They can modify the way an individual views the dilemma, looks at the future, and considers the available options.

Nurses are in an ideal position to assist with the recognition of this problem. They are familiar with local treatment centres and

can provide referral to these resources or to a physician who deals with this disorder. With knowledge of SAD and its characteristics, nurses can inform patients of seasonal vulnerability, common symptoms and the various treatment modalities. Nurses are in a good position to design interventions that would assist the client with practical, social, and interpersonal responses, rather than solely with the medical aspects of symptom control. Lastly, the nurse can assist the patient in defining a suitable treatment plan. The diagnosis of SAD remains within the scope of the medical practitioner, however challenge remains for nurses to act within the domain of illness prevention as well as the management of chronic illness once SAD is diagnosed.

Despite public awareness campaigns in the popular press, nurses may not be aware of SAD assessment and treatment. As SAD has only been recognized in the last 10 years, only those nurses who graduated during that time frame would have had this theory taught to them. Hence, there are many practicing nurses today who may not be familiar with the diagnosis of SAD and this may not be included as part of the assessment of high-risk individuals. Nurses who work in mental health settings may have greater awareness of SAD. However all nurses should be aware of individuals at risk, as assessment is an integral part of the nurses role in illness prevention. All nurses need to have knowledge of SAD, particularly those who are involved with active practice.

Instruments have not yet been developed to assess nurses' knowledge of SAD. According to Dr. Eric H. Turner at the National

Institute of Mental Health, "there are, to my knowledge few, if any, articles that have actually focused on these instruments" (personal communication, September 22, 1994). Descriptive data are needed on nurses' knowledge prior to the development of educational approaches that will enable nurses to incorporate SAD risk assessment as a regular part of health screening. Assessment of nurses' knowledge of SAD is a first step prior to the design of SAD screening content for health assessment instruments. The focus of this research, therefore was to design and test an instrument for the assessment of knowledge of SAD.

CHAPTER TWO

Review of the Literature

A review of the literature is the first step in developing the content of a new instrument (Anastasi, 1968). This review revealed that, for the most part, the content stems from the discipline of medicine. Those works emanating from nursing and other health related fields are also included in this review.

For organizational purposes, the literature review is arranged in sections. Following the historical perspective of SAD, the literature review includes: etiology, phototherapy and other treatments; appetite, weight disturbance and SAD, the relevance of SAD to shiftwork and nursing, summer SAD, subsyndromal SAD, SAD in children and adolescents, geographic influences, the role of health professionals and nurses, major variables of SAD, and a review of instrumentation. Each of these content areas are reviewed for the purpose of deriving relevant content for instrument development.

This section will conclude with implications for human subjects and the theoretical framework.

Historical Perspective

The notion that radiant energy could play a role in health dates back to our first documented awareness of emotions. Seasonally distributed influences on affective illness were recorded by Hippocrates (460-370 B.C.). He noted that "of constitutions some are well or ill adapted to summer, others are

well or ill adapted to winter" (Hippocrates, 1923, p. 123). Esquirol (1772-1840) wrote: "there are individuals who pass the summer in a state of prostration or agitation, whilst in winter they are in an opposite condition" (Esquirol, 1845, p. 275). However, it was Frederick A. Cook, arctic explorer, who made the following notation in his journal on May 16, 1898:

> The winter and the darkness have slowly but steadily settled over us . . . it is not difficult to read on the faces of my companions their thoughts and their moody dispositions.... The curtain of blackness which has fallen over the outer world of icy desolation has also descended upon the inner world of our souls. Around the tables . . . men are sitting about sad and dejected, lost in dreams of melancholy from which now and then one arouses with an empty attempt at enthusiasm. For a brief moment some try to break the spell by jokes, told perhaps for the fiftieth time. Others grind out a cheerful philosophy, but all efforts to infuse bright light fail. (cited in Wurtman & Wurtman, 1989, p. 68).

As the journal entry illustrates, recognition of the association between depression and winter is not a new one. In later years, other individuals would pick up Cook's theme. Hasselbach reported in 1905 that a "'light bath' including ultraviolet radiation produced feelings of increased energy, exhilaration and hypomania" (cited in Oren & Rosenthal, 1989, p. 424). Specifically reviewing the incidence of suicide in both the Northern and Southern Hemispheres, Gaedeken in 1911 drew a

direct connection between sunshine and mood. Drawing on Cook's observations, Llewellyn in 1932 suggested that visual pathways were linked to the powerful phenomenon of environmental light which had an impact on mood (cited in Oren & Rosenthal, 1985).

While much of this was documented early in the 19th century, it is noteworthy that interest in light and mood disorders lay dormant until the late 1970's. This was again sparked by one patient, in particular, who was a catalyst for the renewed interest in light. Complaining of a 13 year history of fall-winter depressive episodes and spring-summer mood elevations, attributing the changes to altered periods of environmental light, scientist-patient Herbert Kern piqued the interest of several researchers at the NIMH (Rosenthal, Sack, Skwerer, Jacobsen, & Wehr, 1988). Lewy and his colleagues, speculating that exposing a patient to two hours of bright lights extending normal daylight hours would improve mood, found a dramatic improvement in the patient's affect (Lewy, Kern, Rosenthal, & Wehr, 1982).

At about the same time Mueller, a psychiatrist also at the NIMH, reviewed data on a 29 year old woman he had been treating for cyclic bouts of depression. On two occasions when the woman travelled to Jamaica, her depression disappeared within several days of her arrival. This prompted Mueller to treat the woman with phototherapy, and found that her depression had lifted in less than a week. Mueller's results came to the attention of several physicians, one of whom was Lewy. Together, along with Rosenthal and Wehr, they began a full scale study which soon confirmed the

therapeutic effect of supplemental light in treating winter depression with phototherapy. It was at this time the winter depression syndrome became known as Seasonal Affective Disorder (Rosenthal et al., 1984). Since then, confirmatory studies involving hundreds of patients have continued to support the basic descriptions of the original account.

Etiology

In an attempt to understand the etiology of SAD and its responsiveness to phototherapy, researchers have proposed several theories. The first considers melatonin suppression, the second examines circadian rhythms and yet a third introduces photon thresholds.

Melatonin, a hormone is secreted by the pineal gland. Melatonin production is greatest during the night, in the dark, and in humans is thought to be a sleep producing agent. Light signals move along the optic nerve and affect the gland's secretion of melatonin. During periods of darkness, the pineal gland secretes more melatonin, with light having an inhibiting effect. "This response to light has also been documented with studies of blind people, who do not demonstrate this typical circadian rhythm" (Ford, 1992, p.94). Studies suggest that melatonin provides a hormonal signal regarding day length, or more specifically the length of the night. In animal studies, it has been shown that animals with seasonal breeding patterns use this signal to generate annual reproductive cycles.

Wurtman and Wurtman (1989) have identified that the release of melatonin in the bloodstream exerts a depressant effect on the predisposed individual. High levels of melatonin affect mood and trigger sensations of lethargy and sleepiness. It is hypothesized that people with SAD are thought to be very sensitive to the increased levels of melatonin and respond with a depressive illness. It may be that SAD stems from an overproduction of melatonin during the long winter nights. In these situations, bright light therapy may be applied at the appropriate times of the cycle in order to suppress melatonin secretion and ward off symptoms of depression. A drawback to this theory as discussed by Zal (1991) is "if the melatonin theory is to hold, phototherapy should only work in the morning. However, light exposure during other daylight hours is just as effective as an antidepressant" (p.67).

The second popular theory examines phase shifts which are believed to disrupt circadian rhythm. A phase shift is a block of time in a 24 hour cycle that is advanced or shortened, like a clock that is moved ahead or back. Phase shifting is a response to light/ dark cycles, and is mediated by activities such as travelling through different time zones or working during evening or night time. An example of phase shifting is when we switch to and from Daylight Saving Time in spring or fall. After any of these events, many individuals experience a day or two of mild malaise due to the disturbance in our circadian rhythm. It is thought that desynchronization of these cycles and biological rhythms are

precursors to the symptoms of SAD. In animal studies it has been shown that changes in the length and quantity of melatonin secretion mediates effects of seasonal changes in daylength on reproduction and other functions that change on an annual basis (Wehr & Rosenthal, 1989). "Based on these animal models, it was hypothesized that changes in nocturnal melatonin secretion mediated effects of light and darkness on winter depression" (Wehr, 1992, p.482). Much of our current research focuses on whether phase shifting can be applied to human subjects. These studies have demonstrated that the use of bright light has a clear synchronization effect on the different circadian cycles of body temperature and sleep which are partially related to suppression of night time melatonin production (Lewy, Sack & Singer, 1985; Wever, Polasek, & Wildgruber, 1983). A logical extension of these studies is the hypothesis that depressed patients have desynchronized, phase delayed, or phase advanced circadian rhythms (Kripke, 1983; Lewy, Sack & Singer, 1987). This hypothesis of desynchronized circadian rhythms is not clearly supported by studies that have demonstrated therapeutic results using multiple light treatment schedules (Isaacs, Stainer, Sensky, Moor & Thompson, 1988; Jacobsen, Wehr, Skwerer, Sack & Rosenthal, 1987).

The photon threshold hypothesis evolved from inconsistencies in the results of the circadian rhythms hypothesis. Phase shifting requires either early morning light to advance circadian phases or later evening light to delay them. Since research data has shown mid-day light to be equally effective in producing symptom

remission, some researchers theorize that the dose of light rather than phase shifting is critical for response (Lam, Kripke & Gillin, 1989). The dose in this example is measured by the total number of photons which reach the retina. It is possible that SAD patients require a 'threshold' of photon dose which cannot be reached during the shorter days of winter. To date, most studies have focused on the amount of light intensity proven to be biologically active. It is conceivable that bright light administered for less time or dim light for a longer period would be equally effective.

A number of other studies provide direction for further research. Jacobsen, Sack, Wehr, Rogers, James and Rosenthal (1989) pointed out that prolactin secretion is elevated in SAD patients, and that other serotonergic mechanisms may be involved. Wurtman (1988) discussed the role of serotonin in the regulation of carbohydrate consumption and mood in patients with SAD. Arora, Kregal, and Meltzer (1984) found seasonal variations in serotonin platelet uptake in both patients assigned to a normal control group, and those assigned to a depressed patients group, with significant differences between the groups. Swade and Coppen (1980) found significant differences between depressed patients and normal controls' seasonal variation of plasma free tryptophan. In a more recent study, Anderson, Vasile, Mooney, Bloomingdale, Samson and Schildkraut (1992) explored the fact that light therapy produces a decrease in the urinary output of norepinephrine and its metabolites.

As illustrated, the etiology of SAD remains an enigma to

researchers. Theories such as melatonin suppression, circadian rhythms and photon thresholds have been considered. It is possible that a number of these theories, plus possibly some not identified, are responsible for causing SAD.

Phototherapy

When reviewing the various theories of SAD, it becomes evident that the absence of light is linked to the pathology of SAD. Thus, it is not surprising to find that much of the research focuses on light therapy or phototherapy. Four basic aspects of light therapy have been explored extensively within the literature. These aspects, or variables, include the timing of the application of phototherapy, the actual duration of phototherapy, the intensity of light used in therapy, and the quality or makeup of the type of light used, i.e., bright white light versus fluorescent light, or lights of various colours of the spectrum (Childs, 1990; Hellekson, Kline, & Rosenthal 1986; James et al. 1985; Rosenthal et al. 1984). Recent studies have begun to look at side effects of light therapy in SAD. In addition, the effects on sleep structure and its usefulness in treating behaviour disorders in the elderly are now being considered.

The Hamilton Depression Scale (HRS), developed by Max Hamilton in 1960, (Hamilton, 1960; Hamilton, 1967), is frequently used to rate the degree of depression among research participants and to measure their response to various therapies. Additionally, it has been used by numerous researchers as one of the criteria for

inclusion in their studies. Hellekson et al. (1986) sought to determine whether two hours of bright artificial light per day constituted a useful treatment for SAD in Alaska, and whether it was sufficient to produce antidepressant effects for SAD. Furthermore, the researchers investigated which light schedule was most effective. Patients whose scores exceeded 13 on the HRS were admitted to the study. They entered a randomly ordered crossover study of three different, one week light treatments which included:

A) one hour upon arising and one hour 14 hours later;

B) two hours in the evening;

C) two hours upon arising.

Bright light, or light of approximately 2500 to 3500 lux, was used. The HRS scores were repeated and significant differences were found between baseline and treatment conditions. The authors concluded that SAD in Alaska could be treated with two hours of bright, full spectrum light per day. Their study suggested that the timing of light appeared to be unimportant, a finding that is compatible with the results of earlier work by Rosenthal et al. (1984).

A study by James et al. (1985) required research participants to have a score of 14 on the HRS in order to qualify for inclusion in their study. Patients participated in a blind study for a one week period, during which time they were randomly administered either bright light or dim light during five consecutive hours of each evening. Patients with an HRS of 14 or more were crossed over to the other lighting condition. After exposure to the second set of lights, light therapy was withdrawn for one week and patients

were again rated with the HRS. The authors concluded, as in previous studies, that bright full spectrum light was beneficial in treating patients with SAD, whereas dim lights were not beneficial. They also concluded that the use of lights solely in the evening hours frequently reversed the depressive symptoms of SAD. Jacobsen, Wehr, Skwerer, Sack, and Rosenthal (1987) concurred with the above researchers' findings. Jacobsen et al. (1987) utilized a sample of three men and 13 women who were randomly divided into two treatment groups. The first group of seven participants was administered phototherapy during the morning hours and the second group was administered light treatment during the midday hours. Morning light led to a decrease in the HRS from 22.4 to 16.3, and midday light was associated with a drop in the HRS scale from 21.6 to 13.9. The authors found two hours of phototherapy administered at midday to be just as effective in the treatment of SAD as two hours given in the early morning. The antidepressant effect of midday light has practical implications for the treatment of SAD, since it appears that a specific time of day is not required for phototherapy to be effective. The efficacy of mid-day light makes way for the use of phototherapy in the workplace, as well as in the home.

Wehr et al. (1986) conducted a similar study to that of James et al. (1985) and found that the effect of phototherapy does not depend on its timing or on its effect on melatonin secretion. These researchers exposed depressed patients with SAD to three-hour light treatments twice daily, finding that patients responded to both conditions. Additionally, Hellekson et al. (1986) reported that

patients showed marked improvement in depressive symptoms following three different two-hour schedules, indicating that either morning or evening phototherapy was active. In a much more recent study Wirz-Justice et al. (1993) concur with the above findings. In a parallel design comparative study, the authors found that depressive symptoms improved after light was administered during morning and evening. This did not support the hypothesis that the phase position can predict the therapeutic response to light given at the opportune time of day. This is opposite to findings by Lewy, Kern, Rosenthal and Wehr (1985) who found that the timing of phototherapy was critical for response. This difference in findings may be attributed to the treatment schedules which were variable in the studies conducted by Wehr at al. (1986) and James et al. (1985), while they were not variable in the study by Lewy et al. (1987).

Clearly, the literature reflects a lack of consensus among the researchers in relation to the timing and duration of phototherapy administration. With regards to timing, several studies have considered the time of year that light exposure is undertaken. Meesters, Jansen, Beersma, Bouhuys, and van den Hoofdakker (1993a) undertook a study to determine the effects of early light treatment on the course of mood during the winter season. A group of patients, identified as winter depressives, received light therapy at the first sign of depression and were compared to a control group who did not receive any therapy. Results indicated that administration of light at the first sign of winter depression

prevented it from developing into a full blown depressive episode. "The treatment improved mood, the level of subjective activation and sleep quality. The control group of patients, who had not been given any therapy, either showed a deterioration or no change of depressed mood" (Meesters et al. 1993a, p.45). These findings are at variance with a subsequent study which questioned whether light exposure given at the beginning of the season when patients are still free of symptoms could be successful in preventing the development of winter depression during the rest of the season. Meesters et al. (1994) were not successful in averting depression with so-called "prophylactic" light therapy. It was reported that 73% of research participants became depressed. This finding was similar to that of Thompson and Silverstone (1989), who reported that 67% of the SAD patients diagnosed in the summer became depressed during the following winter, and by Meesters et al. (1993a) who reported that 70.4% of SAD patients became depressed following a symptom free summer. It was hypothesized by Meesters et al. (1993a) that these discrepancies might be explained by the fact that patients are very sensitive to light treatment at the onset of depressive symptoms, whereas recovery might be difficult to achieve once these have taken root. Further studies are needed to determine whether the efficacy of light treatment is related to the phase of the depressive episode.

Another possible consideration as postulated by Partonen (1994) is that altered gene expression may contribute to the individual sensitivity and mediate the antidepressant effect of

light. He speculated that, as with the animal prototype, patients with winter depression may be more sensitive to minor changes in the hours of sunshine or artificial light especially in more northerly locations. He considered that SAD patients may have a fundamental difference in the sensory components responsible for light evoked responses as compared to normal individuals.

In considering yet another facet of phototherapy, Mishima et al. (1994), exposed elderly patients with dementia to morning light for four weeks. Their results indicated that morning bright light therapy "significantly increased total and nocturnal sleep time and significantly decreased daytime sleep time" (p.1). The results of this study have important implications for those involved with gerontological research. If light can be proven to have a calibrating effect on disturbed sleep patterns and subsequently reduce the frequency of behaviour disorders in elderly, the significance of this could be far-reaching.

The literature contains numerous studies which consider the type of light used in the treatment of SAD. Oren et al.(1991) conducted a study to determine whether green light was superior to red light in the treatment of SAD. Twenty participants, who scored at least 13 on the HRS and had no previous experience with green or red light, were entered into the study. They participated in a balanced order crossover trial of one week green light therapy compared to one week red light therapy. Each treatment consisted of two hours of daily light treatment at home in the early morning. At least one week separated the treatment to allow for relapse.

Effectiveness of treatment was assessed by analysis of variance of changes in the HRS. The authors concluded that green light provided a treatment effect superior to that of red light and similar to that seen in previous studies with white light. These studies are consistent with the hypothesis that retinal photoreceptors mediate the antidepressant response in SAD.

Bielski, Mayor, and Rice (1991) investigated the effect of spectrum by comparing two broad spectrum fluorescent light sources. These consisted of full spectrum fluorescent light and cool white light. The term "full spectrum" has been used to characterize light that simulates the band of colours formed when radiant energy is broken up. "Cool white is a generic term used to describe fluorescent light with a large output of power in the green and yellow wave bands" (Bielski, 1991, p.168). Research participants were assigned to two 7-day periods of light therapy consisting of the full spectrum or cool white light treatments, separated by a one-week withdrawal period. Scores on the HRS were reduced from 22.1 to 8.8 with full spectrum fluorescent light and from 23.5 to 8.8 with cool white light. These results suggest that both light sources are effective treatments.

As illustrated by the above discussion, it is evident that light therapy has become an acceptable treatment for patients suffering from SAD. Upon review of the literature it became clear that few studies have addressed the problem of either short-term or long-term side effects. The APA (1987) identified the following side effects: irritability, eyestrain, headaches, insomnia, eye

irritation and hypomania (p.1894). Oren, Shannon, Carpenter, and Rosenthal (1991) found eyestrain (26%), headache (25%), and insomnia (24%) to be most common. However, it is noteworthy that the "patients in this study had been using lights with unspecified duration and intensity" (p.151). Rosenthal (1993) listed the following as the most commonly encountered side effects: headaches, eyestrain, irritability, overactivity, insomnia, fatigue, dryness of the eyes, dryness of the nasal passages and sinuses, and a sunburn-type skin reaction. However, when he addressed these side effects, he rarely suggested that phototherapy be terminated. Instead, he offered practical suggestions as to how these might be dealt with. In a recent study addressing the problem of side effects, Levitt et al.(1993) studied 105 patients with SAD who were treated with three intensities of light. Common symptoms which they identified during treatment were headache (19%), eyestrain (17%), and feeling "wired" (14%). There was no correlation between side effects and intensity of light used. These authors concluded that "it is important to establish the safety of light therapy by evaluating both short and long-term side effects as well as potential toxic effects on the eye" (p.651). As the numbers of patients who are being treated with light therapy is increasing, there is a compelling reason to assess nurses' understanding of SAD and its treatment. It is important that nurses can explain the treatment effect to their patients who have SAD.

Appetite, Weight Disturbance, and SAD

Many of the major depressive illnesses, as defined in the DSM-IV, are accompanied by marked changes in appetite. These changes may be exhibited by either an increase or decrease in eating habits. The literature suggests that the degree of appetite change is related to the severity of the depressive illness. When reviewing the literature on SAD, it became apparent that alterations in appetite and weight are cardinal symptoms of the condition. Appetite increases are reported by 70% of SAD patients, decreased appetite by 22%, and only 8% report no appetite changes at all. At the same time, "approximately two-thirds report carbohydrate craving" (Rosenthal, Genhart, Jacobsen, Skwerer, & Wehr, 1987, p. 215).

A number of studies have looked at the relationship between "carbohydrate craving" and SAD (Krauchi, Wirz-Justice & Graw, 1990; Rosenthal et al. 1987; Wurtman & Wurtman, 1989; & Wurtman, 1988). As this is a commonly reported symptom of those diagnosed with SAD and of those who suffer from premenstrual syndrome (PMS), researchers have looked at the role of serotonin in the depressive process. Wurtman reported that serotonin had a mediating effect on individuals who were obese and craved carbohydrates (CHO). The author suggested that if there is a positive association between repetitive weight alterations, CHO craving and depressed mood, then practical therapy should involve both dietary and pharmacologic intervention to increase serotonin levels.

Wurtman and Wurtman (1989) tested the relationship between

snacking and mood. Forty-six volunteers, including both those who crave carbohydrates and those who do not crave carbohydrates, were given standard psychological tests before and after eating a carbohydrate-rich, protein-free meal. The participants who craved carbohydrates were found to be significantly less depressed after snacking, whereas those who did not crave carbohydrates experienced fatigue and sleepiness after their carbohydrate rich protein-free meal. The researchers postulated that people who crave carbohydrates sought high carbohydrate snacks in order to restore vitality. This insight into the fact that carbohydrate craving has a distinct periodicity similar to the periodicity experienced among individuals afflicted with SAD was thought, in some way, to be linked to cyclic manifestations of appetite and mood disorders. Wurtman and Wurtman then asked the question: "why do patients with SAD, carbohydrate craving, obesity and PMS have a tendency to crave carbohydrate snacks" (p.73)? They postulated that serotonin, a derivative of tryptophan (an amino acid), is normally present in low levels in the blood stream. The rate of conversion is affected by the proportion of carbohydrates in the person's diet. The feedback mechanism which is thought to be disturbed in patients with SAD, CHO craving and PMS does not allow the brain to respond when carbohydrates are eaten. Therefore, for this group of individuals, the craving or desire for these foods persists for much longer than it should.

