DEVELOPMENT OF A SCREENING TOOL FOR ASSESSING ADULT INSOMNIA IN PRIMARY CARE

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CAROLYN D. BAKER

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The tool has many nursing implications relating to primary care, education, and research.

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TABLE OF CONTENTS

LIST OF FIGURES

Introduction

Sleep is a basic human need and is a naturally occurring state, consuming nearly one-third of life (Anch, Browman, Mitler, & Walsh, 1988). Disturbed sleep presents disorders which may be categorized into hypersomnolence or insomnia. Hypersomnolence is excessive sleepiness during the daytime, perhaps leading to sleep at inappropriate times (i.e., while driving). Insomnia, on the other hand, is a perception of not getting enough restful sleep (Gillin, 1990; Hauri & Esther, 1990; Rakel, 1993). Only insomnia will be addressed in this project.

Insomnia is a prevalent problem in the United States. The prevalence of insomnia complaints within the previous year of their respective study is estimated between 30% and 35% (Coleman & Roffwarg, 1982; Ford & Kamerow, 1989; Kales, Kales, Bixler, Soldatos, Cadieux, Dashurba & Bueno, 1984). Each year 10 million Americans consult health care providers with the complaint of difficulty in sleeping (Anch et al., 1988). Daytime habits and activities (smoking, medications, exercise, alcohol use, etc.) influence one's quality of sleep, while sleep habits and sleep patterns influence daytime performance. Insomnia affects the whole individual

and his or her sense of well being. The consequences of lack of sleep or poor quality sleep are clear: Insomnia can adversely affect quality of life by impairing concentration and the ability to cope with minor irritations. A person may also not feel well, decreasing the ability to enjoy interpersonal relationships (Anch et al., 1988; Fillingim, 1992; Hauri & Esther, 1990; Rakel, 1993). Long-term insomnia may cause fatigue and increased daytime sleepiness, which, in turn, may increase an individual's risk for accidents (Mendelson, 1993).

Role of the Advanced Practice Nurse

A principle role of the Advanced Practice Nurse (APN) is to promote health maintenance and wellness. The APN has the skills of assessment, client education, support, and counseling, all of which help to provide a holistic approach to managing problems such as sleep difficulties and are well within the scope of practice. APNs frequently collect a more complete history from clients than physicians, which may lead to more specific and appropriate interventions for their clients (Everitt, Baker, & Avorn, 1990).

Insomnia, like pain, is a symptom that is just a piece of the whole, and the APN must determine an overall "picture" to make appropriate treatment recommendations. This is accomplished by assessing the characteristics of the disorder (Rakel, 1993). But management of insomnia is

sometimes challenging for the primary care provider, as it may have obvious causes or may subtly develop over a long period. To properly assess and treat the client may, therefore, become more time consuming. Because APNs are trained to take a holistic approach to wellness, clients benefit from the APN's ability to develop a complete strategy to promote optimum and restful sleep. Indeed, the APN is less likely to use pharmacological interventions and more likely to address the causes of the disorder, employing sound behavioral and natural interventions (Everitt et al., 1990).

Intended Project Outcome

This project explored research from nursing and other disciplines regarding insomnia, its prevalence, causes, and treatment. Based on the literature, the product of this project was an insomnia assessment tool for adults (18-65 years of age) for the primary care provider to use in the primary care setting. While primary care providers can manage insomnia in children and older adults, these age groups did not fall within the scope of this project.

The theoretical framework was based on Florence Nightingale's concepts. Nightingale asserted that the environment affected the health of individuals. She stressed the importance of holism; that is, that all parts of the individual are connected and that what affects one part of

the individual is felt throughout. She wrote that through environmental adjustments, health is promoted for the individual. Thus, when APNs use this theory in practice, they will be able to use the tool to assess potential causes of insomnia and make internal and external environmental adjustment recommendations as the primary nursing intervention.

Conceptual Definitions

To understand what insomnia is, one must have an understanding of normal and disturbed sleep. The following are conceptual definitions of key concepts relating to insomnia.

Circadian Rhythm

Circadian rhythm is an inherent cycle of biological rhythms including body temperature, sleep, wakefulness, and a variety of hormonal changes. Sunlight and other time cues, called Zietgeber, help to set circadian cycle consistency from day to day. For most individuals the circadian rhythm is 24-25 hours long, but length of the cycle normally changes in adolescents and the elderly (American Sleep Disorder Association (ASDA), 1992).

Circadian rhythms are coordinated by small nuclei centered at the base of the brain called the suprachiasmatic nuclei (SCN). The SCN have connections with other parts of the brain to control the body's temperature, hormone

release, and many other functions. A neural pathway runs from the eye to the SCN, and light seems to have the greatest impact on setting the circadian clock. Other factors that many influence SCN and the circadian cycle include changes in body temperature and use of certain types of medications such as alcohol and central nervous system (CNS) stimulants (American Sleep Disorder Association, 1992; Hauri & Esther, 1990).

Sleep

Sleep is part of two alternating states that influence each other: An individual is either awake or asleep. For a healthy adult, the average amount of sleep is 7 or 8 hours per night, though activities during the day influence the quality and quantity of that night's sleep. Short sleepers are described as those who sleep less than 6 hours while long sleepers are those who sleep more than 9 hours per night (Anch et al., 1988). Sleep needs remain relatively constant from week to week (Hauri & Esther, 1990). A person may sleep 5 hours one night and 9 hours the next, but it averages to about the same total hours each week throughout one's adult life. The pattern or structure, however, may change with age (Hauri & Esther, 1990).

Sleep Stages

Sleep is not a constant state; rather, it occurs under two categories: nonrapid eye movement (non-REM) and rapid

eye movement (REM). There are four non-REM stages of sleep, the first two (1-2) referred to as light sleep and the second two (3-4) as deep or slow-wave sleep. A normal progression through these stages, also termed sleep architecture, occurs during the night (Berry, 1995; Hauri & Esther, 1990).

Going to sleep is like going up and down stairs. There are typically 2 to 4 cycles with the following pattern: 1-2-3-4-3-2-REM. Cycles usually occur the first part of the night in 90-120 minute intervals. The remainder is then spent in stages 1, 2, or REM sleep (Anch et al., 1988; Berry, 1995; Ford & Kamerow, 1989). REM sleep is thought to be essential because it is during this period that restoration of the mind and body occurs. Hormones are excreted and healing of tissues and mental rejuvenation takes place.

The function of the REM stage has been studied by depriving individuals of sleep. The first definite finding was that REM deprivation can lead to a marked increase in the drive for sleep (Anch et al., 1988). The longer the deprivation, the stronger the drive/need for sleep. On the night of recovery sleep, it has been noted that there is a rebound in REM sleep and REM periods are longer. Some of the manifestations of REM deprivation are irritability, anxiety, difficulty in concentrating, and possibly paranoid thinking

(Anch et al., 1988). REM deprivation also seems to result in musculoskeletal symptoms and increased sensitivity to pain (Ford & Kamerow, 1989).

Sleep Disturbances

A sleep disturbance is anything that interferes with sleep. Individuals who experience sleep that is nonrestful, inefficient, or ineffective experience a sleep disturbance. Sleep disturbances can be caused from environmental, behavioral, or medical stimuli (ASDA, 1992).

To uniformly name sleep and arousal disturbances and operationalize criteria to aid in diagnosis, the Association of Sleep Disorder Centers developed a standardized and internationally recognized classification system called Difficulty Initiating & Maintaining Sleep (DIMS) (see Appendix A)(Erman, 1987). DIMS has formalized the naming of sleep and arousal disturbances and operationalized criteria to aid in diagnosis under two primary categories: hypersomnolence (disorders of excessive somnolence) and insomnia (disorders of initiation and maintaining sleep) (Coleman & Roffwarg, 1982; Erman, 1987). Under DIMS, causes of insomnia are delineated as use of drugs, underlying medical or psychological conditions, and environmental or behavioral problems (Hauri, 1982).

Insomnia

The characteristics of insomnia are the duration and severity of the symptoms, underlying medical or psychological conditions, or any identifiable stressful life event which must have an accompanying complaint of daytime difficulty (Roth, Roehrs, Stepanske, & Rosenthal, 1990). Daytime difficulty may be reported as problems in completing tasks or concentrating, falls or clumsiness, and/or other complaints.

Duration of insomnia symptoms can be generalized into three categories: transient, short-term, and chronic. Transient insomnia typically lasts from a few days up to two weeks and is generally triggered by situational stress, such as an impending business meeting or jet lag (Anch et al., 1988; Hauri & Esther, 1990, Rakel, 1993). It usually resolves itself once the stressful event has passed. Short-term insomnia may last 3 to 4 weeks and is often associated with an identifiable (often self-limiting) situational stress, such as death of a family member, pending divorce, or change at work or home (Anch et al., 1988; Gillin & Byerley, 1990; Rakel, 1993; Appendix B). Both transient and short-term insomnia account for approximately 15% of insomnia cases (Coleman & Roffwarg, 1982; Fillingim, 1992).

Chronic insomnia, however, is the persistent inability to initiate or maintain sleep, often defined as lasting more

than 3 weeks (Gillin & Byerley, 1990; Rakel, 1993) and by others as a month and longer (Coleman & Roffwarg, 1982; Walsh & Mahowald, 1991). Chronic insomnia is generally complex and caused by multiple factors (Lahmeyer, 1994). Coleman and Roffwarg (1982) cite that the most common type of chronic insomnia is insomnia with an underlying psychological problem. Their study cites the second most common cause of insomnia as psychophysiological. Psychophysiological insomnia is a sleep disorder unrelated to psychiatric illness, specific organic diagnosis, or drug intake (Guilleminault, 1995). In this condition, a maladaptive condition process has occurred (generally unknown to the person), whereby the bedroom environment, or simply the anticipation of bedtime, results in arousal rather than relaxation. The individual's frustration and vigorous attempts to sleep are met with further arousal and performance anxiety. Rampant mental activity or the inability to "turn off the mind" is often characteristic of psychophysiological insomnia. Paradoxically, when in nonsleep-related sedentary situations, the person may unintentionally fall asleep (Walsh & Fillingim, 1990). Individuals with psychophysiologic insomnia report being anxious or "stressed" about not being able to sleep and feel that sleep would alleviate this anxiety (Bonnet & Arand,

1996). These individuals are different from those with an underlying anxiety disorder.

Literature Review

A review of nursing literature revealed little regarding insomnia. However, a number of studies have been conducted by medicine and other disciplines. These studies provide a foundation of pathophysiological research on sleep and sleep disturbances, including prevalence, causes, and treatments of insomnia. While most of the literature offers treatment options in the medical modes, behavioral psychology literature supplies greater information on behaviors associated with insomnia and behaviorally-based solutions.

Prevalence

Over 4% of all Americans seek medical assistance to alleviate their complaints of insomnia each year (Anch et al., 1988). Various studies have found 30-35% of subjects had experienced insomnia within the last year (Coleman & Roffwarg, 1982; Ford & Kamerow, 1989; Kales, Kales, Bixler, Soldatos, Cadieux, Dashurba, & Vela Bueno, 1984). Radecki and Brunton (1993) found incidences of insomnia for individuals over age 18 recorded in 2.6 million patient charts (78.8%) out of 3.3 million reviewed; the remainder was individuals under 18. Sixty-five percent of the individuals with insomnia complaints were treated by primary

care providers. Higher complaints of insomnia have also appeared among lesser-educated and lower-income individuals (Bixler, Kales, Soldatos, Kales, & Healey, 1979; Ford & Kamerow, 1989).