Krauchi et al.(1990) focused on documenting the increased carbohydrate intake of SAD patients. In a first study using a

retrospective, Long Term Food and Drink Frequency Questionnaire developed by Burke (1947), they documented that patients with SAD chose starch rich foods more often than non-SAD subjects, except during the summer months. Patients with SAD were also found to eat more frequently during the latter half of the day. In a follow-up study, the researchers scrutinized the daily eating habits of patients with SAD by replicating and extending earlier research findings on changes that occurred during the winter. The findings of the two studies were then compared in relation to the effect of light treatment and the natural changes that occur in summer on the two samples. The investigators cautioned that, in the area of dietary assessment, few techniques are accurate and feasible. Moreover, the findings were congruent with data reported by Rosenthal et al. (1987) that while the amount of CHO ingestion was proportional to the depression felt by clients, serotonin levels were inversely related to the same depression. Krauchi et al. (1990) concluded that the application of phototherapy appears to result in decreased CHO ingestion and a rise in serotonin levels regardless of seasonality. Several years later, these same researchers (Krauchi, Wirz-Justice & Graw, 1993), examined demographic characteristics, depression ratings and detailed records of symptoms as possible predictors of the response to light therapy. Of 26 items, high intake of sweets in the second half of the day was the best predictor of a rapid response to light therapy. They hypothesized that the intake of sweets may help validate a functional connection between sweets intake, mood, and

the time of year in SAD. Future studies to determine whether a selective CHO diet can increase the efficacy of light in SAD patients, or if such a diet alone is sufficient for an antidepressant response are required to test this hypothesis further.

While Rosenthal et al. (1987) agreed with the above findings, they also postulated that understanding the relationship between CHO ingestion and obesity in clients with SAD could serve to curb the effects of weight gain through appropriate client education. They theorized that more research into the association of overeating and obesity, and subsequent findings, might provide direction for educational programs for affected individuals. Using educational processes, the interaction of endogenous susceptibility and the iatrogenic effects of ingestion, and their relationship to obesity and seasonality may be explained to individuals.

Recently, there has been further interest in the link between SAD and eating disorders (Lam, Solyom & Tompkins, 1991; Hardin et al. 1991; Blouin et al. 1992). The appetite symptoms in patients with SAD are similar to those found in patients with bulimia nervosa. Berman, Lam, and Goldner (1993) examined cognitive aspects of eating behaviour in patients with SAD as compared to patients with bulimia nervosa and a non-clinical comparison sample. SAD patients were not only found to have appetite and weight disturbances, but also accompanying dysfunctional eating habits. It was found that a significant number of patients with SAD held as many dysfunctional attitudes as those patients with bulimia.

Furthermore, these attitudes were found to be just as pathologic as those held by patients who are bulimic. They concluded that both the behavioral and cognitive aspects of disturbed eating are common to the two disorders. They emphasized that further work will be needed to determine whether dysfunctional eating attitudes are related to the serotonergic deviations that have been exhibited in these disorders. They also recommended further research to determine whether dysfunctional eating attitudes in people who have SAD persist during natural summer remissions or those mediated by light therapy. Additionally, patients with bulimia or other eating disorders might also respond to light therapy. Rosenthal (1993) reported that preliminary results of treating patients who have bulimia with light therapy have been encouraging.

These findings suggest the need for assessment of the eating habits of individuals who are at risk for SAD. Nurses who are knowledgeable about individuals at risk for SAD should include questions about attitude to food in their health assessment of these individuals.

Relevance of SAD to Shiftwork

Large numbers of people are required to work at night, despite growing concern over the detrimental effects which may result for the individual shiftworker (Gander, DeNguyen, Rosekind, & Connell, 1993; Monk, 1990; Skipper, Jung, & Coffey, 1990; Whitehead, Thomas, & Slapper, 1992). The negative effects of shiftwork have been found primarily in two areas: workers' physical and mental health, and in

their job performance and social relationships (Skipper et al., 1990). Specifically, with regard to physical health, shiftworkers suffer from inadequate sleep, persistent fatigue, poor work performance, digestive troubles and irritability. Job performance may be affected by absenteeism, decreased alertness and safety, increased stress and decreased productivity. Social relationships include disruption in family life and the inability to maintain normal relationships due to an interrupted work schedule. Fiedor and Keys (1987) also noted that night shiftworkers often express a sense of malaise and isolation. Shiftworkers appear to have greater difficulty making new friends and tend to have fewer friends than day workers (Harrington, 1978).

From the literature reviewed, it was not clear whether shiftwork directly affects both physical and mental health, and job performance and social relationships, or whether one may act as an intervening variable in interpreting the effect of shiftwork in the other. A relationship is hypothesized between the prevalence of SAD and shiftwork. Several researchers (Eastman, 1990; Healy, Minors & Waterhouse, 1993; Monk, 1990) posit a relationship between circadian rhythms, more specifically the time of light onset and termination, and symptoms associated with SAD among shiftworkers. Research by Wehr et al. (1986), and Wirz-Justice (1986) refutes this hypothesis. However, definitive refutation of this hypothesis is still tenuous, as the more complex relationship of time of onset and other factors such as light influences have yet to be explored. Hence, it is the interaction of the variables which may serve to

negate the circadian rhythm hypothesis. In a recent study by Healy et al. (1993), student nurses involved with shiftwork for the first time participated in a study which tracked their perceptions of altered neurovegative function, perceived criticism from others, sense of purpose and control, and psychosomatic complaints. Changes in all of the above were documented, and have implications for circadian rhythm hypotheses of depression. The researchers noted that, in the absence of a control group, it is not possible to interpret the data in terms of altered circadian functioning. "However, given the use of different cohorts of nurses, given the lack of any reporting of other stressors...and given the scale of the changes from established baseline values, it is difficult to see an alternative explanation" (p. 22). A second explanation for the establishment of the relationship between SAD and shiftwork may lie in the total number of hours of light exposure experienced by the average shiftworker. As the tendency of shiftworkers is to sleep consequent to a night shift, the hours of sleep normally fall within the daylight hours. These hours are particularly short during the fall and winter seasons.

In the absence of specific research investigating shiftwork and SAD, there are a number of studies which look at the impact of shiftwork among nurses in relation to physical and emotional health. Skipper and colleagues (1990) examined two alternative models in their study. The first model suggested that shift work influences physical health and mental depression, which in turn affect social and work-related variables. These include family

relations, social responsibilities, individual activity, job performance and job related stress. Skipper et al. (1990) hypothesized that shiftwork's disturbance of circadian rhythm would exert a direct affect on nurses' physical health and mental depression, which would impact on other aspects of their lives. A second model suggested that shiftwork first affects social and work-related variables which then influence physical health and mental depression. The researchers hypothesized that circadian rhythm desynchronization, a consequence of shiftwork, might not be related to physical health or mental depression. In surprising findings, shiftwork was not found to be significantly related to either physical health or depression, refuting both of their hypotheses. One explanation for this was first proposed by Coffey, Skipper and Jung (1988), who suggested that, since the job demands of working at night tend to be less stressful than those of other shifts, this reduction in stress could serve to lessen the negative effects associated with the disruption of circadian rhythm connected with working nights. Additionally, nurses' ability to select their own shifts may have allowed them to choose those with which they were more likely to cope best. This self-selection factor has been acknowledged as contributing to the sometimes contradictory findings of some studies, which have actually shown some groups of shiftworkers to have fewer physical complaints than day workers (Frese & Okonek, 1984). Also, as the work responsibilities for each shift are sometimes quite varied, direct comparisons among the shifts may not be valid.

Due to the controversy that exists within the circadian rhythm hypotheses, there are proponents who advocate attempting to shift circadian rhythms. The objective of this would be to ease the adjustment to sleeping during the day and minimize the impact of this on one's life. In a study by Petrie, Dawson, Thompson, and Brook (1993), who investigated the efficacy of administering melatonin to flight crews after a series of international flights, the potential benefit of this was demonstrated. They found that, when melatonin was taken after arrival, the pilots experienced reduced feelings of jet lag and a more rapid recovery of sleep and energy levels. This supports the findings of Lewy, Ahmed, Latham-Jackson and Sack (1992), who suggested that melatonin shifts circadian rhythm according to the phase-response curve. It has been argued that it is very difficult to adjust circadian rhythms, therefore some researchers recommend the use of rapidly rotating shifts without any intent to modify circadian rhythms. One must then realize the implications that the concomitant sleep loss would have on those occupations that involve life and death decisions. Nurses, nuclear plant operators, and pilots would be just a few that would fall into this category. Health assessment of individuals in these occupations should include a screening for SAD.

Summer SAD

A discussion of winter SAD would not be complete without reference to the reverse of this phenomenon, aptly labelled as

summer SAD. In this group of patients, symptoms usually begin between March and June and end between August and October. The relationship between latitude, climate and severity of symptoms has been documented. Summer SAD patients note that travel south brings on depression, whereas vacations in colder northern regions results in improvement (Rosenthal & Wehr, 1987).

In winter SAD, the majority of patients experience "atypical" symptoms of depression. These include increased sleep, appetite, and weight gain, along with carbohydrate craving. Patients with summer SAD are more likely to experience the "typical" depressive symptoms such as reduced sleep, appetite and weight. However, carbohydrate craving has also been documented in more than half the patients with summer SAD (Martin, 1992).

There are two other differences in symptom profile between winter SAD and summer SAD. Patients with winter SAD often complain of anxiety and irritability, while these are not distinguishing characteristics in those with summer SAD. Rosenthal (1993) reported summer SAD patients as often being agitated and more likely to have suicidal thoughts. "This is in keeping with studies showing that the peak time for suicide in the general population is the spring or early summer" (p.84).

Individuals with summer depression often attribute their symptoms to the intense heat of summer, while individuals experiencing winter depression associate their symptoms to the lack of light. Rosenthal (1993) postulated that summer depression may in fact be triggered by the extreme light, instead of the warmth of

summer.

Unlike winter SAD, no specific treatment for summer SAD has been defined. Through anecdotal descriptions, individuals have found that "travel to cooler climates, swimming in cool water, and staying in air conditioned rooms have alleviated their symptoms" (p.86). The value of nonpharmacologic strategies has not been investigated. In the meantime, treatment of summer SAD has been done primarily with standard antidepressant therapy. "Tricyclic antidepressants are usually tried first with other options including monoamine oxidase inhibitors and serotonin re-uptake inhibitors" (Martin, p. 35).

Therefore, it is important for nurses to become aware of seasonal illnesses such as winter and summer SAD, so they can assist these individuals to develop strategies to minimize the effects of SAD and to cope with those effects that cannot be minimized.

Subsyndromal SAD

Many individuals suffer a milder form of SAD. These individuals may not seek out medical help for their problems. They may simply acknowledge the fact that they have less energy in the winter, accompanied by lack of enthusiasm and productivity. This milder form of SAD was identified on the basis of findings by Kasper et al. (1989a). Their study revealed a group of patients who had never suffered a major depression, but consistently endured milder winter problems. "SPAQ (Seasonality Pattern Assessment

Questionnaire) criteria for subsyndromal SAD require that subjects have a seasonality score of 10 or more and experience seasonal change as no more than a mild problem, or that they have a seasonality score of 8 or 9 and experience seasonal change as at least a mild problem" (Rosen et al., 1990, P. 131).

Nurses need to be able to distinguish between the various types of SAD when doing a health assessment with their clients, so that they may be able to direct them to appropriate treatment resources.

SAD in Children and Adolescents

The majority of research to date has centred around adults who suffer from SAD. There is growing evidence that not only adults are afflicted with SAD, but children and adolescents as well. Interest in children came about after researchers found that many adult patients reported symptoms that dated back to their early years. Additionally, it was found that many adult patients with SAD described similar symptoms in their children (Rosenthal et al. 1986). There are many similarities to the adult form, with the main difference being that children display increased irritability during the winter months (Rosenthal, 1993, p. 61).

In one of the early studies, Rosenthal et al. (1986), using an experimental crossover design, studied four boys and three girls all under the ages of 18 years. All participants experienced at least three of the following symptoms: fatigue, alteration in sleep patterns, increased or decreased appetite, carbohydrate craving,

and headaches. In addition to these manifestations, all displayed some evidence of dysfunction such as difficulties in school or social detachment. These children were followed over a two year duration and were observed each year from the summer months into the winter. When symptoms became severe enough to interfere with their performance, they were treated with phototherapy. In the first three situations a crossover design was employed "using bright (2500 lux) full-spectrum light and dim (300 lux) yellow light for 2-4 hours a day for one week each, separated by a week of withdrawal" (p.356). Results were interpreted with caution, as the number of participants was small and at the time of reporting there had not been adequate follow-up to establish predictive validity. However, results suggested that children responded to less environmental light augmentation in both length of exposure and intensity of light than do adults. In addition to this, spectral qualities of light seemed to have a role to play. In some of the children, exposure to full-spectrum light tended to cause an overactivating effect and increased sleep disturbances, while some appeared to do better with dim light therapy. The findings from this study illustrated the importance of school counsellors, teachers, and nurses becoming knowledgable about SAD and considering the possibility of this diagnosis when encountering children with school difficulties in the fall and winter.

Carskadon and Acebo (1993) surveyed the parents of students in grades four through six for a history of seasonal changes. A form was sent home during the second week of March which addressed such

items as "sleep behaviours, family functioning, seasonal variations and physical maturation" (p. 15). Data were obtained from 1,680 surveys (788 boys; 892 girls). The researchers reported that almost half of the parents noted some seasonal change in their children. In addition, the findings were consistent with the literature on adults in relation to geographic distribution. Childrens' seasonal problems were more noticeable in locations that are further north. The researchers suggested that, in consideration of the potential benefits of light therapy, a conscientious evaluation of seasonality is important when children present with mood and behaviour problems in the winter (Carskadon & Acebo, 1993).

Rosenthal (1993) discussed the importance of adult attitudes with respect to children and adolescents with SAD. If the adult attaches a stigma to the illness, the child will likely do the same. It is critical that the problem be presented in a non-stigmatizing manner.

Nurses are in a key position to inform parents who have SAD about possible stigmatizing effects in their children. In nursing, health education is a logical consequence of identification of individuals who are at risk for disease. Health education extends beyond individuals to their families. Additionally, nurses are in a suitable position to educate school teachers and counsellors about SAD, and assist them to recognize the possibility of this disorder among their students.

Geographic Influences

Much of the current literature addressed thus far is based on research that has taken place in the United States. Researchers have also studied SAD in Canada, Iceland, Norway, Japan, Australia and India.

The variability in prevalence described earlier may be due to the difference in latitudes where these studies were conducted, or to differing assessment methodologies. In support of the first explanation, Rosen et al. (1990) studied the prevalence of SAD at four different latitudes along the Eastern seaboard of the United States. Their study revealed a positive correlation between prevalence rates and the four points of latitude. A comparable study conducted in Norway by Lingjaerde and colleagues (1986) also estimated a higher prevalence of winter depression in the northern country of Norway than in the southern countries.

In Canada, Williams and Schmidt (1993) "examined whether northern Manitobans with recurrent mood disturbances do in fact have higher rates of seasonality related mood changes" (p.42). The results indicated that "nearly one-fifth of individuals seeking treatment for recurrent mood disturbances in northern Manitoba have seasonal affective disorder (p.43). These numbers were consistent with the "10-38%" as previously reported in the literature (Gupta, 1988; Rosenthal et al.,1984). The results, however were lower than might be expected when considering the latitude of their study. They posited several different explanations. First, there might have been a "self-selection bias in population migration patterns

over time" (p.44). This means that those least likely to tolerate the severe winter conditions may have moved to a southern climate, leaving a nucleus of people who were better equipped to handle the severe winter conditions. A second factor which they considered was the number of individuals who seek out general practitioners. A recent study found that large numbers of patients seen at primary health clinics have seasonal depression accompanied by functional impairment (Schlager et al. 1992). This is relevant as the number of individuals recognized as having intermittent depression was small, relative to a population of 23,000 in the Northern community where the study was conducted.

Lastly, Schlager et al.(1992) considered the possibility of using different assessment techniques. The prevalence rates of other studies might have been overestimated in that they used a "self-reporting" system and did not require a specific number of episodes to assess a seasonal relationship. They questioned the possibility of an imbalance between self-report and a positive clinical history. Many patients did not recognize the link between their depression and a particular season. However, when chart reviews were conducted by the researchers, evidence to support the connection was identified. Of interest is the fact that the DSM-III-R criteria were specifically introduced for the purpose of eliminating false-positive identification. It appears that the criteria are somewhat restrictive in the requirement that the onset and offset of depression occurs within the same 60-day period.

Prevalence of SAD in Iceland has been examined in an

experimental study using a random sample from the Icelandic National Register. Investigators Magnusson and Stefansson (1993) used the SPAQ, an instrument designed to investigate mood and behaviour within the seasons. This tool was translated into Icelandic and then back into English to confirm that the translation was analogous to the English version. Of the 1000 questionnaires that were mailed out by Magnusson and Stefanson, 35 were returned due to changed addresses and 587 were returned completed for a response rate of 61 percent. The results of this study were quite unexpected as the prevalence of SAD in Iceland was lower than on the East Coast of the United States, in spite of Iceland's more northern latitude. Additionally, since light deprivation is thought to be a major etiologic factor in the development of SAD, an explanation for these results was needed. The researchers contemplated the idea that Icelanders have a higher threshold for complaints, perhaps minimizing their symptoms. This idea was dismissed based on the fact that "large population samples in the United Stated and Iceland have not shown significant differences as measured by the Hypochondriac scale of the "Multiphasic Personality Inventory" (Magnusson & Stefansson, p. 944). In addition, prevalence rates of psychiatric disorders in Iceland and the United States have been found to be comparable.

Another possibility discussed by the authors is the idea that there may have been a population selection amongst those individuals with a higher threshold for the darkness which accompanies winter. As the numbers of individuals who tend to leave

Iceland are relatively small, it is possible that those who were least likely to endure the winters did move on, leaving a population of individuals who were able to cope with the climate.

The last possibility considered was the fact that even though Iceland's winters are long and dark, the Gulf Stream gives Iceland a relatively temperate climate, with the difference between January and July being about 10.6 degrees celsius. "If temperature changes do play a role in SAD, the modest changes in temperature across seasons in Iceland could be a partial explanation for the low prevalence rate of winter related problems there" (Magnusson & Stefansson, P. 945).

Magnusson and Stefansson (1993) also suggested that there might be a genetic preference within the Icelandic population that has assisted in the acculturation to the long arctic winters. Assuming this to be correct, one might find lower prevalence rates of SAD among people of Icelandic descent living outside of Iceland. Subsequently, Magnusson and Axelsson (1993) set out to assess the prevalence of the disorder in descendants of Icelandic emigrants to Canada.

In an experimental survey design using a random sample from the Interlake district, prevalence rates of SAD and sub-syndromal SAD (S-SAD), a milder form of SAD, were measured using the same tool as in the previous study (SPAQ). Three hundred people were selected at random. The response rate was 82%. "This represented nearly 42% of the entire population of adult residents of wholly Icelandic descent in the Interlake district" (Magnusson & Axelsson,

1993, p. 948). Interlake immigrants cannot be distinguished anthropologically from their ancestors in Iceland. Magnusson and Axelsson (1993) compared their prevalence findings to prevalence rates found in the previous study which took place in Iceland and along the northeastern American locations studied by Rosen et al. (1990). This, then was the second study that found lower prevalence rates among Icelanders and their descendants than among U.S. citizens. In fact, the prevalence rate of SAD and S-SAD were much lower in the Interlake group than in Iceland. The importance of this finding is that researchers must begin to look at factors other than latitude when explaining the occurrence of SAD. Further studies will need to include clinical measures of larger populations.

Norway, with its northerly geographical location and dramatic seasonal alterations in daylight, has also been the focus of several studies involving SAD. These have attempted to determine the prevalence of seasonal disturbances in mood and behaviour in the general population. In an epidemiological, experimental design, Haggag, Linaker and Gotestam (1990) investigated the degree of symptoms of mood alteration during the polar winter night and midnight sun seasons. The urban community of Tromso was chosen as the site for the study because of its geographical features and its climate. It is 3.5 degrees north of the Arctic Circle with radical seasonal changes in light and darkness. The changes in the light and dark ratio range from complete darkness during November to January and continual daylight in the sun period from May to July.

Questionnaires were sent to "one thousand subjects chosen at random from the Tromso Address Registrar, which includes the names and addresses of all Tromso residents over the age of 18" (p. 142). Questionnaires were sent at two different times, once during the middle of June and the second during the month of December. Of the 1000 questionnaires, 514 were returned during the summer and 395 were returned during the winter with an overall response rate of 91%. The findings indicated an inclination towards "physiological, psychological and mood disturbances in winter and summer" (p.144), in the normal population. This can be viewed as a chronobiological mood disturbance. In this study, the extreme seasonal variations in light, from complete darkness to constant daylight is seen as an important factor in triggering an alteration in mood in susceptible individuals. Limitations of this study were that statistical analysis used average group scores, therefore making it difficult to determine the function between mood disorders and winter and summer seasons in individuals.

Japan has also been an area of interest for the examination of SAD. In an experimental survey design conducted by Sakamoto, Kamo, Nakadaira, Tamura and Takahashi (1993), and the co-operation of 53 outpatient university psychiatric outpatient clinics, it was shown that SAD also exists throughout the Japanese islands. Unfortunately, this study was not successful in extracting enough epidemiological information on the prevalence of SAD because of differences in the recruitment of participants in each of the districts. However the investigation did reveal that SAD occurs in

about 1-3% of new patients diagnosed with depression. It was found that hours of sunshine were a more pertinent variable controlling the prevalence of SAD than latitude or the average temperature in December. Compared to previous studies, substantially lower prevalence rates of SAD were noticed. One of the reasons for this, as considered by the researchers, was the type of patient that was recruited for the study. They included all depressed patients who attended the clinic for the first time, whereas other researchers evaluated depression among patients with a previous history of depression. Secondly, as they evaluated newly diagnosed clients from September to March, and did not include those patients who only visited the outpatient clinic during the winter months, they may have missed a group of patients with seasonal depression. Had this group of individuals been included, the prevalence rates may have been higher. One might also speculate that patients who have SAD might seek out the care of a general practitioner, as opposed to a psychiatrist, because of the unique characteristics which might be manifested. Lastly, the prevalence of SAD might have been overestimated in earlier surveys, which included a mail-out or telephone approach, as individuals are more likely to participate in research if it does not include a face to face interview (Polit & Hungler, 1995).

In the southern hemisphere in Australia, Boyce and Parker (1988) set out to determine "whether SAD existed in the southern hemisphere and whether there was any seasonal specificity in phenomenology" (p.96). Participants were obtained through a popular

women's magazine, which is a highly biased sampling procedure. Readers were asked to participate if they had regular seasonal mood changes. Not surprisingly, the sample included a predominance of women. The sex ratio and mean age of this sample, however, were similar to those in other studies conducted in the northern hemisphere. Also identified were a group of participant who reported a spring/summer onset with remission in autumn/winter. The researchers concluded that, until the results were replicated, it would be difficult to determine whether this pattern indicated another seasonal syndrome or a seasonal effect in addition to depressive symptoms. If nothing else, the findings of this study suggested the presence of SAD in the Southern Hemisphere giving merit to the widening global interest in this phenomena.