Bixler et al. (1979) conducted a study in Los Angeles, collecting data from 1,006 individuals 18 years and older who responded to a 1973 metro area survey (Bixler et al., 1979). The multistratified, 100-question survey included six questions related to sleep patterns. The data showed 32% experienced insomnia with an increase to 42% when a past history was included. Data also revealed that those with insomnia had a higher incidence of mental health problems (33%), compared to those without such problems (23%). While only 16% of insomnia sufferers reported symptoms lasting for one year or less, 80% indicated symptoms for over a year and 40% for 5 or more years, implying that insomnia can be a persistent problem throughout the life cycle.

Causes of Insomnia

Generally, clients suffering from insomnia do not describe outright their troubles of sleeping; rather, they complain of fatigue, "something's not right," or state other vague complaints. Many consider insomnia a "fact of life" and a problem not worth help. This compounds assessment difficulties for the APN, and a more thorough assessment may reveal less obvious conditions contributing to the problem.

The APN must be particularly aware of individuals complaining specifically of chronic insomnia, as this may suggest a psychological disorder, underlying medical condition, maladaptive behavior, or severe emotional or environmental stress (Hauri & Esther, 1990; Rakel, 1993; Appendices B and C).

Zorick, Roth, Hartze, Piccione, and Stepanski (1981) conducted a descriptive study to delineate causes of insomnia. Of 84 participants (46 men, 38 women), 20 were control subjects (9 men, 11 women). Ages ranged from 36 to 65 years. Complaints of insomnia spanned from 6 months to 40 years. All subjects were tested by one-night polysomnolography, a sleep diary, the Cornell Medical Index, the Minnesota Multiphasic Personality Inventory (MMPI), and a history and physical. The control group individuals were defined as having no history of sleep disturbances or history of serious physical or mental health problems. Data revealed that of insomnia complaints approximately 29% experienced a primary sleep disorder, 20% psychological problems, 12% used drugs and/or alcohol, 8% had circadian rhythm changes, 7% had an underlying medical condition, and 19% had subjective complaints of insomnia that proved to have no findings (Zorick et al., 1981).

Coleman and Roffwarg (1982) evaluated approximately 5,000 individuals from 11 sleep centers across the United

States with chronic or established sleep complaints. The overall prevalence of insomnia was 31%, with the most common underlying cause related to psychological disorders. Of those in the sample with psychological disorders, 35% had affective disorders. Another 15% had psychophysiological disorders; that is, environmental or cognitive stimuli led to conditioned arousals (anxiety) but without a known psychological disturbance. The study also documented that 12.4% related their insomnia to drug and alcohol use, and another 9-10% to medication use (Coleman & Roffwarg, 1982).

Psychological Disorders.

Psychological disorders contributing to insomnia include stress, anxiety, depression, and the like. Pagel (1994) reported that 60% of those patients with chronic insomnia related symptoms to an underlying psychological illness, versus Ford and Kamerow (1989) who found 40% suffered from psychological difficulties. Weyerer and Dilling (1991) also found a high correlation between individuals with a depressive or anxiety disorder and moderate to severe insomnia when they conducted their study of 1,536 individuals over 15 years old, of which 28.5% had insomnia complaints.

Ford and Kamerow (1989) specifically investigated the relationship between insomnia and psychological disorders. The study involved 7,954 individuals who responded to the

National Institute of Mental Health Epidemiologic Catchment Area Study and who had experienced insomnia lasting more than two weeks. A follow-up interview was conducted one year later. On the initial questionnaire, 10% of the individuals complained of insomnia during the prior 6 months. On reinterview, 31% of those who had originally complained continued to have insomnia while 69% did not. Forty percent of those suffering chronic insomnia had an underlying psychological disorder (Ford & Kamerow, 1989).

Kales et al. (1984) studied 100 insomniacs having symptoms for greater than one year. They found 75% of reported symptoms were triggered by a stressful life event and began before age 40, and 80% frequently went to bed with things on their minds. Disturbed sleep was found to be caused from (a) psychological issues, dreams, or nightmares; (b) pain or the need to void; and (c) environmental stimuli (light, noise temperature) (Kales et al., 1984).

Chemicals.

Chemical intake also plays a significant role in sleeplessness. Many chemicals--whether alcohol, drugs, caffeine, or medication--interfere with the architecture, patterning, and/or the amount of sleep during its various stages.

Ten percent of those suffering from insomnia can relate it directly to alcohol consumption or drug use. Alcohol

initially induces sleep; however, it disturbs sleep 3-4 hours after ingestion. The primary effect of alcohol is it changes sleep structure by decreasing sleep latency, suppressing REM, and decreasing the number of eye movements during the first half of the night, all of which lead to disturbed sleep (Anch et al., 1989; Lahmeyer, 1995).

Mellinger, Balter, and Uhlenhuth (1985) evaluated data from the 1979 National Survey of Psychotherapeutic Drug Use involving individuals from 18 to 79 years old to determine the prevalence of insomnia and drug-use patterns. The researchers found that 35% of the population had experienced DIMS within the last year, of which 17% stated that it "bothered them seriously." The study also found insomnia increased with age, was more prevalent in women, and had a higher association with anxiety (Mellinger et al., 1985).

Other common chemicals that disturb sleep are caffeine and nicotine, both stimulants that interrupt sleep for many individuals. Eliminating or changing the consumption pattern of these chemicals can affect the quantity and quality of sleep. Caffeine's stimulant effect can last up to 12 hours in some individuals (Nakra, Grossberg, & Peck, 1991) and taken before bedtime increases the body's metabolic rate and reduces sleep efficiency (Bonnet & Arand, 1992).

Some over-the-counter (OTC) medications that interfere with sleep and potentially cause insomnia are cold and

allergy medications and cough syrups containing decongestants that act as a CNS stimulant. Many other prescription and OTC medications also interfere with sleep because they often contain alcohol, caffeine, or other stimulants. Thus, it is important for the APN to know the patient's medication usage including prescription and OTC medications, herbs, vitamins, caffeine, nicotine, and use of any illicit drugs (Lahmeyer, 1995).

Behaviors.

Approximately 10% of individuals suffer insomnia from circadian rhythm disturbances, while another 20% experience insomnia as a conditioned or learned behavior (Lahmeyer, 1995). Most commonly, circadian rhythm disturbances are found in individuals who work off shifts (Hauri, 1982; Lahmeyer, 1995).

Conditioned or learned behaviors causing insomnia are those that lead to the association of the bedroom with anything other than sleep. Watching TV, reading, and eating in bed may develop an association between the bedroom and the activity. Others may lie down to sleep and find themselves going through problems and events of the day and are unable to go to sleep. The association of bed/worry/can't sleep on a repeated basis eventually leads to "I go to bed and I can't sleep" or "I hate to go to bed" (Bootzin, 1984).

Behaviors between bed partners can also affect sleep. For example, Pankhurst and Horne (1994) investigated 46 bed partners for three consecutive nights in a sleep lab. The pairs were monitored for movements and subjective data. High movement between partners was related to restlessness, snoring, or the other partner was taking up too much bed space. Men were less affected by movements than women. However, both men and women reported "better" sleep with their partner present than alone (Pankhurst & Horne, 1994).

Medical Conditions.

Approximately 10% of insomnia is caused by an underlying physical condition (Coleman & Roffwarg, 1982). An acute illness or recovery from surgery may cause insomnia but is generally short term. Ford and Kamerow (1989) suggested that 15-20% of chronic insomnia is related to chronic pain, allergies, metabolic diseases, and other medical conditions such as gastroesophageal reflux disease (GERD) and headaches. GERD is a sensation of heartburn, which disturbs sleep by causing partial or full arousal of the individual during the night (Ford & Kamerow, 1989). Migraine headaches, though usually relieved by sleep, are at times triggered by sleep. In contrast, cluster headaches and chronic paroxysmal hemicrania occur predominantly at night and are frequently triggered by sleep (Hauri & Esther, 1990).

Treatment of Insomnia

Most of the research offers treatment options in the medical model. However, there are many ways to treat insomnia, and the majority of insomnia can be managed on an outpatient basis (Pagel, 1984). Sleep experts generally agree that a single modality approach is only partially beneficial. As with other medical problems, for the best results a holistic approach is necessary for long-term improvement of insomnia. This holistic approach includes sleep hygiene (a group of sleep activities and habits), stimulus control (behavior modification specifically for insomnia), and possible pharmacological therapy.

Sleep Hygiene.

Sleep hygiene is a group of behaviors and health practices that affect an individual's quality of sleep. Jamieson and Becker (1992) found that up to 20% of insomnia was directly related to inadequate sleep hygiene, involving irregular or poor sleep habits and sleep-incompatible behaviors. Regularly violating these habits impacts the quality of sleep (see Appendix D). However, optimizing sleep habits and behaviors should improve the quality of sleep and decrease insomnia.

Though cited by many authors for its importance, the beneficial or detrimental effects of sleep hygiene on sleep quality are difficult to determine. The many routine

activities which affect the ability to obtain restful sleep include amount and degree of strenuous exercise, what and when individuals eat, where they sleep; and a host of environmental factors (Jamieson & Becker, 1992; Morin, Culbert, & Schwartz, 1994); Walsh & Fillingim, 1990). Environmental factors are comprised of noise, room temperature, light, and foreign surroundings, etc. (see Appendix B).

Sleep is influenced by drop in body temperature and decrease in basal metabolic rate (BMR). When core body temperature is increased by passive heating or exercise, it falls back to normal and below. It is this drop in body temperature that helps induce sleep. Passive heating with heating pads or hot baths can accomplish this goal, but the compensatory drop in core temperature occurs earlier with passive heating than with exercise. Hot pads and baths are most effective 2-3 hours before going to bed if exercise 4-6 hours before cannot occur (Hauri, 1993; Morin et al., 1994).

Exercise is perhaps one of the most important aspects of sleep hygiene behaviors in that it aids in ease and deepening of sleep. Exercise influences both body temperature and metabolism (Morin et al., 1994). In contrast to the good sleeper, Morin et al. (1994) have shown that the metabolism rates do not slow down during the night in the poor sleeper. Exercise increases metabolism and the core

body temperature, with a compensatory drop about 4 to 6 hours later, thus leading to sounder sleep (Bonnet & Arand, 1995; Morin et al., 1994). Vigorous aerobic exercise has been demonstrated to increase slow-wave sleep, the phase of sleep considered the most restful and restorative.

The time of day for regular exercise can determine the amount of benefit it has for management of sleep disturbances. Morning exercise, for example, is not as advantageous as exercise later in the day because the compensatory drop in core temperature and metabolism occurs long before bedtime. Conversely, late evening exercise should be avoided because of its arousing effect (Hauri, 1993). To optimize sleep induction, exercise would be best 4-6 hours before bedtime.

Stimulus Control.

Stimulus control is most appropriate for the individual who has psychophysiologic insomnia. Bootzin (1984) defines stimulus control as a technique that promotes the association of the bedroom environment with sleep instead of wakefulness. This association is formed between various bedtime rituals and experiencing an inability to sleep. The individual who associates or anticipates going to bed with poor sleep is unable to relax and sleep. Repeatedly pairing the act of going to bed with being restless and frustrated,

while waiting for sleep, may lead to insomnia (Hauri, 1982; Jamieson & Becker, 1992).