In a research report emanating from a clinical practicum in India, Dr. R. Gupta (1988) cited his experience with SAD in that country. The first case history which he related, described a 53 year old woman who had satisfied the DSM-III criteria for bipolar illness. Her illness had taken on a specific pattern, in that she developed manic behaviour during the months of June and July. This was portrayed by increased psychomotor activity, euphoria, increased physical energy, and a penchant to overspend. By November and December a severe depression unfolded, manifested by withdrawal, impeded psychomotor activity, insomnia, thoughts of suicide and anorexia. When spring arrived, the woman inevitably began to feel better. Her care included electro-convulsive therapy and prophylactic lithium treatment, neither of which she responded

to.

The second case history which Gupta (1988) described is that of a 46 year old woman who had experienced manic attacks during the months of October and November. The manner in which these manifested was that she became verbose, euphoric, grandiose, energetic, exhibited unprovoked anger, and occasionally became violent. These episodes were followed by depression distinguished by melancholy, tearfulness, apathy in work and household activities, insomnia, anorexia and feelings of powerlessness. Of interest, is that this woman was asymptomatic from April to September. Again, lithium had been prescribed but was discontinued during the intervals in which she illness-free.

In the last case history Gupta described a 70 year old woman who for the last 15 years had experienced attacks of increased activity, elation, grandiosity and unprovoked anger during the months of October, November and December. This was followed by a depression during the months of June and July which had a trend of improving without any psychiatric therapy.

Although India's climate is far more temperate than in North America, these case histories illustrate that despite the temperature, individuals have a tendency to react to the changes in season in many different parts of the world. Could it be feasible that there are unique types of SAD in different parts of the world? This question lends support to the need for further research into prevalence and incidence of SAD in all parts of the globe. Additionally, it lends support to the need for nurses to do health

assessments for SAD on all cultural groups, and not limit this to any one group.

The Role of Health Professionals and Nursing

It has now been over a decade since the first researchers described the syndrome of seasonal mood changes called SAD. Despite this, there are many health care professionals and lay individuals who have never heard of this disorder (Eastwood, 1991; Zal, 1991). This has posed several problems in the identification of the illness and in subsequent treatment. Primarily, it may not considered when evaluating a problem that is of a seasonal nature. SAD symptoms are often disguised as common medical conditions such as those which produce sustained reduction in energy and increased consumption of carbohydrates. Consequently, SAD may be inaccurately investigated as hypothyroidism, hypoglycemia, chronic fatigue syndrome, or infectious mononucleosis (Rosenthal, 1993; Zal, 1991). Additionally, since many of the characteristics of SAD resemble other forms of depression, SAD may be incorrectly labelled as a different psychiatric illness.

It is likely that, despite health awareness programs in the media, a large percentage of the population has never heard of SAD. Thus, many individuals may "suffer in silence" thinking the symptoms they experience are simply psychosomatic. They may resign themselves to the fact that they must endure the winter months in a compromised state. The lucky ones are perhaps those who have been given sympathy, antidepressant drugs, or numerous diagnostic tests.

The less fortunate have been told to "snap out of it" or generally just to "pull themselves together". Consequently, self reporting is not a common occurrence (Bushnell & DeForge, 1994; Glod, 1991).

Professional journals and media have played a large role in educating health care professionals and the general public about SAD. This is illustrated by the increasing documentation and descriptions of SAD, reports of recent research, and many newspaper and magazine articles which have recently appeared. Some of these include: Rosen, J. (1992, Nov. 16). Lamp fights winter blues. Winnipeg Free Press, p. B15; Coping with winter blues. (1992, Nov. 6). Winnipeg Real Estate News. p. 4; Reynolds, L. (1992, Nov. 8). SAD strikes with cool weather. Winnipeg Free Press, p. 3; Brody, J. (1993, Dec. 31). How to battle winter blues. The Globe and Mail; Muskat, J. (1995, Jan. 31). Lethargic, distracted, peckish, and cranky? A little light therapy might help. The Globe and Mail; Strovek S. (1995, Feb. 13). SAD to hear you're feeling blue. Winnipeg Free Press; and Andrews, K. (1995, Feb. 9). Winter of discontent? The Winnipeg Sun, p.25. We have, however, a long way to go in the education of all stakeholders. Despite efforts to increase awareness about this phenomenon, there are still large knowledge gaps present among health care professionals and the public sector. Therefore research is imperative to assist in elevating the profile of SAD so that health care providers, in conjunction with their patients, will consider this as a diagnosis.

Once a diagnosis of SAD is made, there are still barriers to the provision of treatment. Phototherapy, the most common remedy,

is not always efficacious. Fluorescent lights encased within a metal box generally cost the patient approximately four to five hundred dollars (Laliberte, 1990). Cost therefore is a definite obstacle for many individuals. Many physicians have phototherapy units in their offices, or, these may be housed at a local health care facility. In order for the light treatment to be therapeutic it is generally administered on a daily basis for between 1-2 hours. This commitment and additional travel time is definitely a hindrance for many people.

Travel to a warmer climate has been cited as being effective for the treatment of SAD. However, this may be quite unrealistic for the majority of persons with this disorder. Travelling is very costly, in addition to the time that may be required to be away from one's work.

Antidepressant medication may be the answer for some individuals, although it is not always useful in every patient. As with any drug therapy, the effectiveness is often measured by the client's adherence to a treatment regime.

Lastly, some of the remedies are readily available. Increasing one's exposure to light by engaging in outdoor activities such as walking, skiing, and hiking will assist some individuals in fighting the winter blues. If unable to partake in outdoor activities, keeping active with exercise and hobbies is also beneficial. Diet can also play a role in SAD. It is advisable to avoid overeating and limit the intake of carbohydrate rich foods. Turning on lights within homes and offices, keeping blinds and

drapes open will improve one's demeanour. Experts suggest decorating homes with bright decor, lights and vibrant colours.

In conclusion, this section has addressed the difficulties encountered in the diagnosis and treatment of individuals with SAD. It reinforces the importance of research to enlighten and educate health care providers and the general public about SAD. As this intervention falls within the nurse's domain, it is important that their knowledge of health risk screening for and treatment of SAD be assessed.

Major Variables

This section of the literature review summarizes the major variables commonly associated with SAD. These variables should be an integral part of nurses' health histories of individuals who have, or are at risk for, SAD.

In reviewing the research on SAD, one major independent variable is that of gender. Researchers consistently report a preponderance of females among SAD patients (Bauer & Dunner, 1993; Harris & Dawson- Hughes 1993; Hensley & Rogers, 1987; Jacobsen et al. 1987; Rosenthal, 1987; and Wehr, 1992). Rosenthal and Wehr (1987) reported that 83% of patients with SAD are women.

A second major variable is age. While SAD may affect individuals of all age groups, the majority of patients that present are those between the ages of 20 to 40. Rosenthal et al. (1984) described the mean age as being 40.4 years and the mean age of onset as 22.6 years. These figures have been consistently

reported in many other studies that have investigated SAD. Kasper, Wehr, Bartko, Gaist and Rosenthal (1989), Jacobsen, Wehr, Sack, James, and Rosenthal (1987), Rosenthal (1993), Rosenthal and Wehr, (1987), Spoont, Depue, and Krauss (1991) have all identified this demographic variable as being significant.

A third variable discussed extensively in the research is latitude. Studies have suggested that the prevalence of SAD is affected by how far north one lives. This appears to be associated with winter day length decreasing with increasing latitudes. A number of investigators found support for this in their research. Gupta (1988), Linaker and Gotestam (1990), Lingjarde, Bratlid, and Gotestam (1986), Potkin, Zetin, Stamenkovic, Kripke, and Bunney (1986), Rosen et al. (1990), have all revealed a positive correlation between latitude and prevalence of SAD. The reverse of this phenomena, summer SAD, depicts a similar pattern. Patients experience depressive symptoms during the summer months and often attribute these to the intense heat and length of summer days. This is in contrast to winter SAD patients who credit their symptoms to the lack of light. One patient stated "during my summer depression, I feel better instantly if I go north" (Rosenthal, 1993 p.85). When the matter of latitude and day length are considered, one must also look at the role which light plays in the evolution of SAD as illustrated by the above quote. In extensive research during the past decade, it is apparent that the decline in natural light in winter may be the stimulus for the emergence of symptoms of SAD. This inference is based on the observation that symptoms of SAD

improve when patients are exposed to bright artificial light, or experience a remission when travel to a warmer climate is undertaken. The role of light has been supported by researchers such as Avery et al.(1991), James et al.(1985), Joffe et al. (1992), Kern and Lewy (1990), Kripke (1985), Meesters et al.(1993), Wehr et al.(1986), Wirz-Justice et al.(1993).

Another major variable is the experience of least one major depression. It is this finding that prompted researchers at the NIMH to include this variable in the criteria for diagnosing SAD. As mentioned earlier in this review, the third criterion for diagnosis states that an individual must exhibit "at least three episodes of mood disturbances in three separate years that demonstrate the temporal seasonal relationship" (APA, 1993). Rosenthal et al. (1984), clearly described this relationship and it has since been supported by Bauer and Dunner (1993), Meesters et al. (1993), James et al. (1985), and Wirz-Justice (1986).

The presence of eating disorders is another major variable. Most patients who have winter SAD report that they eat more and gain weight during the winter months, conversely eating less and losing weight during the summer months. The craving for carbohydrate rich foods increased appetite and body weight has been documented by many researchers. Krauchi et al (1990), Krauchi et al. (1993), Rosenthal et al. (1987), Wurtman (1988), and Wurtman and Wurtman (1989) discuss the predisposition to weight gain. Eating disorders such as bulimia, reverse obesity, and anorexia have also received attention by various investigators. Brzezinski,

Wurtman, Gleason, Greenfield, and Nader (1990); Wurtman (1989); and Tamburrino, Kaufman and Hertzer 1994) have researched this phenomenon.

Finally, shiftwork is also a major variable in the study of SAD. Evidence is accumulating that shiftwork can adversely affect many aspects of well-being. Individuals who work shifts are often at a disadvantage with regards to the amount of daylight they are exposed to. If the theory of reduced sunlight is adhered to, then those individuals who work all night and sleep the greater portion of the day are at greater risk for the development of SAD if they have a predisposition to it. Additionally, shiftwork can cause desynchronization of circadian rhythms which further alters one's sleep patterns. While there are few, if any, articles that look specifically at these phenomena, there are several researchers who have investigated the relationship of shiftwork to depression, physical health, performance demands and sleep problems. Barton and Folkard (1991), Eastman (1990), Gordon, Clearly, Parker and Czeisler (1986), Healy, Minors and Waterhouse (1993), and Monk (1990), have documented the deleterious effects of shiftwork. It is a variable that should be considered in the assessment of individuals with SAD.

Review of Instrumentation

Research instruments used in the assessment and diagnosis of SAD are limited in number. According to Dr. Erick H. Turner at the National Institute of Mental Health, "there are, to my knowledge

few, if any, articles that have actually focused on these instruments" (personal communication, September 22, 1994).

By far the most common instrument that is used the studies of SAD is the Seasonal Pattern Assessment Questionnaire (SPAQ). This instrument "was developed as an instrument for evaluating retrospectively the degree of seasonal variation in mood and behaviour among patients entering studies of SAD and phototherapy" (Rosen et al., 1989, p.131). The questionnaire extracts information on which times of the year are most unpleasant for patients and when they feel best, the extent to which seasonal change is a problem, and the degree of seasonal change experienced across six elements of mood and behaviour. These include sleeping, eating, weight gain, socializing, energy level, and mood. The scores on these six items are totalled and form what is called the global seasonality score. The score ranges from 0 to 24, with a higher score signifying a greater degree of seasonal change. Other questions on the SPAQ include reactions to assorted weather conditions, number of hours slept during the different seasons, and seasonal food preferences. On the basis of SPAQ profiles, SPAQ criteria were developed for winter SAD, summer SAD and subsyndromal SAD (Rosen et al., 1989). In order to meet the criteria for winter-SAD, individuals are required to have a seasonality score of 10 or more, report that their symptoms are most intense during the months of January and February (plus any other combinations except July and August) and describe that these changes impact on their lives to an excessive degree. Criteria for summer-SAD are virtually the

same, with the exception that individuals report the worst months as falling between July and August, plus any other combination other than January and February (Rosen et al.,1989).

The last category criteria were developed for is that of subsyndromal winter-SAD. In order for individuals to meet these criteria, they must score between 8-10 on the SPAQ and describe their seasonal changes to be at least mild, but no more than of a mild nature.

It is important to note that the SPAQ is a relatively new instrument and has not been subjected to extensive psychometric evaluation. In recent correspondence with Dr. Eric Turner at the NIMH he stated, "unfortunately, the review article on the SPAQ got pushed to the 'back burner' by competing projects" (personal communication, September 22, 1994). Thompson, Stinson, Fernandez, Fine, and Isaacs (1988) investigated the test-retest reliability of the SPAQ using an experimental survey design. Three groups of patients were administered the SPAQ. The first of these included a group of patients who met the criteria for SAD. A second group consisted of individuals who attended a lithium clinic and had been diagnosed with bipolar affective disorder. The last group to be included in the study were a normal group who were solicited from one of the investigator's general practice. The three groups were compared using Mann-Whitney U-tests for all scale items, and seasonal profiles were plotted for each group. "Scores were then converted to a percentage of maximum possible score so that comparison between groups of different sizes was possible" (p.259).

One year later 20 SAD subjects were available for retest with the average interval being 50.5 weeks. Results indicated correlations of "above chance expectation" with the "median correlation being 0.51" (p.260). Although these results are significant, they must also be interpreted with caution. Firstly, these findings are retrospective and self-rated, allowing only indirect conclusions about true seasonal rhythms. This group of individuals, knowing the symptoms of SAD, may have conveyed the expected replies for their own purpose, perhaps to gain entry into the study. Another reason to interpret the results with caution as suggested by the authors is "that the SAD group, complaining of symptoms often associated with 'hysteroid dysphoria', may have been constitutionally inclined to over-report symptomatology" (p.263). Clinically, however this has not been the general impression. Thus, the reliability of the SPAQ is addressed in this research, albeit interpreted with caution.

Hardin et al. (1991), utilized the SPAQ to evaluate retrospectively self-reported seasonal changes in two normal populations and six clinical populations. The normal populations were chosen by differentiating them as 'regular normals, and 'non-seasonal normals'. The first group was assembled without regard to their seasonality, as long as there were no clinical problems. The second group specifically included individuals with a history of slight seasonal fluctuations. The remaining groups included winter-SAD, summer-SAD, eating disorders, bipolar affective disorder, major depressive disorder, and subsyndromal winter disorder. All

patient groups were recruited by means of advertisement or referral, with the questionnaire administered in an outpatient clinic except in the case of those with eating disorders who were studied as inpatients. SPAQ's were distributed to winter-SAD, eating disorders and regular normal participants over the course of the year. The other groups were given the questionnaire over a shorter duration, mainly during the fall and winter months. Frequency counts were generated on all variables and descriptive statistics were computed. "Relationships were made across groups by multiple Chi-square or t-test analyses for categorical and continuous variables respectively, and Bonferroni corrections were made for multiple comparisons in interpreting significance levels" (p.78). Comparisons were made within the various groups with regards to the following variables: age, marital status, years of education, global seasonality score, seasonal changes in sleep length and weight, and the extent to which seasonal changes were judged to be an issue. To establish test-retest reliability the questionnaire was completed a second time by a subset of the winter-SAD and subsyndromal winter-SAD patients and the nonseasonal normal groups. Results indicated the winter-SAD group as having the highest overall test-retest reliability with "23 of 24 items correlating at a statistically significant level ($p<.05$) and 19 of these items having correlation coefficients of 0.7 or greater" (p.79).

This study illustrates, as did the previous one (Thompson et al., 1989), the SPAQ as being effective in discriminating between

different degrees of retrospective seasonal irregularities within different clinical populations. It is able to elicit information about seasonal changes rather than nonseasonal shifts in mood and behaviour. Additionally, it has the potential to identify other groups of individuals, such as those with eating disorders as being "highly seasonal". The implication here is the potential usefulness of phototherapy with this group of individuals. These studies suggest the benefit of using the SPAQ as a screening tool.

An exploration of the literature for instruments related to SAD, and more specifically those related to assess knowledge of SAD, revealed that at the present time, there have not been any instruments developed to test individuals' knowledge of SAD.

In conclusion, the review of the literature on SAD has revealed several significant findings. Research in this area is relatively new, with the first controlled study taking place in 1984. Subsequently, there are many questions yet to be answered. Studies to date have focused on the general population, with little interest to specific groups. Particularly noticeable is the absence of research that examines those individuals who are in a key position to assist with the identification of SAD and the referral to appropriate treatment facilities. The scope of nursing practice encompasses the identification of depressive symptomology as part of health assessment. Evaluation of interpersonal functioning, coping and mood are now a standard part of the nursing process. When identifying problems in these areas, nurses need to consider questioning patients about the seasonality of their symptoms. At

the present time, no studies were found that examined nurses' knowledge of this phenomena. The absence of research in this area support the proposed study to identify nurses' knowledge of SAD. As the literature review section concludes, it is noteworthy to mention that this is the first step in the process of content validation when designing an instrument.

The purpose of this research was to develop and test an instrument for the assessment of knowledge of health risk screening and treatment of SAD. The overall purpose of the instrument is to test knowledge of SAD. Therefore the content of the instrument is built around the concept of SAD. The items consequently are drawn from all available knowledge (content) about SAD (concept of interest). A comparative sample of nurses working in the areas of mental health, medical surgical nursing, and a group of individuals representative of the "lay public" were used for the purpose of instrument development and testing. An underlying assumption is that nurses who work in the area of mental health should be more knowledgeable about this disorder than nurses who work in other areas such as medicine or surgery.

Theoretical Framework

A search of the literature did not yield a conceptual framework in relation to nursing applications and SAD. Therefore, the model for this proposed research constitutes the writer's creation. The framework has been developed in three levels (Appendix E1; E2; E3)

The first level simultaneously integrates and considers etiologic and demographic risk factors of SAD. The person with SAD is depicted as moving through a tunnel coinciding with a period of time when daylight hours are diminished. The absence of light, a mediating condition, increases the risk and severity of symptoms. The amount of light that the individual receives is directly proportional to the months or seasons of the year (less hours of sunlight during the winter), and to the latitude in which the individual dwells (less exposure to light as one moves north). Hence light is the first independent variable (IV) and the sole modifiable factor in the framework.

The predisposed individual enters the tunnel bearing predisposing and non-modifiable factors which are age, gender, and history of previous psychiatric illness.

Age, the second IV, constitutes one of the factors which predispose the individual to SAD. The onset of SAD occurs during early to middle adulthood.

Gender is the third independent variable. It afflicts females in 90% of the cases.

The fourth, and final, IV is comprised of previous psychiatric illness, as many psychiatric diagnoses are associated with depression in one form or another. Therefore, it is possible that these individuals may be more prone to SAD than individuals who have never had a previous psychiatric illness.

Central to this model is the duration of light which serves as the trigger to SAD: the absence of light, the mediating condition,

increases the risk and the severity of symptoms. The combination of the IVs is interrelated, contributing to the degree of pathology in SAD, which constitutes the dependent variable (DV). Hence, this model serves as an organizational framework which gives guidance and direction in analyzing the problem of SAD. Additionally, we might look at the entire framework as conceptualizing the content domain of SAD.

For nurses to assist patients with a predisposition or diagnosis of SAD, they must first be able to recognize the disorder. Accordingly, knowledge of SAD becomes critical in order for this to be accomplished. A second level of the model which predicts knowledge of SAD is therefore presented. This framework is a modification of a model of job effectiveness presented by McCloskey (1983a).

Clinical competence which could also be perceived as "knowledge" is at the core of the model and constitutes the dependent variable (DV). Four groups of independent variables (IVs), placed around the core, influence and determine clinical competence/knowledge.

The first group is composed of education. It constitutes a one way relationship with problem identification (which one may equate with clinical competence/knowledge) because, in itself, problem identification does not increase educational attainment. The inclusion of SAD within the curriculum will impact on the identification of this phenomenon.

Nursing practice or experience is the second group of IVs

which directly affect problem identification. The relationship between skill and competence/knowledge is well documented (Davis, 1974; McCloskey, 1983a, 1983b; Schwirian, 1979). If a nurse has cared for a patient with a diagnosis of SAD, or has been exposed to this illness within his/her practice, it will impact on the recognition of this disorder.

Areas of practice constitute the third group of IVs and may impact on clinical competence/knowledge or problem identification. The area in which an individual works will lend itself to recognition of certain illness by way of increased exposure.

Individual variables comprise the fourth group of IVs which affect actual or potential competence in problem identification. These may include exposure to SAD through a relative, newspapers, or other media.

This model is useful to highlight some of the difficulties inherent in any research dealing with nursing competence or problem identification. Educational factors constitute only one variable, which impinges on knowledge and is difficult to isolate from the other three variables in relation to effect on the DV. The extent of influence of each IV with regards to knowledge may vary with the individual.

This dynamic model is interactive in that the IVs may impinge on each other in a reciprocal manner while they exert their influence on the DV. Additionally, this model is amenable to change if any of the IVs is altered or modified.

The end result is a conceptual framework which encompasses

both of the previous ones just presented. The depiction of SAD moving through a tunnel, flanked by dependent and independent variables, becomes the core of the framework. It can be characterized as the "knowledge of SAD", which is illustrated in the second model.

Ethics Implications for Human Research Participants

Fundamental ethical principles in research address beneficence, respect for human dignity, and justice (Polit & Hungler, 1991). Beneficence includes freedom from harm, freedom from exploitation, benefits from research and careful assessment of the benefit/risk ratio (Polit & Hungler, 1991). Prior to commencing this research, ethical approval was obtained from the Ethical Approval Committee of the University of Manitoba Faculty of Nursing (Appendix B). The research protocol also complied with the Manitoba Association of Registered Nurses' (MARN) protocol (Appendix C) and the Community College's protocol for research (Appendix D). The confidentiality of the respondents was maintained and assurance of anonymity was given in the covering letter. All individuals participating in the study were informed that their participation was voluntary, and that job security would not be influenced in any way. Consent to participate was indicated by their completion and return of the questionnaire.

The respondents, MARN, and the college were informed that in publication of my research, individual responses would not be identifiable, as only group data would be reported. Only the

researcher and Thesis chair had access to the raw data. Data will be retained for seven years and protected in a locked file. At the end of this time, all data will be destroyed.

Research Question

Does the Seasonal Knowledge Questionnaire (SKQ) provide a reliable and valid measure of nurses' knowledge of the assessment and treatment of SAD?

CHAPTER THREE

Methodology

A comparative descriptive design using survey methodology was selected for instrument development. The research design, sample selection, procedure, and the instrument developed in this study, are presented in this chapter.