The goal of stimulus control is to help the insomniac acquire a consistent sleep rhythm, strengthen the bed/bedroom as a cue for sleep, and weaken the bed/bedroom as a cue for activities interfering with sleep. The assumption underlying the teaching is that falling asleep is an instrumental act promoting the conditioned reinforcement of sleep or nonsleep. Stimuli that become associated with sleep or falling asleep become discriminative stimuli for promoting sleep (Hauri, 1982; Jamieson & Becker, 1992).

Difficulty in falling asleep reflects established stimuli for activities not compatible with sleep. For example, in an experiment applying a stimulus at various times during sleep, Arkin and Antrobus (1991) found that individuals who knew about the stimulus seemed to anticipate it and reported "seeing" it in their dreams. With repetition, the researchers suggested sleep would be interrupted. Individuals who retire with daily concerns and anxieties may have interrupted sleep with either partial or full arousals (Arkin & Antrobus, 1991). And those who use the bed/bedroom for virtually all of life's activities (reading, eating, watching TV) reinforce wakefulness, causing an inability to sleep (Bootzin, 1982; Harsh & Badia, 1990; Orr & Altshuler, 1982).

It is important for those experiencing insomnia to associate the bed/bedroom with no activities other than sleep and sexual relations (Bootzin, 1984; Pagel, 1994; Spielman, Caruso, & Glovinsky, 1987; Walsh & Mahowald, 1991). To help control stimuli affecting sleep, the individual should follow the rules listed below:

1. Go to bed only when you are sleepy.
2. Use bed/bedroom only for sleep and sexual relations.
3. If unable to sleep after 20 minutes, get up, go to another room, and engage in nonstressful activities.
4. Repeat #1-3 as many times as needed.
5. Set an alarm clock and get up at that time.
6. Do not nap during the day.

For those with chronic insomnia, combinations of both sleep hygiene and stimulus control may prove beneficial (Guilleminault, 1995; Walsh & Fillingim, 1990).

A comparison study of nonpharmacological interventions by Morin, Culbert and Schwartz (1994) showed a decrease in sleep latency after using various nonpharmocological interventions by 25-30%, compared to the control group which did not receive any intervention. When nonpharmocological interventions were used, chronic insomniacs demonstrated a more reliable and durable change in sleep patterns. The study demonstrated that stimulus control and sleep restriction were the most beneficial interventions.

Pharmacological Interventions.

Walsh and Fillingim (1990) and Gillin and Byerley (1990) recommend hypnotic medication for short-term, transient, or psychophysiologic insomnia which, given early enough in the psychophysiologic cycle, may abort the cycle. In cases of chronic insomnia, Silva, Chase, Sartorius, and Roth (1996) recommend the use of hypnotics in most cases for approximately two weeks, while the National Consensus Conference (NCC) recommends use for 30 days, but in conjunction with sleep hygiene and behavior modification (National Institute of Mental Health, 1996). For long-term therapy of chronic insomnia, Regestien (1987) suggests therapy be evaluated on an individual basis.

The major groups of medications used for insomnia are the hypnotic and sedatives, and more specifically, the benzodiazepines. The keys to choosing hypnotic therapy are dose, half-life, and therapeutic index of the medication. Dose determines the safety of the drug. Half-life helps predict the length of action and residual effects of the drug (i.e., daytime sleepiness). And the therapeutic index describes interactions with other medications that may bind or potentiate the hypnotic (Silva et al., 1996; Walsh & Fillingim, 1990).

Benzodiazepines are a group of medications whose primary mode of action is not clearly defined. They are

thought to act on the limbic, thalamic, and hypothalamic areas in the central nervous system. These drugs produce sedative, hypnotic, anxiolytic, relaxive, and anticonvulsant effects. Benzodiazepines are widely distributed throughout the body and cross the blood/brain barrier, and depending on the route of administration, the onset of drug action occurs typically after 15-45 minutes with a peak action in 7-8 hours. The benzodiazepine group has a varied half-live, and the long half-life of some of these drugs can produce daytime sleepiness (McEvoy, 1995).

Another group of medications sometimes prescribed is the tricyclic antidepressants. Tricyclics are used as effective treatment for insomnia because of the sedating properties (McEvoy, 1995; Pagel, 1994). These drugs work particularly well with those individuals with insomnia who have an underlying depressive component, but may also be used for chronic pain or anxiety. Though not a drug prescribed as a first order of treatment for insomnia, a major side effect of tricyclics is sleepiness; hence it should be employed at low dosage levels (Pagel, 1994).

Theoretical Framework

A theoretical framework is useful to assist in describing a set of events within a given context. Many theories, although rooted in a specific academic base, such as sociology or psychology, have broad applicability. In

particular, nursing theories have been developed to explain the phenomenon of nursing. They also have broad applicability in a wide range of practice settings.

The concepts first put forth by Florence Nightingale in the nineteenth century addressed environmental alteration as a means of implementing nursing care (Selanders, 1993). Nightingale's theory identified the relationship of the person with the internal and external environments and the importance of how they influence each other. When an individual experiences illness or disequilibrium, Nightingale asserted that making changes in the environment improves well being, placing the patient in the best possible condition for Nature to heal (Nightingale, 1946/1996).

Nightingale's concepts have great utility in the diagnosis and management of insomnia. The nurse is the one recommending the environmental changes. Today, the APN assesses and identifies the environment for imbalances and provides strategies for clients to change, returning them to equilibrium, and thus, to health.

Person

Nightingale defines the person as the individual who is affected by the environment (Selanders, 1993). The person is the "object" of care, not the disease or symptom. Nightingale viewed the person from a holistic perspective: a

multidimensional being of biological, social, and spiritual elements (De Graaf, Marriner-Tomey, Mossman, & Slebodnik, 1989; Selanders, 1993).