Research Design

A comparative descriptive design was used to develop and field test an instrument to determine nurses' knowledge about health risk assessment and illness prevention techniques for SAD. Both qualitative and quantitative data were collected from nurses working in either a mental health area, or medical surgical area. A third group representative of the lay public was accessed from a local community college. This approach was chosen for several reasons. Descriptive data about nurses' knowledge and awareness of SAD, and in particular health risk assessment and illness prevention techniques was sparse. The review of the literature supported this premise, in that knowledge of SAD among health care professionals was limited. Studies which have examined this were nonexistent. It may be hypothesized that nurses who work in a mental health setting may be more knowledgeable about SAD than nurses who work in areas other than mental health. Thus, a comparative approach was chosen to determine whether the instrument designed for this study could discriminate knowledge of SAD between

the groups. The first group, which was hypothesized to be the expert group, was asked to complete the questionnaire twice. This was done to test the instrument's stability over time. Including qualitative data provided an opportunity to understand any qualitative differences in responses between the groups.

The time period proposed for this study was from June 1, 1996 until July 30, 1996. It was hoped that this would be sufficient time for the respondents to send in their completed questionnaires. In actuality, the time frame extended until August 11, 1996 when the last questionnaire was returned. Data analysis was to be done during August 1, 1996 until September 30, 1996, but was not completed until October 15, 1996.

The Sample and Setting

Sampling is a vital part of the research procedure in instrument development. The issues that need to be considered in selecting a sample for a comparative survey design, are "that the sample is representative of the population and that the comparison groups are equivalent on all relevant variables except the independent variable" (Brink & Wood, 1989, p. 93-94).

The population of interest included two distinct groups of nurses, and a third group of individuals who represented the public domain. The first was comprised of those individuals deemed to be knowledgeable about SAD. These included nurses working in the area of mental health, and they were considered the "expert" group. The second group was made up of nurses working in a medical surgical

area, who may, or may not have heard of SAD. The chances of their knowing about SAD were certainly higher than the "lay public" through their contact with patients' and the literature which is published in nursing journals. This group was considered the semi-naive group. The third group was considered the "naive" group. This group was made up of individuals who were presumed to have little knowledge with regards to SAD. The "naive" group was comprised of 'non-nurse' members of the general population. The anticipated sample size for each these groups was 52 individuals. Several considerations were necessary. First, since little was known about the average level of knowledge of SAD, in both the professional and lay population, but based on experience and existing literature it was assumed there was more knowledge in the mental health nursing group, less in the general nursing group and still less in the general population. Thus, in considering effect size, it was safe in estimating a medium effect (Cohen, 1992; Hinkle, Wiersema, & Jurs, 1988). The researcher anticipated using a one tail (directional) statistical hypothesis. Thus, with a one tail test; medium effect size = .50; alpha at .05; and power at .80, the researcher planned the sampling strategy such that there were 52 participants in each group. This permitted an adequate sample for analysis of variance, and the correlational matrices needed to engage in factor analysis and other statistical techniques.

The study was conducted in Winnipeg, Manitoba. The geographic area chosen for the study was, in part, due to accessibility for this researcher. It ensured a wider population base for the survey

design. By limiting the sample to nurses in one large location the investigation was more feasible and practical in terms of time, costs and personal energy. Time, energy, and practicality require consideration when determining a sampling plan (Polit & Hungler, 1991).

Procedure

The study was implemented in the following manner. The research protocol required by the University of Manitoba Ethical Review Committee was completed and submitted. Similarly, the research protocol required by the Manitoba Association of Registered Nurses (MARN) and the Community College was completed and submitted. Subsequent to organizational approval, a sample of each of the three groups was chosen. This was attained through simple random sampling.

Prior to the distribution of the questionnaire (Appendix E) the researcher changed the format of the questionnaire into a pamphlet form. This was done to enhance the appearance of the questionnaire and to make it "user-friendly". "The physical appearance of the questionnaire can influence its appeal, so some thought should be given to the layout, quality and color of paper" (Polit & Hungler, 1995, p.288).

Cover letters were prepared for the individual groups (Appendix F; G; H). The letters indicated that consent to participate was assumed by completion of the questionnaire and its return by mail. Anonymity and confidentiality of responses were

ensured. The researcher's telephone number and name were clearly displayed on the covering letter. Inquiries were encouraged in the event that problems arose with the completion of the questionnaire. Envelopes were assembled ahead of time by the researcher. Each contained the appropriate cover letter, a copy of the questionnaire and a stamped, self-addressed return envelope.

Sampling with the two groups of nurses was done through the public mail system and sent out from the MARN office, while sampling for the community college employees was done via the internal mail system. The office manager at the MARN generated the names and labels for the prospective respondents. These included active practising nurses working in the area of mental health or in the medical surgical area. The human resource manager at the community college went through a similar process. Potential individuals included all employees of the community college with the exception of the nursing department. Cover letters, questionnaires, and stamped self addressed envelopes were prepared ahead of time by the researcher and given to the individuals responsible for mailing them. Questionnaires were delivered in the college without incident, however there were some difficulties encountered at the MARN. Despite having the questionnaires clearly labelled as "mental health" and "medical/surgical" an error was made and the wrong envelopes were sent to each of these groups. This error was noted the next day by the office manager who stated "this has never happened in the history of the MARN". Subsequently, envelopes were prepared by the investigator and mailed again with

an additional letter prepared by the MARN apologizing for the error. The MARN assumed the cost of the second mailing. After the initial distress, the researcher looked upon this in a positive manner. It was hoped that by receiving two questionnaires it would heighten awareness, thus increasing the response rate. This, however was impossible to measure, as the researcher had no way of knowing whether those who returned the questionnaire were more aware of it because of the two mailings. Sufficient responses were received which ensured minimal response bias.

Following the initial mailing within the college, a follow-up postcard (Appendix I) was sent two weeks later. The date for this was June 19, 1996. As most employees begin their summer holidays around this time, this was the only reminder they received. Responses had been encouraging, so the researcher was comfortable with this decision. Additionally, a reminder letter was sent to both mental health and medical surgical nurses with an additional questionnaire on June 21, 1996 (Appendix J; K). On July 4, 1996, the group of nurses in mental health received a second cover letter (Appendix L) along with the second "official" questionnaire and self addressed stamped envelope. This group also received a reminder postcard one week later (Appendix M). Data collection was completed on August 11, 1996.

Instrument

The instrument undergoing field testing was a questionnaire which the researcher developed. The SAD Knowledge Questionnaire or

SKQ (Appendix E), was designed for the sole purpose of assessing knowledge of SAD among nurses. Following the steps of content validation as described by Farrell and Scherer (1983), the researcher generated the questionnaire in the following manner. An extensive review of the literature was done to identify the various elements of SAD that have been investigated by many researchers. These were divided into the following categories; etiology, demographics, behavioral changes and treatment of SAD. Once the list was generated, the second step in the validation method was undertaken. This involved consultation with subject matter experts, who were asked to assist in establishing content validity of the proposed items of the questionnaire. A letter explaining my proposed thesis (Appendix N) was sent with the list of items that had been generated (Appendix O). The experts were asked to comment on each point with regards to content validity. Three professionals were chosen based on their knowledge and expertise in this area. They included one each from Nursing, Medicine and Psychology. Using feedback from these individuals, the questionnaire was developed. It was interesting for the researcher to note that feedback from the experts was similar, necessitating few changes from the original items. Comments mainly related to those items which inferred 'diagnosis of SAD'. As this is not within the sphere of nursing they were reworded or eliminated from the final questionnaire. Additionally, a section on the "nurses' role" in relation to SAD was added, as the researcher felt it was important assess this component.

Content Validation

Anastasi (1968) defined content validity as "the systemic examination of the test content to determine whether it covers a representative sample of the behaviour domain to be measured" (p.21). This systematic examination typically involved the following aspects:

1. " A thorough and systematic examination of relevant course syllabi and textbooks..."
2. " Consultation with subject matter experts..."
3. " Leading to the establishment of "test specifications...drawn up...to show the topics to be covered, the kinds of (objectives and processes) to be tested and the relative importance of individual topics and objectives (or processes)."

Historically, "procedures for the establishment of content validity were originally developed in the disciplines of education and psychology in relation to the development of test items" (p. 21). This theory has now been generalized to include other domains. Scherer, Farrell and Sinha (1985) utilized this method in a project supported by Health and Welfare Canada titled A Project to Measure the Quality of Nursing Care in Manitoba. In their project a review of the nursing and quality of care literature replaced the "...examination of relevant course syllabi and text-books." In the development of a questionnaire that assesses the knowledge of SAD, a review of the research and literature on SAD was done as the initial step.

The systematic application of these content validation procedures resulted in the following method. The researcher undertook an extensive review of the literature for the purpose of identifying those items associated with SAD that were thought to be important when conducting a health assessment. These items were then grouped into two categories: demographics of SAD and treatment of SAD. This resulted in a potential of 28 items for the questionnaire (Appendix O). Following this step, a covering letter (Appendix N) and the items for analysis were sent to three subject matter experts who were asked to review them and provide feedback on their suitability for a final questionnaire. I found that many of the comments were generally agreed upon by the experts. The feedback was then analyzed and the findings were incorporated into a revised 50 item questionnaire. This included the section mentioned earlier that considers the nurse's role in the assessment of SAD. This step of development ensured content validity of the items used in the final draft.

Assessment of criterion-related validity is not possible at this stage because other measures of the same concept do not exist. Assessment of construct validity or "the degree to which an instrument measures the construct under investigation" (Polit & Hungler, 1995, p. 638), was to be accomplished through factor analysis. Also, although item analysis is used to estimate both reliability and validity of an instrument, through careful assessment of each item, factor analysis is a form of item analysis as well as a method to assess construct validity. Discriminability

of the items was assessed (as part of item analysis and as a method to assess construct validity).

First, factor analysis was used as an item selection device in the construction of the instrument. Thus, items which were found to measure constructs, other than the knowledge of SAD, were eliminated or altered. The first step in factor analysis is to examine the item correlation matrix to identify factor loadings of variance. The criterion to determine the identification of a factor "normally has a cutoff value of about .40 or .30" (Polit & Hungler, 1995, p. 447). This determines the larger factors, which then will be rotated such that items will tend to load on the larger factors and, once rotated, will remain independent of each other (variamax procedure). The emergence of factors, statistically, must be coupled with a judgement about whether they "make sense" as attributes of SAD knowledge. If they do not, they may be an artifact of statistical procedure.

Secondly, the discriminance approach was used whereby it was hypothesized that the professional insiders, professional outsiders, and a "lay" public have different degrees of knowledge about SAD. The nurses in mental health settings were thought to have the most knowledge, nurses in general medical surgical settings the next most knowledge, and the lay public the least knowledge. If the instrument performed in such a way, then it could be said to have discriminability. The procedure identified groups, or clusters of items, that measure similar things (as in factor analysis). However, unlike factor analysis, it uses the clusters of

variance on which groups most differ. This variance is then factored out of the total variance, and the process is repeated until discriminant factors have been identified. If the discriminant factors represent the three groups in the hypothesis above, then the instrument would be performing in such a way as to discriminate SAD knowledge among levels of knowledgeable to naive groups.

Field Testing

Field testing refers to instrument development research that is conducted in real life settings such as clinics, hospitals, and educational facilities. These fields are well suited for the study of nursing phenomena as authentic settings contribute to a study's external validity, thus increasing generalizability (Brink & Wood, 1989). The field test used the three groups mentioned previously.

Method of Analysis

The following tests of validity and reliability of the instrument were used. First, some assessment of content validity, using the approach outlined by Anastasi (1968) and Farrell and Scherer (1983)) was already achieved. Secondly, discriminant validity was accomplished by analyzing three groups of participants for this study. Anova was used to determine whether or not the participants in the "expert group" had significantly higher scores than the participants in the "semi-naive" group. If this was demonstrated, evidence for discriminate validity would be shown.

Thirdly, the instrument was subjected to factor analysis to determine the conceptual fit of its parts to the whole. "Construct validation represents an attempt to understand the meaning of a scale score when no adequate criterion (e.g. previously validated measure of that construct) exists" (Ware, Johnston-Avery, & Brook, p. 81).

"Reliability refers to the degree of consistency and repeatability of the scores on an instrument" (Brink & Wood, p. 266). If a measure is not reliable, the scores will vary and will fluctuate. In the proposed study, it was hypothesized that the "knowledgeable sample" would have a low random error, indicating high reliability. For this reason, the "test-retest" method was utilized. Scores from both tests were then correlated to determine the extent to which the participants achieved the same score on two separate occasions.

Despite the problems with use of the test-retest method (i.e., homework done by participants to improve scores, or reactivity), it was used, since test-retest information proved useful to the overall assessment of reliability. Test-retest method addresses external consistency of the instrument. Also, the method is enhanced by the use of a method to assess internal consistency.

First, the coefficient of stability was used to measure the extent to which respondents performed at the same level on two separate occasions. This is also known as the reliability coefficient. The value of the reliability coefficient can range between -1.00 and +1.00. "The higher the coefficient, the more

stable the measure. For most purposes, reliability coefficients above .70 are considered satisfactory" (Polit & Hungler, p.349), although a higher or lower one may be acceptable in some situations.

The second method to assess reliability of the instrument was to measure its internal consistency. The assumption underlying internal consistency was that each item equally measures the concept (i.e., each item measures knowledge of SAD). The estimate that was used is the Kuder-Richardson 20. This estimate is similar to Cronbach's Alpha, but can be used with cognitive scales having dichotomous items. The recommended criterion level for new scales is .70 or above. Items that correlate above .70 are considered redundant. "The normal range of values is between 0.0 and +1.00, and higher values reflect a higher degree of internal consistency" (p. 351).

Following completion of the data collection phase, the data were coded using a code book which was developed by the investigator, and the coded responses were entered on a spreadsheet using SPSS/Win. This was done according to the group to which the respondent belonged. Responses to the SKQ were recoded and assigned score: +1 for a correct response, -1 for an incorrect response, and 0 if the respondent did not know the answer or omitted the response. Additionally, a 'knowledge score' was computed which was the individual's total score on the SKQ. Using the SPSS/Win the data were analyzed for summary statistics. These included measures of frequency, range, mean, and standard deviation. Anova, a

parametric test, was used to test the significance of differences between means. Parametric tests are "generally preferred when variables are measured on at least one interval scale" (Polit & Hungler, p. 292). The statistic computed by the Anova is the F-ratio (Polit & Hungler, p.442). The Kruskall-Wallis test, was used to test the difference in the ranks of scores of the three groups answering the questionnaire. As mentioned earlier the Kuder-Richardson 20 was used to estimate internal consistency. Responses to each of the professional and demographic questions were summarized and compared using descriptive statistics appropriate for the data level.

CHAPTER FOUR

Results

The purpose of this study was to answer the following question. Does the Seasonal Knowledge Questionnaire (SKQ) provide a reliable and valid measure of nurses' knowledge of health risk screening as it relates to the assessment and treatment of SAD? The SKQ was developed by the researcher following the steps of content validation as described by Anastasi (1968) and Farrell and Scherer (1983), and using additional steps for assessment of instrument validity and reliability as outlined in the literature (Brink & Wood, 1989; Polit & Hungler, 1991; Ware et al., 1979).

Data Analysis

In this section, the sample is described, as well as results of data analysis. Discriminant validity was accomplished by selecting three distinctly different groups of participants for the study. Further assessment examined the validity and reliability of the instrument itself. Summary statistics are included, as well as knowledge scores for those answering the SKQ.

Questionnaires were mailed to three groups of individuals. The first two groups were comprised of active practising nurses working in the area of mental health or in medical surgical nursing. The third group of individuals included employees of a local community college. A total of 600 questionnaires were mailed with 150 mailed to each group respectively. This sum included the additional 150

questionnaires sent to the mental health nurses who were asked to respond to the questionnaire a second time. The total number of questionnaires mailed back were 287 for an overall response rate of 48%. The final sample consisted of the following: 79 respondents from the mental health group who answered the questionnaire a first time for a response rate of 52%; 54 respondents from this group who answered a second time for a response rate of 36%; 79 nurses working in the medical surgical area for a response rate of 52%; and 75 respondents from the community college, again with a response rate of 50%. The researcher oversampled by 33% in order to obtain a minimum of 52 responses in each group. When responses are reported in this section for the various statistical tests, the numbers do not always match with the totals above. This is due to the fact that some respondents left out individual questions and in some situations whole sections of the questionnaire. Therefore results are not reported in these instances.

Demographic and Professional Characteristics

Respondents were asked to complete questions which related to their personal history. These included work history, academic background, age and specific questions which related to SAD. These questions were listed in Part A of the questionnaire. The demographic data and professional characteristics of the individuals participating in the study are described in the following sections.

Gender distribution. The gender distribution of respondents is given in Table 1.

Table 1. Gender Distribution of Respondents

	Total		Mental Health Nurses		Medical Surgical Nurses		Community College Employees	
	%	(N)	%	(n)	%	(n)	%	(n)
Male	16.2	(37)	12.8	(10)	5.2	(4)	31.5	(23)
Female	83.8	(191)	87.2	(68)	94.8	(73)	68.5	(50)

The total percentage of male respondents is 16.2% (n = 37). This value is skewed by the higher percentage of males in the community college employees group 31.5%, (n = 23) versus the nurse respondents where the complement of male respondents varies from 5.2% (n = 4) in the medical surgical nurses group to 12.8% (n = 10) in the mental health nurses group. Overall, the percentage of male respondents in the nursing category is higher than the percentage of males within the Manitoba nursing population. In this study the percentage of male nursing respondents was 9% compared to the Manitoba Association of Registered Nurses statistics in which males represent 4% of the total nursing population (Karen Dunlop, personal communication, April 10, 1997).

Age distribution. The age distribution is recorded in Table 2.

Table 2. Age Distribution of Respondents

Age in Years	Total %	Total (N)	Mental Health Nurses %	Mental Health Nurses (n)	Medical Surgical Nurses %	Medical Surgical Nurses (n)	Community College Employees %	Community College Employees (n)
21 - 30	10.5	(24)	16.7	(13)	10.3	(8)	4.1	(3)
31 - 40	32.0	(73)	24.4	(19)	40.3	(31)	31.5	(23)
41 - 50	39.5	(90)	39.7	(31)	37.7	(29)	41.1	(30)
over 50	18.0	(41)	19.2	(15)	11.7	(9)	23.3	(17)
Total	100.0	(228)	100.0	(78)	100.0	(77)	100.0	(73)

The largest cohort of the combined group of respondents fall into the 41 to 50 year old age group. This is also true for the mental health nurse respondents and the community college employee respondents but not for the group of medical surgical nurse respondents. The largest cohort of the medical surgical nurse respondents are in the 31 to 40 year age group.

A comparison of the age distribution of the nurse respondents to the age distribution of Manitoba's registered nurses is shown in Table 2a.

Table 2a. Age Distribution of the Nurse Respondents and Manitoba Registered Nurses in 1996

	Nurse Respondents		Manitoba Registered Nurses*	
Age in Years	%	(n)	%	(n)
21 - 30	13.5	(21)	15.4	(1638)
31 - 40	32.2	(50)	32.6	(3458)
41 - 50	38.7	(60)	34.0	(3608)
Total	100.0	(155)	100.0	(10,586)

*Manitoba Association of Registered Nurses statistics (Karen Dunlop, personal communication, April 10, 1997).

In comparing the ages of the nurse respondents in this study to those of the Manitoba nursing population, it is evident that they closely resemble one another. For example, in the category of "21-30" the percentage of nurses in this study accounted for 13.5% as compared to 15.4% for the same age category in the Manitoba population. The similarities are reflected throughout with nurse respondents accounting for 32.2% compared to 32.6% in the category of 31-40 year old and 38.7% versus 34% in the 41-50 age bracket. The only age group which was not represented in the study were those nurses in the "under 21" category. There are 7 nurses in the province in this category accounting for only .06% of the total population.(Karen Dunlop, personal communication, April 10, 1997).

Years of employment of respondents. Table 3 displays the years of employment for each of the three groups of respondents.

Table 3. Years of Employment of Respondents

Years of Employment	Mental Health Nurses % (n)	Medical Surgical Nurses % (n)	Community College Employees % (n)
1 - 5	22.1 (17)	22.1 (17)	40.3 (29)
6 - 10	20.8 (16)	23.4 (18)	19.5 (14)
11 - 15	19.5 (15)	22.1 (17)	16.7 (12)
16 - 20	19.5 (15)	13.0 (10)	13.9 (10)
21 - 25	7.8 (6)	14.3 (11)	2.8 (2)
26 - 30	7.8 (6)	3.9 (3)	6.9 (5)
31 - 35	1.3 (1)	---	---
36 - 40	1.3 (1)	1.3 (1)	---
Total	100.0 (77)	100.0 (77)	100.0 (72)

The employment profiles for the first twenty years of employment are very similar between the group of mental health nurses and the group of medical surgical nurses. Whereas, the years

of employment for the community college employees group is skewed toward the first five years of employment. This may reflect the diversity of job types included in the community college employees group, many jobs which may not be lifetime career goals (eg. janitorial, food services) as generally nursing is considered to be.

Terms of employment. Table 4 records the terms of employment for the three groups of respondents.

Table 4. Terms of Employment

	Mental Health Nurses		Medical Surgical Nurses		Community College Employees	
	%	(n)	%	(n)	%	(n)
Part Time	33.3	(25)	43.4	(33)	6.9	(5)
Full Time	54.7	(41)	40.8	(31)	83.3	(60)
Casual	6.7	(5)	7.9	(6)	---	
Term	5.3	(4)	7.9	(6)	9.7	(7)
Total	100.0	(75)	100.0	(76)	100.0	(72)

As in the years of employment, there is more agreement between the two groups of nurses than between nurses and the community college employment group. This may reflect the nature of nursing

employment where shift work is the norm creating part time and casual work opportunities in addition to full time and term opportunities.

Education. Respondents were asked to indicate their basic nursing education, their highest level of nursing education and whether they were working toward another level. The majority of respondents indicated that they had received a diploma in nursing as their basic level of education. For the mental health group this meant that 60% (n = 47) had received their diploma in nursing as compared to 83% (n = 65) of the medical surgical respondents. The smaller number of nurses in the mental health category who obtained a diploma in nursing is offset by the larger numbers, 24.3% (n = 19) who reported to having obtained a diploma in Psychiatric Nursing as their basic education. In the medical surgical area 1.2% (n=1) of the nurses also reported having received this as their nursing education. Additionally, one respondent (1.2%) stated that they had received a Licensed Practical Certificate as their basic education, compared to 5% (n = 4) of the medical surgical nurses. A Baccalaureate degree accounted for 11.5% (n = 9) of the basic nursing education in the group of mental health nurses while 10.2% (n = 8) of the nurses working in the area of medical surgical nursing reported this as their basic education.

In response to the question which asked about their "highest level of education" 68.4% (n = 52) of the mental health nurses had received a diploma in nursing while 77.9% (n = 60) of the medical surgical nurses reported this as their highest level of education.

There were 21.1% (n = 16)) of the mental health nurses who reported having received a baccalaureate degree as compared to 13% (n = 10) of the medical surgical nurses. The remainder of respondents reported having received their highest level of education in the "certification of specialty" category or the "other" category.