Environment

The external environment is composed of physical surroundings, daily activities, habits, and exposures. The internal environment is within the person and includes emotional, spiritual, and biological dimensions of the person. The psycho-spiritual dimension can affect the individual by causing feelings of anxiety, fear, worry, or other emotions and concerns that can be intense enough to interfere with sleep. All of the internal processes can be affected by intake from or exposure to the external environment. Therefore, Nightingale's emphasis on ventilation, pure food and water, light and noise control attempts to improve both the internal and external environments. Nightingale asserts that making changes in the environment will improve the health of the person (Nightingale, 1946/1996). In the instance of insomnia, the patient experiencing it requires environmental adaptation, thereby allowing Nature to heal.

The Environment and Holism

The focus of Nightingale's Theory is the environment. Both internal and external dimensions affect the individual, causing health or dys-ease (see Figure 1).

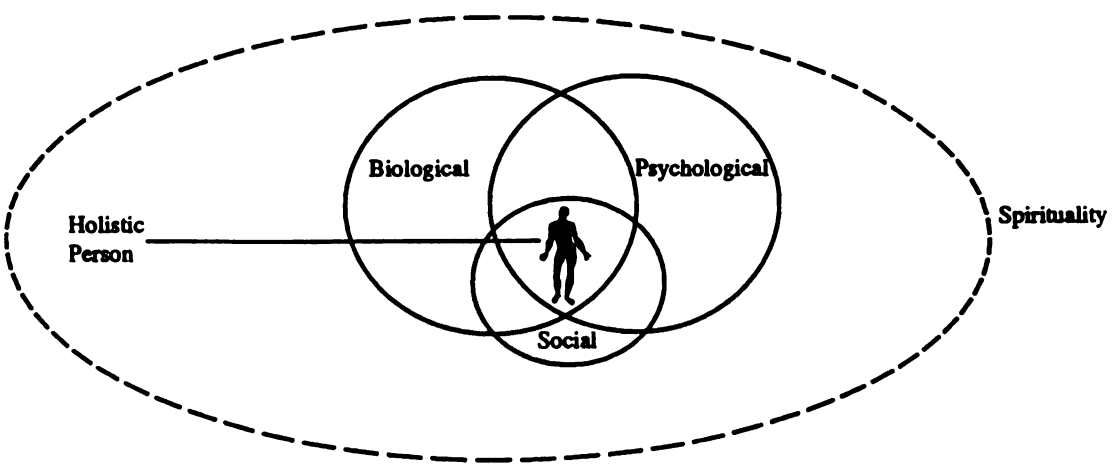

Figure 1. Holistic Person as Conceived by Nightingale (Selanders, 1996).

Bio-psycho-social-spiritual dimensions of an individual's environment overlap each other, and to omit a dimension would be missing a piece of the whole. This model demonstrates the interconnectedness of each dimension. Thus, when assessing or treating a client, a holistic approach is the most beneficial; all dimensions must be considered. The American Holistic Nurses' Association (1995) states that holism involves understanding the individual as an integrated whole, interacting with and being acted upon by both internal and external environments (Dossey & Guzzetta, 1995).

Health

Nightingale describes health as a relative state determined by both factual and perceived factors. The perception of health is according to how one feels and is heavily dependent on the psychological, spiritual, and social spheres. Nightingale also viewed health as the perfection of health and that persons should use every power to move toward wellness or the best that one can be at any given point in time (Nightingale, 1946/1996; Selanders, 1993).

Health and Dys-ease

Insomnia is a perception by the person that he or she is experiencing nonrestful sleep and consequently experiencing dys-ease. Nightingale describes dys-ease as

lacking comfort and being alerted to a lack of health (Selanders, 1993). This feeling of dys-ease suggests to the nurse that environmental adaptation is required as part of a planned nursing intervention. The theory asserts that making alterations in the environment will lead to relief of the dys-ease (Nightingale, 1946/1996; Selanders, 1993).

Nursing

Nursing is a way of facilitating nature's reparative processes by placing the person in the condition for Nature to act upon them. The nurse is, directly or indirectly, the manipulator of the environment (De Graaf et al., 1989).

Conceptual Model

A nurse in advanced practice uses the nursing process to observe, assess, and document findings, identify disequilibrium, and make recommendations and/or alterations to the person's environment. The goal is to improve the health status of patients and return them to health. After intervention, the nurse again assesses, observes, and documents progress, and, depending on the progress, may recommend new interventions. This process is recurring and is, in essence, a feedback loop. It can be visually depicted in a model to symbolize representations of phenomena and show relations of the metaparadigm components as described by Nightingale (see Figure 2). The model of nursing practice is linear, starting with action initiated by the nurse.