The last question which considered education asked respondents to indicate the highest level they were working toward. Results from this question indicated that in the group of mental health nurses 23% (n = 18) were working on a baccalaureate degree in nursing compared to 25.6% (n = 20) of the medical surgical nurses. Five nurses in the mental health category or 6.4% reported that they were working on "other" degrees. Those which were stated included: one in Master of Business Administration, one in Master of Education and one in Master of Social Work. Five or 6.4% of the nurses in the medical surgical group reported to be working on a "certification in specialty". Three or 3.8% of the mental health nurses reported that they were working on a Master of Nursing degree as compared to 1.3% (n = 1) of the medical surgical nurses also working on a Master of Nursing degree.

Respondents Who Had Heard of SAD. The number of respondents who reported they had heard of Seasonal Affective Disorder are shown in Table 5.

Table 5. Respondents Who Had Heard of SAD

	Mental Health Nurses		Medical Surgical Nurses		Community College Employees	
	%	(n)	%	(n)	%	(n)
Heard of SAD	97.0	(76)	86.8	(66)	59.7	(43)
Not Heard of SAD	2.5	(2)	13.0	(10)	40.3	(29)

Within the group of mental health nurses there were 97% (n = 76) of the nurses who had heard of SAD. Only 2.5% (n = 2) of the sample had not heard of SAD. The group of medical surgical nurses reported a smaller number, as 86.8% (n = 66) of the nurses had heard of SAD. There were 13% (n = 10) of these respondents who reported that they had never heard of SAD. The group from the community college reported the smallest number as 59.4% (n = 43) of the individuals had heard of SAD. Conversely, there were also a larger number of individuals, 40.3% (n = 29) of the respondents whom had never heard of SAD.

Sources of Information about SAD. The principal source from which the respondents received their information was the media.

In the group of mental health nurse respondents there were 14% (n = 11) who reported hearing about SAD while in school, and 26.9% (n = 21) who reported hearing about SAD from either a newspaper or

magazine article. Only 1% (n = 1) of this group of respondents had learned about SAD from family or friends.

Of the medical surgical nurse respondents 56.6%, (n = 43) reported their source of information about SAD was print media. This was also reported as the source of information for 26.4% (n = 19) of the group of community college employee respondents; additionally, 2.8% (n = 2) of this group gave television as their source of information about seasonal affective disorder.

Sources of information for those who had heard of SAD are summarized in Table 6.

Table 6. Respondent's Source of Information about SAD

Source of Information	Mental Health Nurses (n)	%	Medical Surgical Nurses (n)	%	Community College Employees (n)	%
Never Heard of SAD	(2)	2.6	(10)	13.2	(28)	38.9
School	(11)	14.1	(5)	6.6	(1)	1.4
Newspaper/Magazine	(21)	26.9	(43)	56.6	(19)	26.4
Family/Friends	(1)	1.3	(4)	5.3	(3)	4.2
Can't Remember	(1)	1.3	-----		(1)	1.4
Workplace	(20)	25.6	(4)	5.3	(1)	1.4
Journal/Workshop	(1)	1.3	-----		(1)	1.4
Research	-----		(1)	1.3	(1)	1.4
Television	-----		-----		(2)	2.8
Other	(21)	26.9	(9)	11.8	(15)	20.8
Total	(78)	100.0	(76)	100.0	(72)	100.0

Diagnosis of SAD or Personal Experience With SAD. In response to the question, "Have you ever been diagnosed with SAD"?, one respondent from the mental health nurses group and two respondents from the community college employees group indicated "yes". All of the respondents in the medical surgical nurses group answered "no"

to this question. Additionally, in the community college employees group eight respondents answered that they did not know if they had ever received this diagnosis.

First Hand Experience with SAD. First hand experience with SAD was defined as knowing someone who has been diagnosed with SAD. To this question 20.5% (n = 16) of the mental health nurses group answered "yes" compared to 6.7% (n = 5) of the medical surgical nurses group and 5.5% (n = 4) of the community college employees group. Fifteen (20. 5%) of the community college employees group, 17.3% (n = 13) of the medical surgical nurses group, and 10.3% (n=8) of the mental health nurse group answered, "don't know".

Cared for Patients with SAD. Nurses who have had experience with SAD gained it in part by looking after patients with SAD. Of the mental health nurses group 38% (n =29) of the individuals reported having cared for a patient with SAD. The majority however, 61.8% (n=47) reported that they had not had experience with these patients. The medical surgical nurse group reported only 9.5% (n =7) of their nurses having cared for a patient with SAD and the majority 90% (n =66) of their group never having cared for a patient with SAD.

Psychometric Analysis of the SKQ

The researcher developed the Seasonal Affective Disorder Knowledge Questionnaire (SKQ), a 50 item instrument to assess nurses' knowledge of SAD. The instrument was divided into Part A, Part B and a section called Nurse's Role. Part A included the

demographic information reported previously and Part B included the specific questions that relate to knowledge of SAD. This included a section on the demographics and treatment of SAD. The last segment relates to the nurse's role and was only answered by those employed as nurses. It was hypothesized that members of the lay public would not have the knowledge or experience to be able to answer the questions in this category. However, it was used with the two groups of nurses since nurses' role in SAD is an important knowledge component. Scores were calculated based on the number of relevant questions. If respondents belonged to the nursing category, they were asked to answer all 50 questions. Those individuals who were not nurses, were asked to answer 40 questions as 10 of the questions in the SKQ specifically relate to nurses' role. The following reports the findings regarding the reliability and validity of the instrument.

Discriminate Validity. Discriminate validity was achieved by the use of three different groups. It was hypothesized that the group of nurses working in mental health would likely score the highest on the SKQ, followed by the nurses employed in the medical surgical area. Lastly, it was anticipated that the employees of the local community college, or those representative of the public would achieve the lowest scores. As predicted, results confirmed this following the application of the Kruskall-Wallis Test (Table 7).

Table 7. Kruskall - Wallis Test Analysis of Median Test Scores on the SAD Demographic, Treatment and Combined Subsections of the SKQ.

SKQ Subsection	Mental Health Nurses (n)	Median %	Medical Surgical Nurses (n)	Median %	Community College Employees (n)	Median %
SAD Demographics*	(79)	68.9%	(79)	58.6%	(75)	34.4%
Treatment**	(78)	72.7%	(79)	63.6%	(74)	27.2%
Treatment & SAD Demographics***	(79)	70.0%	(79)	60.0%	(75)	37.5%

* $H = 62.37$ $df = 2$ $p = 0.000$

** $H = 69.23$ $df = 2$ $p < 0.001$

*** $H = 72.64$ $df = 2$ $p = 0.000$

The Kruskall-Wallis test "is the nonparametric counterpart of the simple one-way ANOVA" (Polit, p. 205). This was chosen as it is "used to analyze the relationship between a dependent variable that is ordinal in nature and a categorical independent variable that has three or more levels" (p. 205). This test is used for three or more groups and when there are more than five subjects per group. The differences between the groups based on rank score were

calculated. The test statistic for this test is known as the H statistic, which "has a sampling distribution that approximates a chi-square distribution with k-1 degrees of freedom, where k is the number of groups" (p. 205). This test was initially run on the total score for all three groups, which included questions from the demographic and treatment section. For the mental health nurses group (n = 79), the median score was 70%; medical surgical nurses group (n = 79), median score was 60%; and the community college employees group, (n = 75), median score was 37.5%. Additionally, the level of statistical significance was (H = 72.65, df = 2, p = <.001), with the largest difference occurring between the mental health nurses group and the group of respondents from the community college.

This test was also run on questions which comprised the "demographics of SAD" section of the questionnaire. For the mental health nurses group, (n = 79), the median score was 68.9%; the medical surgical nurses group, (n = 79), the median score was 58.6%; and for the community college employees group, (n = 75), the median score was 34.4%. These results were statistically significant, (H= 62.37, df = 2, and p = <.001). As with the previous test results, the largest difference again occurred between the group of mental health nurses and the group of community college employees.

The Kruskall-Wallis test was then run on the questions which comprised the "treatment" section of the questionnaire. Similar results were reported as in the previous tests. The mental health

nurses group, (n = 78), reported a median score of 72.7%; the medical surgical nurses group, (n = 79), reported a median score of 63.6% and the community college employees group, (n = 74), reported a score of 27.2%. Statistically significant results were demonstrated, (H = 69.23; df = 2; p = <.001), with the largest difference appearing once again between the mental health nurses group and the community college employees group. The low score achieved by the community college employees indicates that they have a relatively poor understanding of the treatment modalities for SAD. As they are representative of the public this result was anticipated.

The same test was also run on the responses of both groups of nurses in the following sections; demographics of SAD, treatment of SAD, and the nurse's role. When the Kruskall-Wallis test is applied to only two groups it reduces down to a non-parametric t-test or Wilcoxan test (Polit, 1996). For purposes of reporting data, the test is still referred to as the Kruskall-Wallis test (Llwellyn Armstrong, personal communication, August, 11, 1997). These findings are summarized in Table 8.

Table 8. Kruskall - Wallis Test Analysis of Median Test Scores on the Nurse's Role and Combined Subsections of the SKQ.

SKQ Subsection	Mental Health Nurses (n)	Mental Health Nurses Median %	Medical Surgical Nurses (n)	Medical Surgical Nurses Median %
Nurses Role*	(78)	80%	(77)	80%
SAD Demographic, Treatment & Nurses Role**	(79)	72%	(79)	64%

* $H = 4.29$ $df = 1$ $p = 0.039$

** $H = 17.23$ $df = 1$ $p = 0.000$

The combined subsection responses revealed a median score of 72% for the mental health nurse respondents ($n = 79$), and 64% for the group of medical surgical nurses, ($n = 79$). Again, analysis ($H = 17.23$, $df = 1$, $p = <.001$) indicated statistically significant results. As was originally expected, the group representative of the mental health nurses achieved a higher score on the entire questionnaire.

Lastly, the section on the nurse's role was analyzed by the Kruskall-Wallis test. The mental health nurse respondents ($n = 78$) achieved a median score of 80%; as did the medical surgical nurse respondents, ($n = 77$), indicating statistically significant results ($H = 4.29$, $df = 1$, $p = 0.039$). When comparing these groups the

median score is found to be the same allowing one to speculate that both of these groups have a good understanding of the nurse's role in relation to SAD. However, these two groups did demonstrate differences in their overall understanding of SAD. This was determined through factor analysis of the SKQ items.

Factor analysis of SKQ items. Factor analysis was run twice. Step 1 involved an analysis of questions common to the entire sample (Appendix P). Step 2 focused on the nurses only, and included the questions relating to the nurse's role (Appendix Q). Results were not clear or readily interpretable. How the questionnaire fared under these manipulations is discussed in chapter five. Individual factors explained less than 12% of the variability. As well, the analysis did not identify the subscale scores as independent factors.

Reliability. One of the methods to determine external reliability was the use of the test-retest method. The group of nurses from the mental health category were asked to fill out the questionnaire on two separate occasions. As previously reported the response rate was 36% with (n = 50) individuals answering the questionnaire a second time. All questionnaires were mailed out by the Manitoba Association of Registered Nurses and as their policy is not to code any of the questionnaires, it was impossible to analyze individual scores. Therefore, only group statistics were calculated using a two sample t-Test.

The reliability scores obtained by this group of nurses during the first and second time that the SKQ was filled out is shown in Table 9.

Table 9. Test - Retest Two Sample t-Test Reliability Measures on the Mental Health Nurse Group's Responses to the SKQ.

SKQ Subsection	Time 1 (n = 79)[!] Mean %	Time 2 (n = 50) Mean %
Nurse's Role*	77.9%	81.2%
SAD Demographics**	66.1%	66.7%
Treatment***	72.0%	71.5%
Combined****	69.4%	70.6%

[!] n = 78 for the nurse's role and treatment subsections

* t = -1.26 df = 101 p = 0.21

** t = -0.17 df = 104 p = 0.86

*** t = 0.15 df = 98 p = 0.88

**** t = -0.41 df = 102 p = 0.68

During time 1, the combined subsections (demographics, treatment and nurse's role) mean score was 69.4% (n = 79). The combined subsections (SAD demographics, treatment and nurse's role) mean score increased to 70.6% (n = 50) at time 2. This change in mean scores was not statistically significant (t = -0.41, df = 102,

$p = 0.68$). That is, the time which had elapsed from time 1 to time 2 did not influence the scores, suggesting to the researcher that the respondents did not attempt to increase their scores. Therefore, results indicated reliability of the tool when all three subsections were considered together.

At time 1 ($n = 79$), the demographic subsection mean score was 66.1%, as compared to the demographic subsection mean score of 66.7% at time 2 ($n = 50$). As before, the change was not statistically significant as there was no substantial difference in the scores from time 1 to time 2 ($t = -0.17$, $df = 104$, $p = 0.86$).

At time 1, the treatment subsection mean score was 72% ($n = 78$). At time 2 the treatment subsection mean score actually decreased minimally to 71.5% ($n = 50$). Again no appreciable difference was established for the treatment subsection mean scores ($t = 0.15$, $df = 98$, $p = 0.88$).

Time 1 indicated an nurse's role subsection mean score of 77.9% ($n = 79$), while time 2 indicated a nurse's role subsection mean score of 81.2%. Although the mean score increased by 1.3% between time 1 and time 2 these results are not statistically significant ($t = 1.26$, $df = 101$, $p = 0.21$). This again suggests that overall, the group of mental health nurses did nothing to increase their score in this subsection of the questionnaire.

Internal Reliability. Internal reliability was assessed through the application of the Kuder-Richardson 20. This was chosen as it is useful with cognitive scales having dichotomous items. An

analysis of the SKQ subsections for the total sample of respondents is given in Table 10.

Table 10. Total Sample Kuder-Richardson 20 Reliability Scores

SKQ Subsection	No. of Cases	No. of Items	KR - 20
SAD Demographics	214	29	0.9408
Treatment	228	11	0.8723
SAD Demographics & Treatment	211	40	0.9566

Analysis of the combined SAD demographic and treatment scores for the entire sample yielded a KR20 = .9566 (n = 211, # of items = 40). For the individual subsections, the demographics section demonstrated a KR20 = .9408 (n =214, # of items = 29), and the treatment subsection a KR20 = .8723 (n =228, # of items = 11). This is evidence of excellent internal reliability of the tool for the entire sample.

Specifically, looking at both groups of nurses, Table 11 summarizes the nurses subsample KR - 20 scores for the questions from the demographic, treatment and nurse's role subsections, as well as these subsections combined.

Table 11. Nurses Subsample Kuder-Richardson 20 Scores for the SKQ

SKQ Subsection	No. of Cases	No. of Items	KR-20
Nurse's Role	152	10	0.6556
SAD Demographics, Treatment & Nurse's Role	138	50	0.9625

The SAD demographic, treatment and nurse's role combined subsection analysis yielded a KR20 = .9625 (n =138, # of items = 50) indicating excellent internal reliability. The nurses role subsection results yielded a KR20= .6556 (n = 152, # of items = 10), signifying a lower estimate of reliability for the questions in this section. This is a result of fewer items analyzed in this section, and does not impact on the reliability of the questions.

Summary

A comparative descriptive design using survey methodology was selected as the research approach for instrument development. In this chapter the findings of this study were reported. Results support the instrument as a reliable and valid measure of nurses' knowledge of Seasonal Affective Disorder.

CHAPTER FIVE

Discussion and Conclusions

The purpose of this study was to test the validity and reliability of a questionnaire developed by the researcher to measure nurses' knowledge of SAD. In this chapter the psychometrics of the SKQ, as well as other methodological implications of the results are discussed. Conclusions interpreted from the research findings are presented.

Discriminate Validity and Reliability of the SKQ

The SKQ is a 50-item questionnaire that was developed to measure knowledge of SAD among nurses. Discriminate validity was achieved by the use of three separate groups. The initial hypothesis was that the group of nurses working in the mental health area would score the highest on the questionnaire, followed by the nurses who worked in the area of medical surgical nursing and lastly by the group employed at the community college. The application of the instrument showed the predicted results the researcher had anticipated. The Kruskall-Wallis test initially was used on the total score for all three groups, and then on the subsections of the questionnaire. These included the sections on demographics of SAD, and the treatment of SAD. The same test was then repeated on the two groups of nurses which also included the section on the nurse's role. In all situations statistically significant results were achieved.

Reliability of the SKQ was assessed by the test-retest method. An important question with regards to the social and behavioral sciences has to do with the question: "Will the same method used by different researchers and/or at different times produce the same results" (Smith, 1975, p.58)? Reliability refers to the consistency between autonomous measurements of the same phenomenon. In the retest method, two measurements were taken with the same instrument at different times. The group of nurses from the mental health category received the questionnaire on two separate occasions. One of the limitations was that it was impossible to compare individual scores as only group results were available. This was due to the fact that the MARN has a policy that does not allow for coding of the questionnaires when they are distributed. However, group results indicated a difference of the average total score of 1.2% which was not statistically significant from time 1 to time 2. Additionally, scores calculated on the demographic and treatment section, and the nurse's role revealed no statistically significant changes in the scores. This finding is supportive of reliability of the questionnaire. It is important to note that the "first application of the instrument may affect responses on the second administration. This is particularly likely the closer the application of each measurement" (p.59). In other words, the smaller the distance between test-retest period, "the more chance subjects may wish to appear consistent and their memory may cause spuriously high reliability" (p.59). As there were only three weeks between the two questionnaires this may be an explanation for the

results. "On the whole reliability coefficients tend to be higher for short-term retests than for long term retests (i.e., those greater than 1 or 2 months)" (Polit & Hungler, 1995, p.349). Other references concur that this time frame is appropriate. "As a check on the instrument's stability, we might arrange to administer the scale 3 weeks apart to a sample" (p.348). It was somewhat of a surprise to the researcher that results did not improve significantly. It was anticipated that some of the respondents might be motivated to do some reading in an attempt to improve scores and thus appear consistent with the results. This was not the case.

Lastly, internal reliability was demonstrated through the application of the Kuder-Richardson 20. This test was a good choice as it implies that "there is a single right or wrong answer, making it inappropriate to use with scales that provide a format of three or more possible responses" (LoBiondo-Wood & Haber, p. 262). Demographic and treatment scores revealed excellent internal reliability on all groups who participated in the study, with scores of KR20= .9566 and KR20= .8723. The normal range of values is between 0.0 and +1.00 with higher values reflecting a higher degree of internal consistency. When this test was applied to the results from the nurses only the total score revealed a KR=.9625, but the section on the nurse's role, when considered by itself, revealed a score of KR=.6556. While still within the normal range, there is some room for improvement with these questions. One further test of the reliability of these questions would be to use

the "split-half technique" whereby the measurement is split in half. The statements in this category (nurse's role) would be split into two separate scales and the "variance of the difference between measurements of the two half tests and the variance of total scores would be computed" (Smith, p.59). "If the scores for the two halves are approximately equal, the test may be considered reliable" (LoBiondo-Wood & Haber, P. 258).

Lastly, in consideration of internal reliability, the occurrence of confounding variables is always a possibility but is generally controlled through the use of controlled experiments.

Factor Analysis

As reported in the Chapter 4, factor analysis was applied twice. "The goal of factor analysis is to understand conceptually and as parsimoniously as possible, what the data are measuring" (Keinbaum, Kupper, & Muller, 1988, P.595). It is hoped that a large number of variables measure only a small number of dimensions allowing the researcher to reduce the number of original variables to a smaller number (p.595). This process is known as "variable reduction" (p.595). Results of factor analysis in this study were not clear, as the first five individual factors explained less than 12% of the variability. The analysis did not identify the subscale scores as independent factors. "A factor that does not measure what it was expected to measure is often described as 'lacking construct validity'" (p.614). It should also be noted that rarely does factor analysis produce a perfect result.

Factor analysis was initially run on all the responses collectively. When one considers Factor 1, the following questions have high loadings for this variable. They are questions # 10, 12, 13, 14, 17, 18, 19, 20, 21, 22, 23, 27, 33 and explain 11.4% of the variability. Upon further examination of the individual questions, there are certain similarities found. These questions all relate to the symptomatology of SAD, which would be considered the underlying dimension. If the researcher was using factor analysis for the purpose of identifying which questions test the same construct, these questions possibly could be grouped together.

Factor 2 reveals that questions # 8, 15, 26, 28, 35 and 39 explain 9.0% of the variability. When examining these questions it is not clear why they load together. Several of the questions have common themes, for example questions # 8 and # 15 look at 'other' demographics which are not behavioral. These include race, ethnic groups, occupations, and geographic areas. Questions # 26 and # 28 deal with how SAD may manifest with other symptoms while Questions # 35 and # 39 deal with the treatment of SAD. Therefore it is difficult to interpret this factor. Perhaps an argument could be raised that factor analysis results do not support content validity of the instrument in its present form, or these results are a statistical artifact.

When considering Factor 3, questions # 4, 5, 24, 34, 36, 37, 38, and 40 load together and explain 8.2% of the variability. When surveying these questions, many of them relate the treatment of SAD, and in fact questions 34, 36, 37, 38, and 40 can be found in

the section entitled 'treatment of SAD' in the questionnaire. Questions 4 and 5, fall into the demographics of SAD and again it is unclear to the researcher as to why they load highly on this factor.

Factor 4 includes questions #1, 2, 3, 6, 10, 16, and 25, explaining 7.5% of the variability. These questions all seem to have a numerical component attached to them. For example they refer to weights, percentages, ratios and some type of measurement. It is more evident why these questions load together.

Factor 5, the last factor to be considered includes questions # 7, 9, 29, 30, 31, and 32, and explains 7.4% of the variability. These questions appear to consider specific information relating to SAD. These include children, adolescents, ethnic groups, tools for diagnosis and treatments.

In summarizing this section, taken together, the first five factors explained 43.5% of the variability.

Factor analysis was again carried out on the responses from all the nurses who participated in the study. This explained less than 4.7% of the variability.

Factor 1 had high loadings for the following questions; #10, 12, 19, 20, 21, 22, 23, 28, 35, and explained 4.7% of the variability. There is some evidence why # 10, 12, 20, and 22 load together as they seem to have a form of measurement as a common theme. Words such as "minimal", "severe", "levels" and "completion" can be found in these questions. It is definitely less apparent why

questions 23, 28 and 35 load with this factor, as there is no common theme evident.

Factor 2 had no questions which loaded with it and explained 4.7% of the variability. This indicated that none of the questions were loading highly and means that there is some "obscure factor common to these questions that is causing the variability" (Llwellyn Armstrong, personal communication April 17,1997). Thus, results are inconclusive.

Factor 3 includes the following questions: # 33 ,36, 37, 38, and 7 and 10 in Part A of the questionnaire. These explained 4.3% of the variability. Questions # 33, 36, 37 and 38 all relate to the treatment of SAD, while the other questions refer to education and area of clinical practice.

Factor 4 had only one question load with it and this was # 15 which asked if respondents "have ever heard of SAD"? This explained 4.3% of the variability.

Lastly, Factor 5 explained 4.2% of the variability with the following questions loading highly; # 3, 6, 8, 11, 13, 40, and # 8 in Part A. When scrutinizing these questions the first five all consider demographics of SAD, while # 40 addresses remedies and # 8 pertains to the respondent. Again, it is not obvious why these questions load together.

When consideration is given to these results collectively, it is apparent that the questions are loading in a manner that is inconsistent with the three subscales which were in the questionnaire: SAD demographics, SAD treatment, and the nurses'

role. As factor analysis is an attempt to search for 'like' items, other tests of discriminant validity also search for 'like' items. One of these utilized in this study was the Kruskall-Wallis which compared the three groups of participants. This test demonstrated statistically significant results. That is, items under the cluster of SAD demographics appear to be measuring SAD demographics; items under SAD treatment appear to be measuring SAD treatment, and items under nurse's role appear to be measuring that. In terms of a priori hypotheses, it was anticipated that the variables would cluster in much the same fashion. However, it was found that the a priori clusters did not emerge. Why did the Kruskall-Wallis test yield statistically significant results when factor analysis did not? Perhaps the answer lies in the fact that the Kruskall-Wallis test is one which is used to analyze the relationship between a dependent variable that is "ordinal in nature and a categorical independent variable that has three or more levels" (Polit, p.205). The fact that there were three distinct groups clearly meets this criteria. As factor analysis "involves the formation of linear combinations" (p.345), or the relationship between two continuous variables", it may be that factor analysis is not the best choice for the instrument being tested owing to the nature of the content. This may be due to the fact that the variables overlap and communalities may not be estimable causing parameter estimates to be totally unreliable. One might theorize that with individuals being more educated about a topic, there will be a greater overlap of information. That is, if you know about the cause of SAD, there

is a considerable chance that you will also be knowledgeable about the demographics and the nurses' role. Therefore information is not separated out into three distinct categories. One might conclude that if nurses know about SAD, they generally know about all facets of the illness. This may be different than the general population who may have only some knowledge of the disorder. In summary, the first five factors, taken together, explained 22.2% of the variability.

There are several risks associated with factor analysis. One of the major problems is that conclusions must be replicated to demonstrate reliability. Without reliability, conclusions must be considered as tentative. "Split sample techniques help to deal with this problem" (p.631). As this was not done in this study, it is a recommendation the researcher can make if this study were to be replicated at another time.

Methodological Issues

Response rates are an important methodological issue in survey research. In the present study, a total of 600 questionnaires were mailed with 287 questionnaires returned. This yielded an overall response rate of 48% which is considered very good in research using survey statistics. However, improvements can always be made and some consideration could be given to the timing of the questionnaire. It was mailed just at the end of the school term, and at the beginning of summer holidays. Respondents might have been preparing for vacation or may have been out of town when

questionnaires arrived. This may have decreased the response rate. With the group at the community college, the questionnaire might have reached them at the end of the school term and may not have been deemed a priority if they had final marks or year end work to complete. Additionally, if they did not check their mailboxes, they would have no way of knowing the questionnaire had been sent. In some cases, they may not have found the envelope until they returned in the fall, with the deadline to return the questionnaire having expired.

Another methodological issue was the cost, time and energy required to administer the questionnaire. As these were all considerations for the researcher, the choice of a mailed questionnaire was a suitable one. Once the questionnaires were placed in envelopes and mailed, all that remained was to wait for the return of the questionnaires and to mail out reminder notices. In terms of the cost, expenditures included the cost of having the questionnaire printed in a pamphlet format, enclosure letters, and reminder notices printed on postcards. The single largest expense was the cost of mailing the questionnaires, with a self-addressed, stamped envelope. As this was done on two separate occasions, the cost was quite significant. However, this was offset for several reasons. Firstly, support for this study was achieved in the form of bursaries which were used for printing and the purchase of stamps and envelopes. Secondly, by utilizing the internal mail system within the community college, there was no cost associated with the mailing of questionnaires within the institution.

Appearance and layout of the questionnaire is another consideration. "A poorly designed format can have substantive consequences if respondents become confused, miss questions, or answer questions that they should have omitted. The format is especially important in the case of questionnaires because respondents who are unfamiliar with the researcher's intent will not usually have an opportunity to ask questions" (Polit & Hungler, 1995, P.293). Although not outlined in the methodology, the researcher became concerned with the length of the questionnaire and the number of pages it contained. It was feared that the questionnaire would be overwhelming, prompting individuals to throw it out. For these reasons, a pamphlet format was chosen to improve the overall appearance and assist with the ease of answering the questions. Attention was also given to the artwork on the cover of the pamphlet which illustrated the topic of the questionnaire. A "sun" was chosen, with half of the sun portrayed in daylight and the other half in darkness. This same "logo" was also used on follow-up letters and postcards which were subsequently sent out to respondents. Although there was no way to measure how effective this strategy was, many positive comments were received about the layout of the questionnaire. One person commented on the questionnaire "Great idea, makes answering this so much easier", while another one wrote "very well done questionnaire, looks great". Generally, the respondents who answered the questionnaire provided a complete set of responses and did not have difficulty with the wording of the questions. With regards to the individuals

who had "never heard of SAD", the majority of these individuals were from the community college (n=29) or 40.3%. It was interesting to note that they were able to answer some of the questions correctly without any prior knowledge of SAD. As the study was not designed to answer the question "do the public know less than the nurses?", but as a comparison to the nurses, it would still be important to include the question (Llwellyn Armstrong, personal communication, September 3, 1997).

The social desirability factor is another methodological issue associated with questionnaire development. Social desirability refers to the "tendency of some individuals to misrepresent their responses consistently by giving answers that are congruent with prevailing social mores" (Polit & Hungler, 1995, p. 290). The social desirability factor in this study would be for the respondents to answer the questions correctly. However, given the anonymity of the questionnaire, this was hopefully kept to a minimum. The respondents had nothing at 'stake' in not providing the correct answers.

The sampling plan chosen for this study generated a representative sample for each of the target populations. That is, sufficient numbers of respondents participated in the study, as had been determined by power analysis. One potential difficulty that might have been encountered was the effects of sample biases. It is impossible to know why respondents answered the questionnaire. The first reason might have been that they were truly interested in assisting with this research. They may have felt that this was

their professional obligation. Although the numbers are not statistically significant, the researcher can speculate that anyone who had completed a Master's thesis, or was in the middle of writing one, might have been more inclined to answer a questionnaire as they valued the importance of supporting research. At the time the questionnaire was distributed, there were 2 individuals in the mental health group who reported that they had obtained a Master's degree, while a total of 9 from both the mental health and medical surgical group reported that they were working toward a Master's degree. A second reason for answering the questionnaire is the interest they displayed in the topic being investigated. This was substantiated by the fact that the researcher received 33 requests for summaries of the study. In talking to colleagues who have completed theses, this number far exceeds those which others have encountered. This indicates a high level of interest in the subject of SAD, and a desire to learn more about it. Thirdly, individuals may have answered the questionnaire because they knew the researcher personally, and this was a way in which they could "support me", even if it was done anonymously. There are likely many other reasons for answering the questionnaire, however these will remain unknown to the researcher.

Not only did this study include representatives from the nursing profession, it also included a group of individuals who worked at a community college. This group encompassed individuals from all "walks of life", as the SKQ was distributed to all employees of the college with the exception of the nursing faculty.

Respondents included individuals employed in maintenance, clerical staff, instructors, and administrators. These individuals reported varying degrees of schooling ranging from those without a high school degree to those who held a doctoral degree in their area of expertise. As was hypothesized, this group achieved the lowest scores on the SKQ, revealing that knowledge of SAD is sparse among the group that was representative of the public. Comments about the generalizability of these results cannot be made unless the sample reflects the total population demographics. Also, if this were so, it would only be representative of the community college population sector.

Findings in Relation to Theoretical Perspective

The theoretical framework which guided the development of the instrument was a dynamic model which first illustrated the problem of SAD and secondly considered the variables which guide knowledge assessment. A search of the literature did not yield a conceptual framework in relation to nursing applications and SAD, therefore this part of the framework was the researcher's creation. The second part of the model was adapted from the model of job effectiveness presented by McCloskey (1983a).

The central part of the theoretical framework illustrates the problem of SAD, simultaneously considering etiologic and demographic risk factors. The individual with SAD was depicted as moving through a tunnel coinciding with a period of time when daylight hours are diminished. Light was the first independent

variable and the sole modifiable factor within the framework. The predisposed individual is characterized as entering a tunnel bearing predisposing and non-modifiable factors including age, gender, and a history of previous psychiatric illness. This framework provided the basis for the questions which made up the SKQ. As the questionnaire has demonstrated internal validity and reliability, this part of the model was useful in providing a framework for the questions which were asked.

The external portion of this model considered the factors which guide knowledge assessment. Knowledge of SAD became the core of the model, constituting the dependent variable. Surrounding this were the independent variables or factors which influence and determine clinical competence. These included nursing education, nursing practice or experience, areas of practice, and individual variables. These factors assisted the researcher in determining which questions to include in the demographic section of the questionnaire.

The results of the questionnaire supported the above framework. The group which ranked highest on the SKQ were the group of nurses who worked in the area of mental health. This finding supported the independent variables of nursing practice and experience, and area of practice. Those working in the area of mental health were more likely to encounter patients with SAD than their counterparts. As reported earlier, there were only 2.56% or ($\underline{n}$ = 2) of the nurses who work in mental health who had never heard

of SAD, compared to 13% or (n = 10) of the nurses who work in the medical surgical area. This was further supported by the fact that 40% or (n = 29) of the community college employees had never heard of SAD. From the group of nurses in mental health, 26.9% or (n = 21) reported learning about SAD from the "workplace", while 11.4% or (n = 9) of the medical surgical nurses reported learning about SAD from their place of work. From those in the community college who had heard of SAD the greatest number 36% or (n = 19) had heard about SAD from reading about it in magazines or newspapers.

In terms of years of employment, it was difficult to determine whether this had any impact on the knowledge of SAD. For the group working in the area of mental health the number of years which they had been employed in their particular area ranged from 1 to 40 years. The largest cohort 20.8% or (n = 16) were found to have worked in the area for between 6-10 years. The range of years for the medical surgical nurses was 1 to 37 years. The largest cohort was 23.4% or (n =18) working for between 6-10 years as well. For the community college employees, years of experience would not impact on their knowledge of SAD, as they would not likely encounter these individuals as part of their employment. Therefore, from a statistical point of view, the years of experience did not support that knowledge of SAD was greater if you had been working in an area for a long time. However, from an intuitive perspective, the writer believes that this has to have some impact on knowledge of the disorder, especially for the nurses working in the area of mental health.

Lastly, when the independent variable of education was reviewed, the group of nurses working in mental health reported that 26.9% or (n = 21) had learned about this disorder "while in school", compared to the group of medical surgical nurses of whom 6.5% or (n = 5) who stated they received their information from this source. When the researcher considers the level of education reported by the respondents, 24.3% or (n =19) nurses in the mental health group stated they had received their Psychiatric Nursing degree as their basic education. This may have contributed to the fact that a higher percentage reported to having learned about SAD while in school. Additionally, the group of mental health nurses scored the best on the SKQ, but also had the highest level of education when compared to their counterparts in the medical surgical group. Not surprisingly, only (n = 1) or 1% of the respondents from the community college reported learning about this in school. These findings definitely suggest that the educational variable is important to include when analyzing knowledge of a given nature.

As the above theoretical framework supported findings of 3 out of 4 independent variables, the writer concludes that this framework was able to explain in part where knowledge of SAD originates.

Summary of Findings

As discussed in the literature review, there is a lack of nursing research with regards to the problem of SAD. Of interest in

this study were the findings from the question which asked respondents "if they were familiar with SAD, where had they received their information from"? Of the group in the mental health category, 26.9% or (n = 21) reported learning about SAD from newspaper or magazine articles, 56.5% or (n =43) of the nurses in the medical surgical area reported this as well. From the community college, 26% or (n =19), reported hearing about SAD from the same source. This finding reveals how powerful information from newspapers and magazines can be. Individuals may rely upon these sources to educate themselves about many different topics.

Despite receiving much information from the above sources, it is noteworthy to consider the number of incorrect responses. From a total of 40 questions in the demographic and treatment section of the questionnaire, the results show that 22 of these were answered correctly by the majority of all respondents, leaving 18 answered incorrectly by the majority of respondents. These statistics were tabulated on all three groups together. Thus, despite having a good knowledge in some areas, there are "gaps" that need to be addressed in all three groups. This has implications for future education and inservice planning for all groups of individuals.

Summary

The purpose of this research was to develop and test an instrument for the assessment of knowledge of health risk screening and treatment of Seasonal Affective Disorder. The overall purpose of the instrument was to test knowledge of SAD. A comparative

descriptive design was selected as the research approach for instrument development.

Initially, content validity was achieved using the approach outlined by Anastasi (1968). This included a thorough review of the literature for specification of the content domain. This was followed by a review of the content by a panel of experts in the field of SAD. These included a representative each from nursing, medicine and social work.

Discriminate validity was achieved by the selection of three groups of participants for the study. The Kruskall-Wallis test was initially run on the total score for all three groups who participated in the study. It was then run on the three subsections of the questionnaire, and lastly on the two groups of nurses who took part. Conclusions from this test revealed statistically significant results in each of the areas it was run. This provided evidence of discriminate validity of the SKQ.

Reliability was achieved through the use of the test-retest method. This was accomplished by administering the questionnaire to the mental health nurses on two separate occasions. As results were not statistically significant, varying by only 1.2% from time 1 to time 2, this was affirmation of reliability of the questionnaire.

Internal reliability of the questionnaire was confirmed by the use of the Kuder-Richardson 20. Demographic and treatment scores demonstrated superior internal reliability, while the section on the nurse's role revealed scores of 80 percent. This is an important finding in that it is interesting to note that, although

nurses may not have a sound knowledge of the demographics and treatment of SAD, they have very good knowledge about the nurse's role. This may be due to the fact that nurses' are taught basic principles and concepts, allowing them to apply these in many different situations. It may not be necessary to know all the details about a disease process for nurses to intuitively know what actions should be taken.

Factor analysis did not identify subscale scores as independent factors. Questions which did not meet the expectations of factor analysis need to be reviewed. It may be that content was redundant and some of these questions are not necessary to include. Others, perhaps, need to be reworded.

In terms of the methodological issues, the study has proven to be of sound design. Response rate was 48%, but since the researcher oversampled by 33%, this was satisfactory. Respondents exceeded the numbers generated by power analysis.

Response rates may have been affected due to the timing of the questionnaire. These were sent out at the end of the school term and just prior to summer holidays. It has been speculated that some were not returned for these reasons. Should this study be replicated, a recommendation would be to send the questionnaire out at an earlier time in the year.

The appearance of the questionnaire and format for return letters and postcards were as asset to the study. Positive comments were written on 8 of the returned questionnaires. These were

unsolicited, and it was felt the overall appearance contributed to the response rate.

Social desirability was kept to a minimum due to the anonymous nature of the questionnaire. There was no "reward" for respondents in going to a book to find out the correct answers. The responses the researcher obtained demonstrated that this was not a concern in the methodology.

The sampling plan was suitable in that responses were equally distributed among all three groups of respondents. Even though one of the groups represented the "public domain", generalizability of results is not possible as it is unknown whether the sample reflects the total population demographics.

Lastly, the theoretical framework chosen for this study proved to be a good selection. As results supported 3 out of 4 independent variables, the researcher concluded this was a good "fit".

Replication of the findings is also needed to determine if some of the results were not due to chance. Multi-site testing is recommended to establish generalizability of the present findings. Ideally, this could take place in other provinces in Canada. Future research should also include different groups of nurses to further test the tool for statistical significance.

CHAPTER SIX

Recommendations

This final chapter will include the recommendations gleaned from this study. Implications for nursing education, practice, research, and the nursing profession are outlined.

Implications for Nursing Education

This study identified a lack of knowledge among nurses in regards to knowledge of SAD. While the nurses who worked in the area of mental health had more exposure to this illness than their counterparts, the majority of all respondents received their information from newspaper and magazine articles. This result supports the reasoning that since SAD has only been actively researched since the late 1980's, many practising nurses have not received any formal education with regards to this illness.

It therefore is important for nursing curricula, especially those situated in North America and specifically Canada, to ensure this theory is taught in mental health content. In order for nurses to be able to consider SAD when assessing clients for depressive symptoms, they must first have knowledge of this disorder. Educators must also include health assessment of SAD and illness prevention strategies. As the incidence of this disorder is greater in the latitude that we live in, all nurses in Canada should be taught SAD content.

Nursing Practice

Nurses who work in geographic locations where there is a high incidence of SAD are in an ideal position to identify this disorder within their practice. As they comprise the largest sector of health care providers, they will inevitably come into contact with individuals suffering from SAD. Knowledge of this disorder is imperative in order to consider SAD as a diagnosis. As assessment is an integral part of the nursing role, steps must be taken to ensure that all nurses are equipped with the necessary information. The SKQ is a useful tool to identify those nurses who are not familiar with SAD. It can easily be administered to a group of nurses and used as a screening tool. It could be used independently by nurses to test their own knowledge. The tool and answers could readily be made available. Once learning needs have been identified, inservices, workshops and information sessions can be organized to assist with the dissemination of knowledge.

Lastly, optimum clinical competence may result in greater job satisfaction.

Nursing Research

The results of this study demonstrate a need for further research that focuses on instrument development in areas where it may be needed. As confirmed in the literature review there is an absence of published valid and reliable instruments to measure nursing knowledge. Therefore theses that focus on instrument

development and field testing are important to add to nursing's body of knowledge.

The findings of this study would be strengthened if replication with a larger sample of nurses, in diverse settings, yielded similar results. As previously mentioned it may be useful to replicate it in other provinces as well. This would assist in identifying whether results were unique to this sample and province or are part of a national/international trend. It also points out the need for research that focuses on instrument development.

If replicated, the questionnaire could be expanded to include room for respondents to provide comments. This might further assist the researcher in identifying specific areas where there may be concerns about the questionnaire.

Following completion of a study, it is important for researchers to publish results so that other nurses become familiar with the information. As revealed in this study, the majority of respondents received information about SAD through newspaper and magazine articles. Nurses have a responsibility to publish so that others can benefit from the unique knowledge which they possess.

Nursing Profession

As nursing roles change in response to health care reform, we have a responsibility to keep pace. The paramount goal of any profession is to improve practice of its members so that services rendered will be of greatest effect. Perseverance in developing a scientific body of knowledge is vital to its practice.

Thus, studies such as the one conducted with the SKQ are fundamental to our profession. They also help to increase the general awareness of "what, when and how" of using instruments that have undergone psychometric assessment.

Moreover, nurses must be committed to the maturation of a distinct body of knowledge in order to separate nursing from other professions. Learning acquired from nursing research helps to clarify the unique role that nursing performs.

Conclusion

In conclusion, there is beginning support that the SKQ is a reliable and valid tool that can be used for the assessment of knowledge of SAD among health care professionals. In order for this tool to be used with clinical confidence further reliability and validity testing is recommended. This study has identified a need to educate both nursing students and those already in practice about Seasonal Affective Disorder.

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Appendix A

Rosenthal's Criteria for SAD

1. Recurrent fall-winter depressions.

2. No seasonally varying psychosocial stressor.

3. Regularly occurring non-depressed periods in winter and summer.

4. At least two years of the depressions met Research Diagnostic Criteria for major depression.

5. No other axis / pathology.

APPENDIX B

UNIVERSITY OF MANITOBA ETHICAL APPROVAL

The University of Manitoba

FACULTY OF NURSING
ETHICAL REVIEW COMMITTEE

APPROVAL FORM

Proposal Number #96/21

Proposal Title: A Questionnaire to Assess Knowledge of Seasonal Affective Disorder Among Nurses in an Urban Manitoban City

Name and Title of Researcher(s): Linda Levitt
Graduate Student

Date of Review: May 6, 1996

APPROVED BY THE COMMITTEE: May 17, 1996

Comments: Approved with the changes dated May 17th

Date: May 17, 1996

Karen I. Chalmers

Karen I. Chalmers, PhD, RN — Chairperson
Associate Professor
University of Manitoba Faculty of Nursing

Position

NOTE:
Any significant changes in the proposal should be reported to the Chairperson for the Ethical Review Committee's consideration, in advance of implementation of such changes.

Revised: 92/05/08/se

APPENDIX C

MARN ETHICAL APPROVAL

Manitoba Association of Registered Nurses
647 Broadway. Winnipeg. Manitoba R3C 0X2 (204) 774-3477
Toll Free: 1-800-665-2027 (Manitoba only.)
Fax: (204) 775-6052

June 3, 1996

Linda Levitt
768 Niagara Street
Winnipeg, Manitoba
R3N 0R8

Dear Ms. Levitt:

Re: A Questionnaire to Assess Knowledge of Seasonal Affective Disorder Among Nurses in an Urban Manitoba City

The Manitoba Association of Registered Nurses Board of Directors, at its May 31 meeting, approved the Nursing Research Committee's recommendation that membership names be released for the purpose of your project "A Questionnaire to Assess Knowledge of Seasonal Affective Disorder Among Nurses in an Urban Manitoba City".

Shortly after the Research Committee discussed your application May 13, 1996, you informed Fjola Hart-Wasekeesikaw, Consultant, Professional Issues, about the changes the Faculty of Nursing Ethical Review Committee, University of Manitoba, requested for your research proposal. At that time she conveyed the Research Committee's suggestions for your study. These suggestions were made to support your research work. They are as follows:

- Omit the following from the Letters of Explanation in Appendixes E and F, "the list will be returned to the MARN at the study's completion".
- Divide question #11 into two questions.
- Add age category 31 - 40 in Personal Data question #2.
- Include the category RPN to question #10.

On May 22, 1996, Fjola Hart-Wasekeesikaw received your letter outlining your proposal revisions incorporating these suggestions as well as the recommendations made by the Faculty of Nursing Ethical Review Committee. Thank you for submitting revised copies of your proposal. Your letter outlining these changes will be kept on file for future reference.

It is my understanding that you and Ms. Hart-Wasekeesikaw also discussed two other areas that the Research Committee wanted to draw to your attention. First, twenty percent seems minimal for your survey. It is my understanding that you will be increasing this percentage. Second, postage and envelopes may be costly. Please contact Anita Mayer, Business Manager to arrange the membership query.

An announcement will be made shortly regarding a call for research proposals to be considered for MARN funding. Please call Fjola Hart-Wasekeesikaw for further information about this, at 774-3477, ext. 228.

Congratulations as you move into the data gathering phase of your research project.