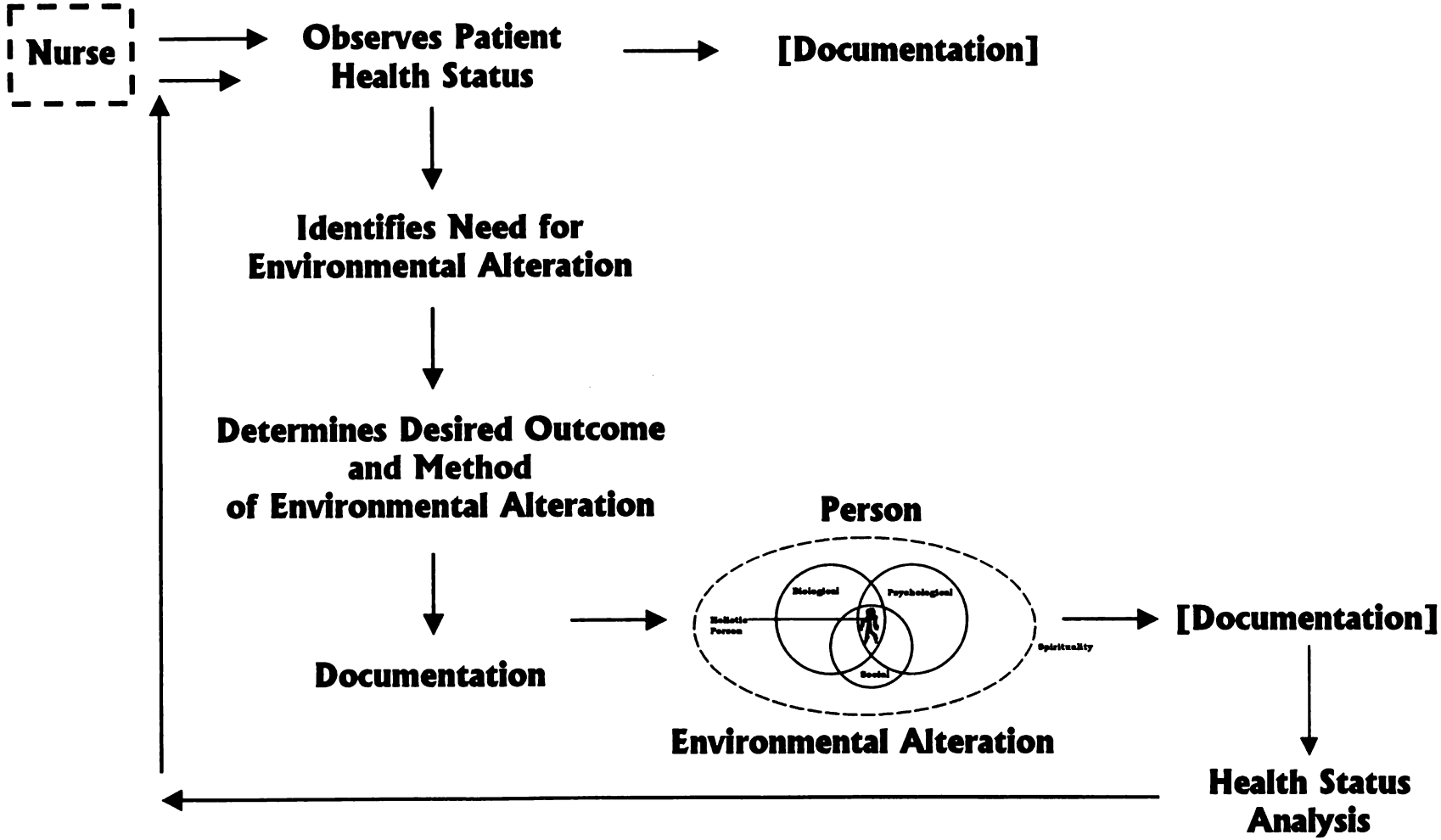

Figure 2. Nightingale's Model for Nursing Practice (Selanders, 1996).