Sincerely,

Diana Davidson Dick

Diana Davidson Dick RN MEd
Executive Director

/tw
cc. Anita Mayer, Business Manager
Fjola Hart-Wasekeesikaw, Consultant, Professional Issues
Donna Goodridge, Co-Chair, Standing Committee Nursing Research
Wendy Fallis, Co-Chair, Standing Committee Nursing Research

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APPENDIX D

R.R.C.C. ETHICAL APPROVAL

2055 Notre Dame Avenue
Winnipeg, Manitoba, Canada R3H 0J9
204-632-2311 Fax: 204-632-9661

Red River Community College

May 27, 1996

Linda Levitt
Graduate Student
Faculty of Nursing
Room C616
Red River Community College

Dear Linda:

The External Research Approval Committee at Red River Community College has approved your request to survey a group of employees at the College as part of the research for your thesis, subject to changes in paragraph four and the last paragraph in the Cover Letter for Group #3. The changes were provided to you and agreed to during our meeting on Friday, May 24th. College participants in the study will be informed that if they wish to see the results of the study, a copy of your thesis will be available in the Library for their review.

If you have any further questions, please contact me at 632-2232.

The Committee wishes you success in your research and the completion of your thesis.

Sincerely,

Patricia Bozyk

Patricia Bozyk
Chair
External Research Committee

SAD Knowledge Questionnaire (SKQ)

Knowledge of Seasonal Affective Disorder Amongst Nurses

This questionnaire is designed to assess knowledge of Seasonal Affective Disorder (SAD) amongst nurses who work both in the areas of psychiatry/mental health and in the medical surgical area. A third group, representing the public will also be asked to complete the questionnaire. All information that you provide is confidential and your anonymity will be maintained.

1. This survey consists of two parts:
   Part A. Identification of specific individual characteristics.
   Part B. Response to specific questions about SAD.
2. The anticipated time to answer the questionnaire is approximately 10-20 minutes.
3. To answer each question, please follow the directions provided at the beginning of each part of the questionnaire.

Confidential

Please check ( ) the correct answer or fill in the blank with the appropriate information.

Professional Characteristics and Demographic Questionnaire

1. In which category are you employed?

_____ Nursing

_____ Other

If you answered 'Nursing', please proceed to question #7.

If you answered 'other' please describe your profession or occupation in the space below, and continue with answer #2.

2. How many years have you been working in your current job?

____ less than one year

_____ years

3. Are you presently working on a:

_____ part time basis

_____ full time

_____ casual basis

_____ term position

4. Describe your past educational experience.

_____ University

_____ Community College

_____ Trade _____ Other

Please use the following space if you wish to expand on your past educational experience:

5. What is the highest level of education achieved?

6. In what year did you complete this education, or is it still in progress?

_____ Year

_____ In Progress

You may now proceed to # 15.

For those who answered 'Nursing", please continue with # 7.

7. What is your area of clinical practice or specialty?

_____ psychiatry/mental health

_____ medical surgical

_____ other (Please identify) _____

8. How many years have you worked in the above clinical area?

_____ less than one year

_____ years

9. Are you presently working on a :

_____ part time basis

_____ casual basis

_____ full time basis _____ term basis

10. What was your basic nursing education program?

_____ LPN

_____ diploma graduate

_____ baccalaureate graduate

_____ other (Please state) _____

11. What is the highest level of nursing education you obtained?

_____ nursing diploma

_____ baccalaureate degree

_____ masters in nursing

_____ certification in specialty

_____ other (Please state)

12. What is the highest level of nursing education you are working toward?

_____baccalaureate degree

_____masters in nursing

_____certification in specialty

_____other (Please state)

13. How many years have you practised as an R.N.?

_____ less than one year

_____ years

14. Have you ever cared for a patient with Seasonal Affective Disorder?

_____ yes

_____ no

All groups to answer #15 and # 16.

15. Have you ever heard of Seasonal Affective Disorder?

_____ yes

_____ no

16. If yes, from where did you receive your information?

_____ while in school

_____ newspaper or magazine article

_____ family/friends

_____ other (Please specify)

Personal Data

1. Gender

____ male ____ female

2. Age

___ under 21 ___ 41-50

___ 21-30 ___ 51 and over

___ 31-40

3. Have you ever been diagnosed with SAD?

___ yes ___no ___ uncertain

4. Has anyone you know ever been diagnosed with SAD ie. family members, friend?

___ yes

___ no ___ not certain

This completes **Part A;** please proceed to Part B.

Part B

This section was designed to evaluate your knowledge of Seasonal Affective disorder. Read each of the following statements carefully and complete the questionnaire by circling the number indicating your response to each of the following statements.

Please use the following code to indicate your response to the statements:

True

False

Don't Know

Demographics of SAD

1.) SAD affects individuals in the ratio of 4 female: 1 males.

True ___ False ___ Don't Know ___

2.) Most individuals with SAD are between the ages of 20-40.

True ___ False ___ Don't Know ___

3.) SAD often runs in families with one relative having a history of depression.

True ___ False ___ Don't Know ___

4.) Some studies suggest that the greater the geographic latitude the higher the incidence of SAD.

True ___ False ___ Don't Know ___

5.) Individuals may experience SAD for only one season.

True ___ False ___ Don't Know ___

6.) It has been suggested that 2-10% of the population is thought to have SAD.

True ___ False ___ Don't Know ___

7.) SAD can affect children and adolescents.

True ___ False ___ Don't Know ___

8.) SAD affects people from all different races, ethnic groups and occupations.

True ___ False ___ Don't Know ___

9.) SAD affects certain ethnic groups more often than others.

True ___ False ___ Don't Know ___

10.) Symptoms experienced by people who have SAD may be from minimal to severe.

True ___ False ___ Don't Know ___

11.) Individuals with seasonally related stressors such as being unemployed every winter, are at greater risk for SAD.

True ___ False ___ Don't Know ___

12.) SAD occurs mainly during winter months when decreased daylight is a factor.

True ___ False ___ Don't Know ___

13.) In people who have SAD, energy and " zest for life" generally return with the onset of spring.

True ___ False ___ Don't Know ___

14.) Individuals who have SAD are often more energetic in summer than individuals who don't have SAD.

True ___ False ___ Don't Know ___

15.) SAD is unheard of in geographic areas near the equator.

True ___ False ___ Don't Know ___

16.) Some individuals have the reverse phenomenon that is, Summer SAD, rather than winter SAD.

True ___ False ___ Don't Know ___

17.) Individuals who work shifts, and those working in windowless offices, subjectively feel an increased risk of SAD.

True ___ False ___ Don't Know ___

18.) SAD can affect productivity which is reported to decrease with the onset of SAD symptoms.

True ___ False ___ Don't Know ___

19.) SAD can affect relationships such as not wanting to socialize or make the effort to interact with friends, family and/or co-workers.

True ___ False ___ Don't Know ___

20.) SAD can affect level of alertness.

True ___ False ___ Don't Know ___

21.) Ability to think or function may be altered in people who have SAD.

True ___ False ___ Don't Know ___

22.) SAD can affect one's ability to complete tasks.

True ___ False ___ Don't Know ___

23.) Individuals who have SAD experience apathy and amotivation.

True ___ False ___ Don't Know ___

24.) SAD can affect appetite; persons with SAD have no control over what they eat, often reporting carbohydrate cravings with weight gain from 5-20 lbs.during winter months.

True ___ False ___ Don't Know ___

25.) Symptoms of "premenstrual syndrome" can intensify in females who have SAD.

True ___ False ___ Don't Know ___

26.) SAD can affect sexual functioning ie. lessen the desire or the need.

True ___ False ___ Don't Know ___

27.) Feelings of sadness, despair, guilt, and pessimism are common in people who have SAD.

True ___ False ___ Don't Know ___

28.) SAD may masquerade as other illnesses ie. hypothyroidism, chronic viral illness, chronic fatigue syndrome.

True ___ False ___ Don't Know ___

29.) A specific tool which may assist in the diagnosis of SAD has not been developed.

True ___ False ___ Don't Know ___

Treatment of SAD

30.) Treatment is categorized into activities an individual can do on his own, or those which must be prescribed by a physician.

True ___ False ___ Don't Know ___

31.) Different approaches to SAD may include those which are used separately or in combination with one another.

True ___ False ___ Don't Know ___

32.) Proper care of SAD often includes hospitalization.

True ___ False ___ Don't Know ___

33.) Relief may be obtained from phototherapy via use of approved light units.

True ___ False ___ Don't Know ___

34.) Treatment may involve the use of antidepressant medication.

True ___ False ___ Don't Know ___

35.) Psychotherapy is sometimes the remedy of choice.

True ___ False ___ Don't Know ___

36.) Self-care may include increasing the amount of light in one's home through different lighting units and the use of light rather than dark decor.

True ___ False ___ Don't Know ___

37.) Another approach to SAD may consist of increasing the amount of time spent outdoors.

True ___ False ___ Don't Know ___

38.) Self-care may include increasing one's physical activity.

True ___ False ___ Don't Know ___

39.) A strategy to minimize the effects of SAD may involve limiting carbohydrate consumption in one's diet.

True ___ False ___ Don't Know ___

40.) A remedy may involve travelling to a warmer climate.

True ___ False ___ Don't Know ___

Only answer the next section if you are a Nurse.

Nurse's Role

Nurses have an important role to play in the recognition and education of SAD. These may include:

1.) Nurses should question patients about seasonality of their depressive symptoms.

True ___ False ___ Don't Know ___

2.) Nurses should assess patients for alterations in mood.

True ___ False ___ Don't Know ___

3.) Nurses should ask patients about changes in interpersonal functioning.

True ___ False ___ Don't Know ___

4.) Nurses can alert patients who have SAD to the fact that their family members may also be at risk for SAD.

True ___ False ___ Don't Know ___

5.) Nurses should refer patients to professional mental health resources if they suspect SAD.

True ___ False ___ Don't Know ___

6.) Nurses should be aware that they, themselves are at risk for developing SAD.

True ___ False ___ Don't Know ___

7.) Nurses can educate patients about changes that can be made in their home environment to prevent or control the effects of having SAD.

True ___ False ___ Don't Know ___

8.) Nurses can determine if a patient is suffering from SAD versus some other type of depression.

True ___ False ___ Don't Know ___

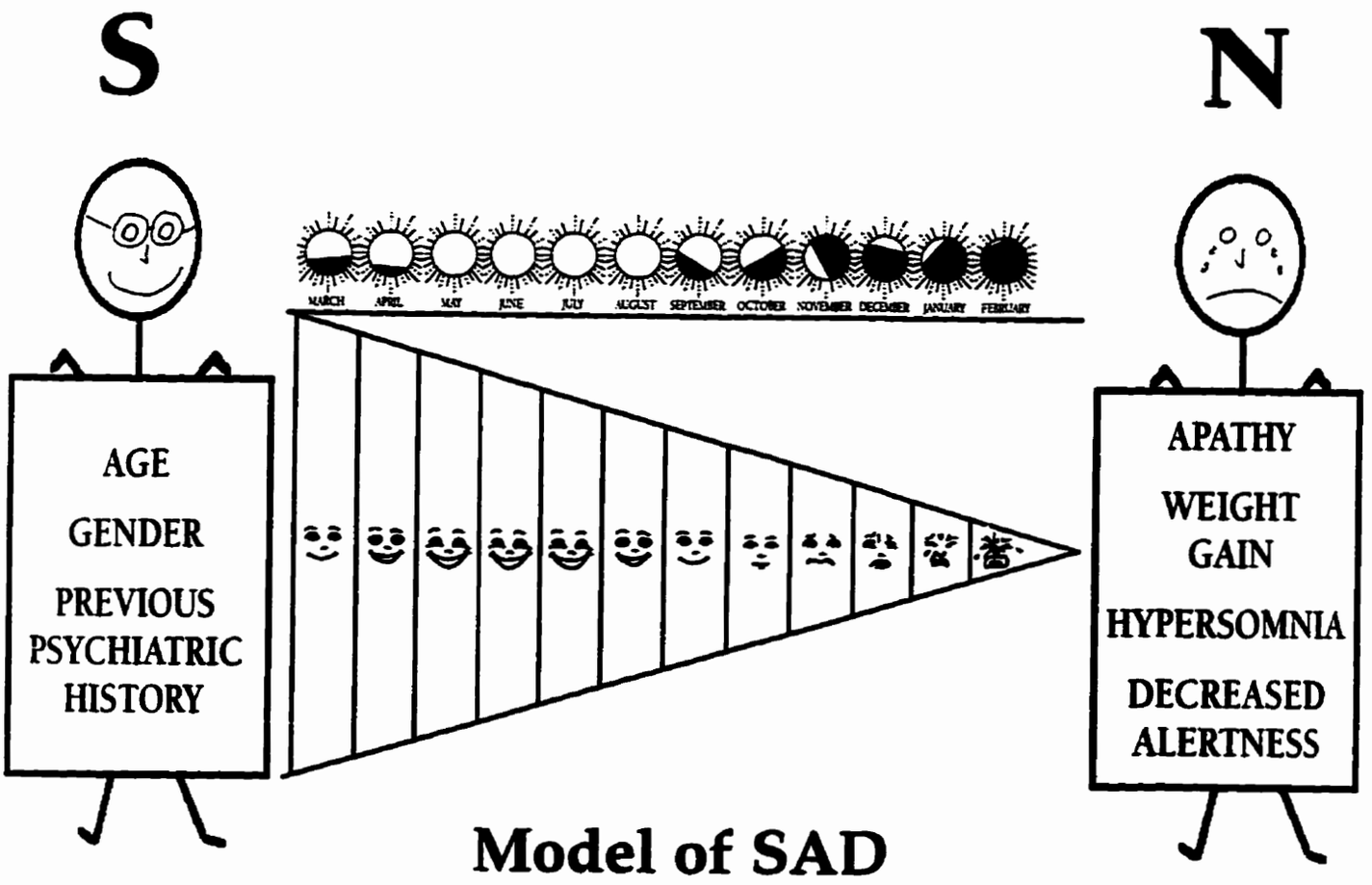
9.) Nurses who work in schools should be alert for students who develop problems at the same time each year.

True ___ False ___ Don't Know ___

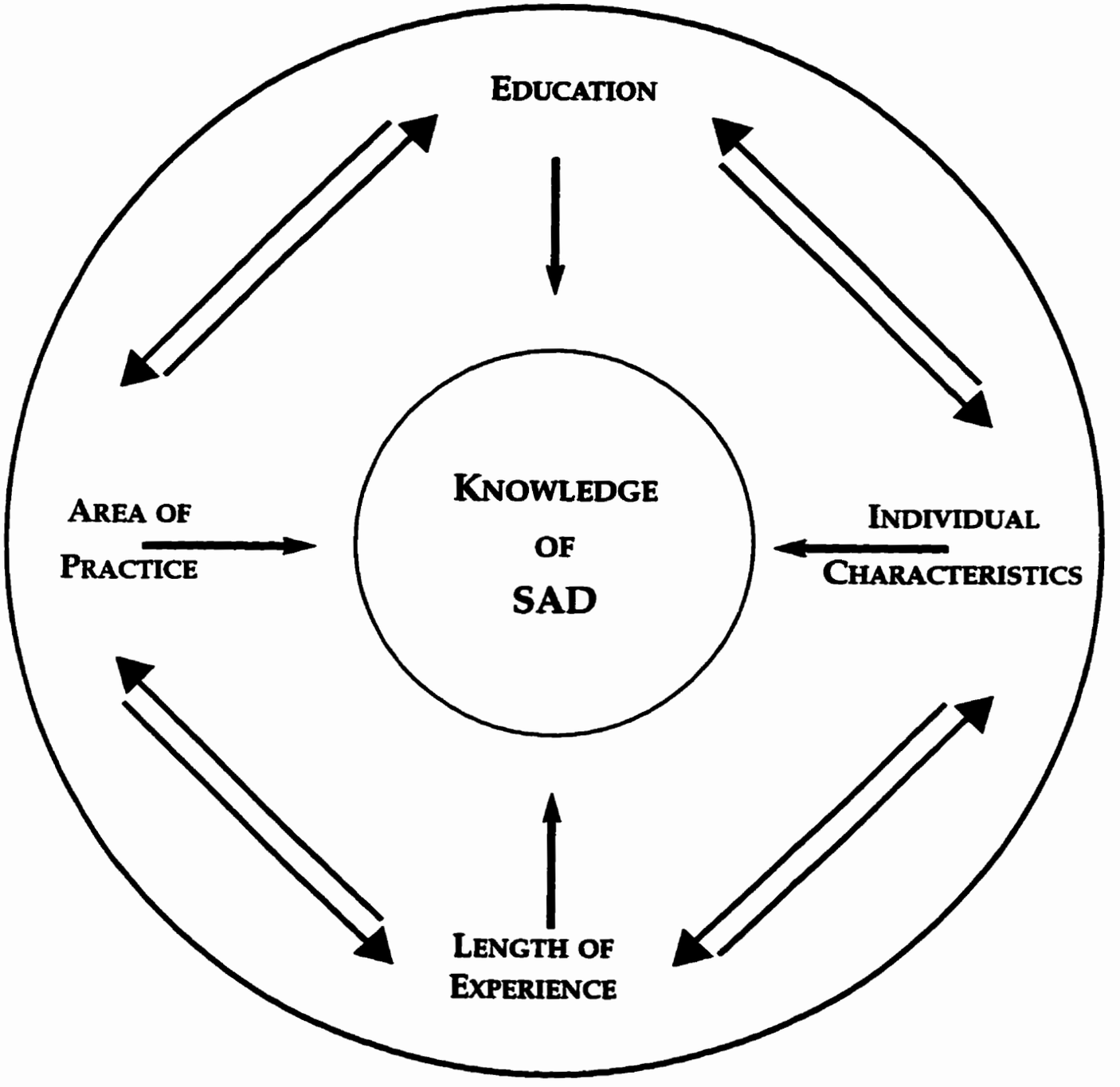
10.) Nurses can recommend the purchase of an approved light unit for patients they suspect might have SAD.

True ___ False ___ Don't Know ___

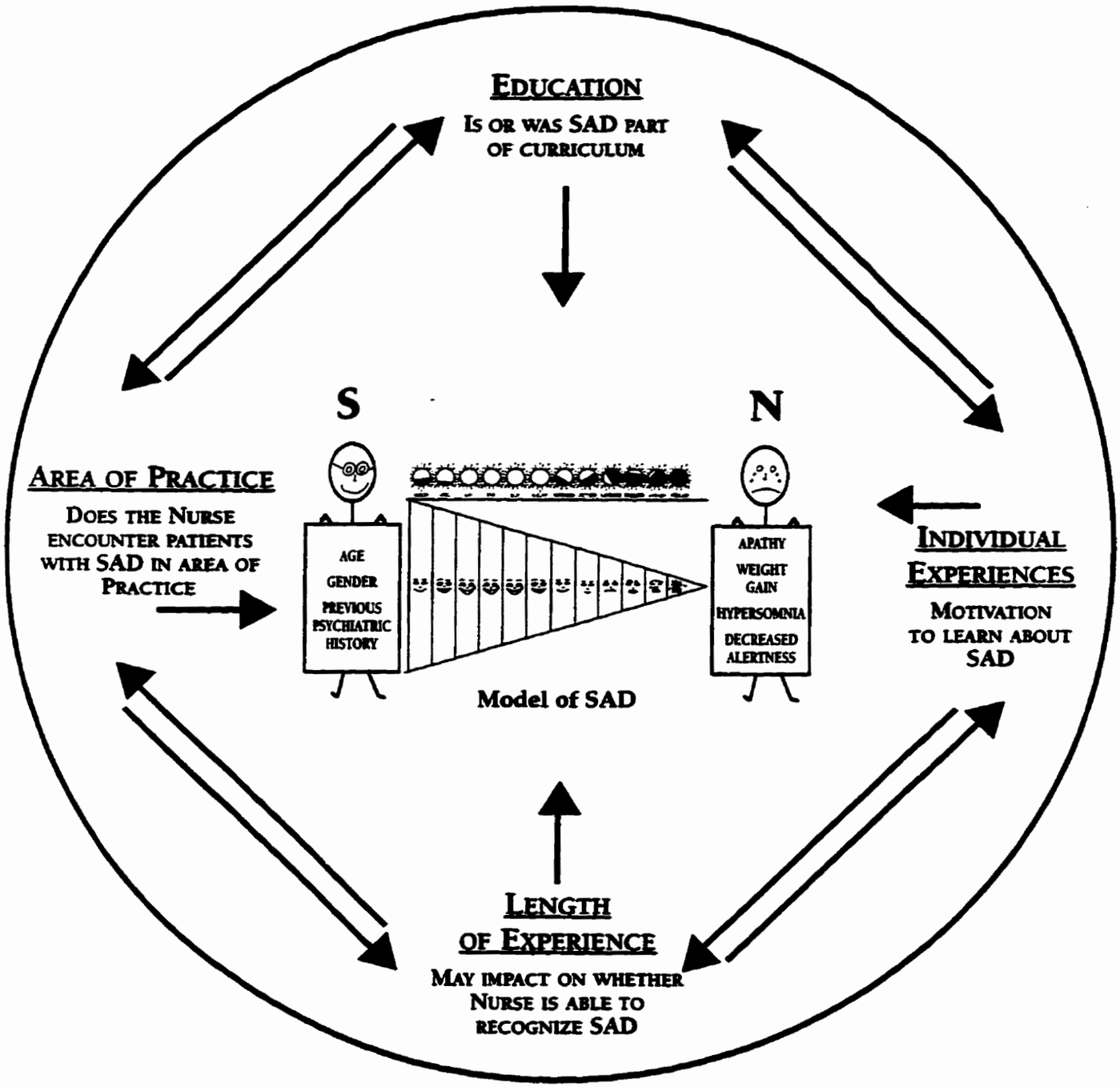
This completes the questionnaire. Thank-you very much for taking the time to answer it. Your participation is greatly appreciated.


S
N
MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER JANUARY FEBRUARY
AGE
GENDER
PREVIOUS PSYCHIATRIC HISTORY
APATHY
WEIGHT GAIN
HYPERSOMNIA
DECREASED ALERTNESS

Model of SAD



Model of Knowledge



Dynamic Model of SAD and Knowledge

Appendix F
Cover Letter Group #1

June 5, 1996

Dear Colleague,

I am a nurse educator and graduate student in the Master of Nursing program at the University of Manitoba. I am conducting a study titled A QUESTIONNAIRE TO ASSESS KNOWLEDGE OF SEASONAL AFFECTIVE DISORDER AMONG NURSES IN AN URBAN MANITOBA CITY.

I have developed a questionnaire to assess knowledge of this disorder. The purpose of this study is to test this questionnaire to determine whether it is a good tool for assessing one's knowledge about SAD. It is to be tested with nurses who work in mental health, nurses who work in a medical surgical area, and a group of individuals from the general public. You were chosen for this study as you work in the **mental health** area, one of the target groups for the study. Additionally, your group will be asked to complete the questionnaire a second time. This repeated administration will allow me to assess the stability of the questionnaire.

It is hoped that the results of this study will benefit the nursing profession by providing an impetus for further education with regard to this illness. It is also hoped that this questionnaire will be a useful tool for assessing knowledge of SAD not only in nurses but in other health professionals. Therefore, by answering this questionnaire, you can make a worthwhile contribution to large numbers of individuals.

Your name and address were obtained from the Manitoba Association of Registered Nurses (MARN), after this thesis was approved by the Ethical Review Committee of the Faculty of Nursing, and the MARN Research Committee and Board. The members to whom the questionnaire were mailed will remain anonymous to me. The envelope packages were delivered to the Marn for labelling and mailing. Follow-up letters and the second questionnaire will be prepared and mailed in the same fashion. Only one person at the MARN will have access to the names and addresses. Any lists or address labels will be destroyed after the second questionnaire and follow up notice has been sent.

Please be assured that your identity will remain anonymous to me throughout and after the study. Since your name does not appear anywhere on the questionnaire, and the names of participants are unknown to me, individual responses will not be identifiable in this study nor if the study is published. Completed questionnaires will be retained in a locked filing cabinet for 7-10 years.

The questionnaire will take approximately 10 to 20 minutes to complete. Once you have done this, please return in the stamped, self-addressed envelope by June 21, 1996. Your voluntary participation in this study constitutes your consent to participate. The questionnaire contains a number of personal and health related questions. Please be assured that the information you provide is confidential and as already indicated your anonymity will be maintained.

Thank you for your consideration of this questionnaire. If you have any questions or concerns about the questionnaire, please feel free to contact me at 488-8733 or my thesis chair, Dr. Pat Farrell at 474-6816. When calling, you need only identify yourself as a participant in the study without giving your name. If you would like a summary of the study please send the form at the bottom of the next page to the MARN and they will send it to you:

Manitoba Association of Registered Nurses
647 Broadway Avenue
Winnipeg, Manitoba R3C OX2

Sincerely,

Linda Levitt B.N.
Graduate Nursing Student
University of Manitoba

Please send me a copy of the summary of the findings of the study titled A Questionnaire to Assess Knowledge of Seasonal Affective Disorder Among Nurses in an Urban Manitoba City.

Send to:

_____
(Name)

_____
(Address)

_____

Appendix G
Cover Letter Group #2

June 5, 1996

Dear Colleague,

I am a nurse educator and graduate student in the Master of Nursing program at the University of Manitoba. I am conducting a study titled A QUESTIONNAIRE TO ASSESS KNOWLEDGE OF SEASONAL AFFECTIVE DISORDER AMONG NURSES IN AN URBAN MANITOBA CITY.

I have developed a questionnaire to assess knowledge of this disorder. The purpose of this study is to test this questionnaire to determine whether it is a good tool for assessing one's knowledge about SAD. It is to be tested with nurses who work in mental health, nurses who work in a medical surgical area, and a group of individuals from the general public. You were chosen for this study as you work in the **medical surgical** area, one of the target groups for the study.

It is hoped that the results of this study will benefit the nursing profession by providing an impetus for further education with regard to this illness. It is also hoped that this questionnaire will be a useful tool for assessing knowledge of SAD not only in nurses but in other health professionals. Therefore, by answering this questionnaire, you can make a worthwhile contribution to large numbers of individuals.

Your name and address were obtained from the Manitoba Association of Registered Nurses (MARN), after this thesis was approved by the Ethical Review Committee of the Faculty of Nursing, and the MARN Research Committee and Board. The members to whom the questionnaire were mailed will remain anonymous to me. The envelope packages were delivered to the Marn for labelling and mailing. Follow-up letters will be prepared and mailed in the same fashion. Only one person at the MARN will have access to the names and addresses. Any lists or address labels will be destroyed after the follow up notice has been sent.

Please be assured that your identity will remain anonymous to me throughout and after the study. Since your name does not appear anywhere on the questionnaire, and the names of participants are unknown to me, individual responses will not be identifiable in this study nor if the study is published. Completed questionnaires will be retained in a locked filing cabinet for 7-10 years.

The questionnaire will take approximately 10 to 20 minutes to complete. Once you have done this, please return in the stamped, self-addressed envelope by June 21, 1996. Your voluntary participation in this study constitutes your consent to

participate. The questionnaire contains a number of personal and health related questions. Please be assured that the information you provide is confidential and as already indicated your anonymity will be maintained.

Thank you for your consideration of this questionnaire. If you have any questions or concerns about the questionnaire, please feel free to contact me at 488-8733 or my thesis chair, Dr. Pat Farrell at 474-6816. When calling, you need only identify yourself as a participant in the study without giving your name. If you would like a summary of the study please send the form at the bottom of the next page to the MARN and they will send it to you:

Manitoba Association of Registered Nurses
647 Broadway Avenue
Winnipeg, Manitoba R3C OX2

Sincerely,

Linda Levitt B.N.
Graduate Nursing Student
University of Manitoba

Please send me a copy of the summary of the findings of the study titled A Questionnaire to Assess Knowledge of Seasonal Affective Disorder Among Nurses in an Urban Manitoba City.

Send to:

_____
(Name)

_____
(Address)

_____
(City) (Postal Code)

Appendix H
Cover Letter Group #2

June 4, 1996

Dear Colleague,

I am a nurse educator and graduate student in the Master of Nursing program at the University of Manitoba. I am conducting a study titled A QUESTIONNAIRE TO ASSESS KNOWLEDGE OF SEASONAL AFFECTIVE DISORDER AMONG NURSES IN AN URBAN MANITOBA CITY.

I have developed a questionnaire to assess knowledge of this disorder. The purpose of this study is to test this questionnaire to determine whether it is a good tool for assessing one's knowledge about SAD. It is to be tested with nurses who work in mental health, nurses who work in a medical surgical area, and a group of individuals from the general public. You were chosen for this study as you are representative of the **public** domain, one of the target groups for the study.

It is hoped that the results of this study will benefit the nursing profession by providing an impetus for further education with regard to this illness. It is also hoped that this questionnaire will be a useful tool for assessing knowledge of SAD not only in nurses but in other health professionals. Therefore, by answering this questionnaire, you can make a worthwhile contribution to large numbers of individuals.

This thesis was reviewed by the Ethical Review Committee of the Faculty of Nursing, University of Manitoba. The questionnaire and research methodology were reviewed by the External Research Committee within the college. The employees to whom the questionnaire is mailed will remain anonymous.

Please be assured that your identity will remain anonymous to me throughout and after the study. Since your name does not appear anywhere on the questionnaire, and the names of participants are unknown to me, individual responses will not be identifiable in this study nor if the study is published. Completed questionnaires will be retained in a locked filing cabinet for 7-10 years.

The questionnaire will take approximately 10 to 20 minutes to complete. Once you have done this, please return in the stamped, self-addressed envelope by June 18, 1996. Your voluntary participation in this study constitutes your consent to participate. The questionnaire contains a number of personal and health related questions. Please be assured that the information you provide is confidential and as already indicated your anonymity will be maintained.

Thank you for your consideration of this questionnaire. If you have any questions or concerns about the questionnaire, please feel free to contact me at 488-8733 or my thesis chair, Dr. Pat Farrell at 474-6816. When calling, you need only identify yourself as a participant in the study without giving your name. If you would like a summary of the study, a copy of this thesis will be placed in the library upon completion.

Sincerely,

Linda Levitt B.N.
Graduate Nursing Student
University of Manitoba

APPENDIX I

REMINDER POSTCARD FOR COMMUNITY COLLEGE

June 19, 1996

Hello again!

You will recall having received a questionnaire regarding Seasonal Affective Disorder. Your input is essential for this study, and will enhance the value of the findings.

If you have not already completed the questionnaire, this is a reminder to do so. If you have misplaced the questionnaire, please call Wendy at 2535 and she will send another copy to you.

Please return survey by June 28, 1996.

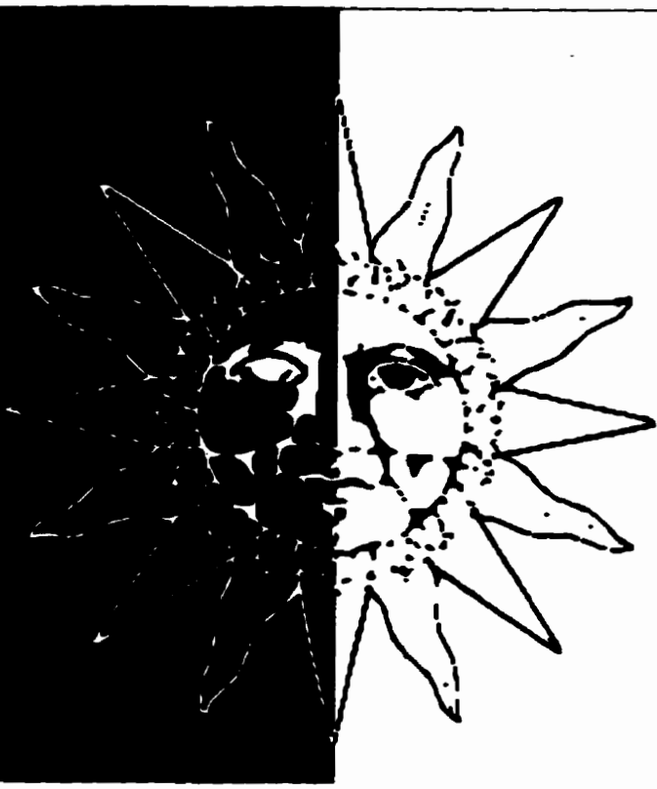
Thank-you once again for your assistance.

Sincerely,

Linda Levitt
C616

SEASONAL AFFECTIVE DISORDER

KNOWLEDGE
QUESTIONNAIRE
(SKQ)



APPENDIX J

REMINDER LETTER TO MENTAL HEALTH NURSES

SEASONAL AFFECTIVE DISORDER

KNOWLEDGE QUESTIONNAIRE (SKQ)

176

LINDA LEVITT * 768 NIAGARA STREET * WINNIPEG, MANITOBA * R3N 0W3

June 21, 1996

Hello again!

Thanks to all of you who have returned the questionnaire on Seasonal Affective Disorder. If you have already done so, please disregard this letter. For those of those of you who have not completed it, this is a reminder to please send it back.

Enclosed please find another questionnaire and return envelope in the event you have misplaced the original. Your input is invaluable to my research and I really hope that you will take the time to complete this. As I initially indicated, I will be asking you to complete the same questionnaire one more time. This will be mailed to you in approximately 2 weeks.

Please return questionnaire by July 2, 1996.

Thank-you once again for your assistance.

Sincerely,

Linda Levitt

Linda Levitt

APPENDIX K

REMINDER LETTER TO MEDICAL SURGICAL NURSES

SEASONAL AFFECTIVE DISORDER

KNOWLEDGE QUESTIONNAIRE (SKQ)

LINDA LEVITT * 768 NIAGARA STREET * WINNIPEG, MANITOBA * R3N 0W3

June 21, 1996

Hello again!

You will recall having received a questionnaire regarding Seasonal Affective Disorder. Your input is essential for this study, and will enhance the value of the findings.

If you have not already completed the questionnaire, this is a reminder to do so. Enclosed please find another questionnaire and return envelope in the event that you have misplaced the original.

Please disregard this package if you have already responded.

Please return questionnaire by July 2, 1996.

Thank-you once again for your assistance.

Sincerely,

Linda Levitt

Linda Levitt

APPENDIX L

SECOND QUESTIONNAIRE FOR MENTAL HEALTH NURSES

SEASONAL AFFECTIVE DISORDER

KNOWLEDGE QUESTIONNAIRE (SKQ)

180

LINDA LEVITT * 768 NIAGARA STREET * WINNIPEG, MANITOBA * R3N 0W3

July 4, 1996

Dear Colleagues,

Thank-you for returning the first questionnaire on Seasonal Affective Disorder. Your input has been invaluable to my research and I really appreciate the time you have taken to complete this. As I initially indicated, I would like to ask you to fill in the same questionnaire one more time. if you recall, I mentioned this was an important step in developing a questionnaire, as it helps to prove the validity of the instrument. Once established, my hope is that the questionnaire will be available to all nurses to assist them in recognizing this illness within their patients.

Enclosed, please find the questionnaire and a return envelope. Please indicate in the space provided if this is the second time you are filling it out.

Once again, I would like to take this opportunity to thank you for your support.

Please return by July 16, 1996.

Sincerely,

Linda Levitt

APPENDIX M

REMINDER TO MAIL SECOND QUESTIONNAIRE

FOR MENTAL HEALTH NURSES

Just a reminder:

If you have not mailed back your second questionnaire on Seasonal Affective Disorder, please do so by **July 26, 1996.**

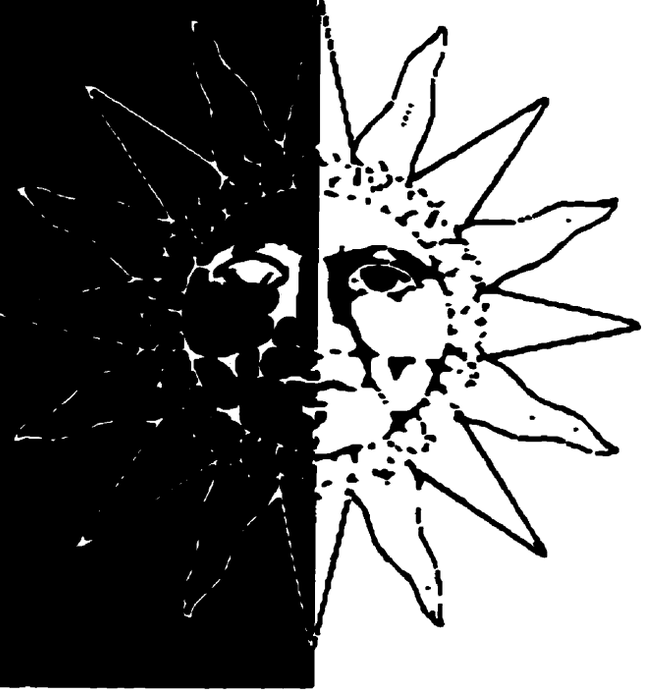
If you have lost the return envelope, please send the questionnaire to:

L. Levitt
768 Niagara Street
Winnipeg, Manitoba R3N 0W3

If you have already done so,
Thank-you.

SEASONAL AFFECTIVE DISORDER

KNOWLEDGE
QUESTIONNAIRE
(SKQ)



APPENDIX N

LETTER TO EXPERTS

Letter to Experts

January, 1995

Dear

I am a nurse educator and a graduate student at the University of Manitoba. I am in the process of completing a thesis as a requirement of the Master's Degree in Nursing. The purpose of my thesis is to generate a questionnaire that will assess the knowledge of Seasonal Affective Disorder among nurses. The following is a list of items that are associated with SAD. As this topic is one of your areas of expertise, I am seeking your assistance in determining the content validity of these items. Content validity is described as "the degree to which items in an instrument adequately represent the universe of content" (Polit & Hungler, 1991, p. 375). Please read each item and indicate in the **Comment** section whether you feel these should be included within the questionnaire. Your participation is a very important part of instrument development, and I hope that you will be able to find the time to answer this.

Enclosed, please find a stamped self addressed envelope for you to return this in. If you wish to contact me, my phone number is 488-8733. Thank- you in advance for your consideration of and support for my request.

Sincerely,

Linda Levitt

APPENDIX O

ITEMS FOR CONTENT ANALYSIS

Item Analysis for Experts

Grouped Items for Questionnaire

Etiology

1. theory of melatonin ie. with darkness, increased secretion of melatonin which has a depressant effect; people with SAD are very sensitive to this therefore depression heightens

Comment:

2. phase-shift hypothesis; desynchronization of circadian rhythm acts as a precursor to SAD

Comment:

3. photon threshold hypothesis; states that SAD patients require a threshold of photon dose which is not reached during the shorter days of winter

Comment:

Demographics of SAD

1. females in ratio of 4:1

Comment:

2. ages mainly 20-40

Comment:

3. often runs in families with one relative having a history of depression, often SAD

Comment:

4. greater the latitude, higher the incidence with earlier onset of symptoms

Comment:

5. between 6-10% of the population thought to have SAD

Comment:

6. can affect children, adolescents, and elderly

Comment:

7. affects people from all different races, ethnic groups and occupations

Comment:

8. previous major depression a factor in those diagnosed with SAD

Comment:

9. symptoms experienced may be from minimal to severe

Comment:

10. occurs mainly during winter months when decreased daylight a factor

Comment:

11. energy and 'zest for life' generally return with the onset of spring and during the summer are often more energetic than the average person

Comment:

12. some individuals have the reverse phenomenon ie. summer SAD

Comment:

13. persons who work shifts are more susceptible to SAD because of the limited time spent outdoors, in addition to the desynchronization of circadian rhythms

Comment:

14. can affect sleep ie. persons with SAD have difficulty getting up in the A.M. and seem to require more sleep that at other times of the year

Comment:

15. can affect productivity which is reported to be lessened with onset of SAD symptoms

Comment:

16. can affect relationships with reports of individuals not wanting to socialize or make the effort to interact with other individuals

Comment:

17. can affect level of alertness which poses some concern for safety

Comment:

18. ability to think/function is altered ie. errors and safety a concern

Comment:

19. can affect ones' ability to complete tasks

Comment:

20. can affect appetite; persons with SAD have no control over what they eat often reporting CHO craving with weight gains from 5-20lbs. during the winter months

Comment:

21. can intensify symptoms of PMS for females with SAD

Comment:

22. may increase the number of physical illnesses a person may experience

Comment:

23.. can affect sexual functioning ie. lessen the desire or need

Comment:

24. overwhelming feelings of sadness, despair, guilt and pessimism

Comment:

25. SAD may masquerade as other illnesses ie. underactive thyroid, hypoglycemia, chronic viral illness, chronic fatigue syndrome; all of these should be ruled out before the diagnosis of SAD is made

Comment:

Treatment of SAD

26. categorized into dependent and independent treatment modalities

Comment:

27. may be used separately or in combination with one another

Comment:

28. dependent includes phototherapy treatment via approved light units; treatment of SAD with antidepressants; and the use of Psychotherapy

Comment:

29. independent includes treatment of SAD via increasing the amount of light in ones' home through different lighting units and the use of decor; increasing the amount of time spent outdoors and ones' activity level; limiting CHO's in diet; and travel to warmer climate

Comment:

Thank-you for taking the time to read this and provide feedback. Your comments will assist me in the development of a questionnaire to be used for the purpose of data collection. If you have any further remarks, please feel free to indicate these below.

Once again, thank-you for your assistance.

Final Comments:

APPENDIX P: FACTOR ANALYSIS OF QUESTIONS FROM SKQ - ALL RESPONDENTS

QUESTION	FACTOR 1	LOADING
10	- Symptoms may be minimal - severe	0.53
12	- SAD occurs in winter months when ↓ daylight is a factor	0.70
13	- In people with SAD, energy returns in spring	0.47
14	- Individuals with SAD often more energetic in summer	0.20
17	- Shift workers and those in windowless office feel ↑ risk of SAD	0.54
18	- SAD affects productivity which ↓ with onset of symptoms	0.59
19	- SAD affects relationships with friends, family & co-workers	0.59
20	- SAD can affect level of alertness	0.63
21	- Ability to think or function is altered with SAD	0.58
22	- SAD affects one's ability to complete tasks	0.52
23	- Individuals experience apathy and amotivation with SAD	0.46
27	- Feelings of sadness, despair, guilt & pessimism are common	0.41
33	- Relief may be obtained from phototherapy light units	0.48
% Variance		11.4%
QUESTION	**FACTOR 2**	**LOADING**
8	- SAD affects people from all races, ethnic groups & occupations	0.53
15	- SAD is unheard of in geographic areas near equator	0.16
26	- SAD can affect sexual functioning	0.47
28	- SAD can masquerade as other illnesses	0.62
35	- Psychotherapy is sometimes remedy of choice	0.59
39	- Limiting carbohydrates may minimize effects of SAD	0.29
% Variance		9.0%

QUESTION	FACTOR 3	LOADING
4	- Greater the geographic latitude the higher the incidence SAD	0.60
5	- Individuals may experience SAD for only one season	0.12
24	- SAD can affect appetite, cravings and weight gain	0.29
34	- Treatment may involve antidepressant medication	0.44
36	- Self care may include ↑ light in homes and using light decor	0.49
37	- Another approach is increasing time spent outdoors	0.59
38	- Self care includes increasing one's physical activity	0.43
40	- A remedy includes travel to a warmer climate	0.71
% Variance		**8.2%**
QUESTION	**FACTOR 4**	**LOADING**
1	- SAD affects 4 females : 1 male	.56
2	- Most individuals are between 20 - 40 years	.68
3	- SAD runs in families with 1 relative with history of depression	.50
6	- 2 - 10% of the population may have SAD	.50
11	- Seasonally related stressors (ie. unemployment) ↑ risk of SAD	.52
16	- Some individuals have reverse phenomena ie. summer SAD	.21
25	- Symptoms of PMS may intensify with SAD	.38
% Variance		**7.5%**
QUESTION	**FACTOR 5**	**LOADING**
7	- SAD can affect children and adolescents	.25
9	- SAD affects certain ethnic groups more than others	.21
29	- A tool to assist with diagnosis has been developed	.70
30	- Treatment is categorized into independent and those prescribed by M.D.	.71
31	- Different approaches may be used separately or together	.55
32	- Proper care often includes hospitalization	.32
% Variance		**7.4%**

APPENDIX Q: FACTOR ANALYSIS OF QUESTIONS FROM SKQ - NURSES ONLY

QUESTION	FACTOR 1	LOADING
10	- Symptoms may be from minimal to severe	.43
12	- SAD mainly occurs during winter with ↓ daylight	.30
19	- SAD affects relationships with friends, family & co-workers	.58
20	- SAD can affect level of alertness	.50
21	- Ability to think or function may be altered	.59
22	- SAD can affect one's ability to complete tasks	.60
23	- Individuals experience apathy & amotivation with SAD	.40
28	- Feelings of sadness, despair, guilt & pessimism are common	.30
35	- Psychotherapy is sometimes the remedy of choice	.53
% Variance		5.8%
QUESTION	**FACTOR 2**	**LOADING**
NONE		NIL
% Variance		5.2%
QUESTION	**FACTOR 3**	**LOADING**
33	- Relief may be obtained from phototherapy light units	.40
36	- Self care may include ↑ light in homes and using light decor	.71
37	- Another approach is increasing time spent outdoors	.78
38	- Self care includes increasing one's physical activity	.39
7A	- Nurses can educate about changes in home environment	.55
10A	- Nurses can recommend purchase of light unit	.10
% Variance		5.1%
QUESTION	**FACTOR 4**	**LOADING**
15	- SAD is unheard of in geographic areas near equator	.14
% Variance		4.9%

QUESTION	FACTOR 5	LOADING
3	- SAD runs in families with 1 relative with history of depression	.44
6	- 2-10% of the population is thought to have SAD	.16
8	- Affects people of all races, ethnic groups & occupations	.31
11	- Seasonally related stressors (ie. unemployment) ↑ risk of SAD	.64
13	- In people with SAD, energy returns in spring	.28
40	- A remedy may involve travelling to warmer climate	.53
8A	- Nurses can determine if a patient has SAD	.09
% Variance		**4.8%**