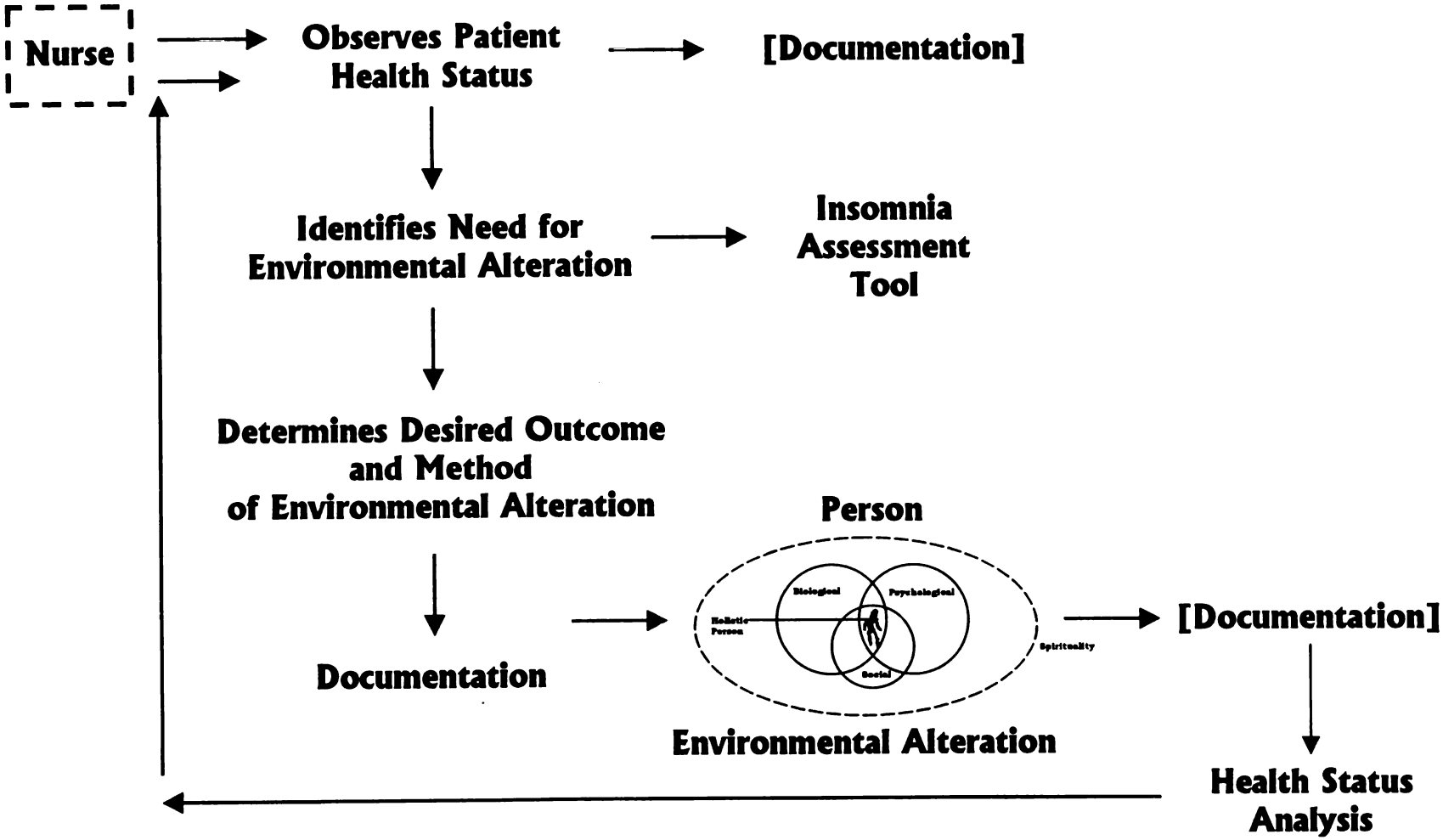

Figure 3. Nightingale's Model for Nursing Practice with the Insomnia Assessment Tool.

This model can be easily adapted for specific care-giving experiences, such as for those who experience dys-ease because of insomnia. In the case of the nurse treating a patient with insomnia, the assessment tool is specifically inserted into the observation portion of Nightingale's nursing practice model (see Figure 3).

Project Development

The purpose of this project was to develop a protocol and assessment tool for clients with complaints of insomnia. This tool will act as a guideline for the APN in appraising and determining treatment for the insomnia patient in the primary care setting. Because a complete analysis of an individual's insomnia requires time, and may require several visits, the tool should facilitate that process. The APN can focus on key assessment points, including medical/surgical, psychological, and sleep histories. The goal of the tool is to gather enough data to determine whether an individual has transient, short-term or chronic insomnia, probable causitory factors, and from the assessment, form a treatment plan. Many health care providers currently document in the SOAP format, into which this tool should be easily incorporated.

The tool focuses on such elements as the person's insomnia, history, symptoms, possible causes, and previous

treatments. The information collected from the tool aids the APN in determining problems, directing the plan, and recommending interventions to change the environment. Such recommendations frequently include sleep hygiene, stimulus control, and/or pharmacological interventions. A return visit is necessary to establish movement toward identified goals. This represents the feedback loop.

Using the Protocol

This tool is for use in the primary-care setting to evaluate insomnia in adults and is divided into three sections: Sleep Inventory, Sleep Environment, and Sleep Assessment (see Appendix E). Sleep Inventory (sleep habits) and Sleep Environment list questions to be answered by the client, which include information on how long the individual has experienced insomnia, sleep patterns, presleep habits, bedroom environmental conditions, and the like. Most questions need only short answers, but for those questions requiring further explanation, extra space has been provided. To reduce time constraints and aid the health care provider in determining what is causing insomnia, clients should ideally complete their sections in advance of their appointments, allowing the provider to review client answers and focus on areas needing further attention.

The Sleep Assessment portion is for use by the health care provider and reviews past medical history of probable

relevance to insomnia, medical symptoms that may disturb sleep (e.g., cough, pain), medications/social habits, and psycho-social history. It is presumed a more complete history (e.g., previous diseases, surgeries, and their sequela) was taken at a client's initial visit to the provider and prior to the complaint of insomnia. This history can be check-marked for "yes" responses, but because the patient may not be familiar with medical terminology and diagnoses, it is important the provider or a member of the health care team, such as a nurse practitioner, nurse, or medical technician take the history. However, yes answers may require a more in-depth assessment by the primary provider. Space is provided to describe the condition(s).

The patient history covers medical problems that are particularly relevant to determining probable causes of insomnia. It is presumed that a more complete medical history (i.e., previous diseases and surgeries and their sequela) would occur at the patient's first visit. It is also presumed that the patient has complained of suffering from insomnia.

Evaluation of the Protocol

Evaluation of the tool should include its content, applicability, and ease of use by primary care givers. There are a variety of groups that could test this tool (family members, groups of patients, medical or graduate students)

in a variety of settings (internal medicine, family practice). Through feedback and re-evaluation, adjustments can be tailored to both professional and lay groups to ensure clarity and usability and appropriateness.

Implications for the APN

Primary Care

There are many goals for primary care, among which are promoting wellness and healthy lifestyle behaviors and identifying and treating health problems. Insomnia is a symptom with many potential causes, and because of its widespread occurrence, it becomes a primary care issue. In family or primary care practices, the APN is qualified to use the tool to facilitate identification and treatment of individuals with insomnia. Portions may be incorporated into the routine physical to identify potential sleep problems, especially since many clients vaguely describe their symptoms (Hauri & Esther, 1990; Rakel, 1993).

Education

APNs' use of the tool should familiarize them more with sleep problems and their frequency. Because of the APN's expertise and knowledge, educational services about insomnia can subsequently be tailored to peers and clients. For example, information on insomnia could be presented in seminar format with a general background ("Improving Your Sleep") or more targeted content ("How to Maximize Sleep

Using Sleep Hygiene"). The APN could also author reference materials geared to the professional or the client, either generalized or specific. Such educational services may further demonstrate the importance of client assessment and use of the assessment tool.

Research

This project can serve as a starting point to further development of potential research. The APN is qualified to design and implement research projects based on the assessment tool. Data collected from the tool may provide generalizations about clients with insomnia and generate a variety of research questions. Potential research projects might include (a) comparing specific treatment modalities to determine which ones best improve sleep, (b) comparing nonpharmacological and pharmacological treatments, (c) evaluating treatments individually and in combination, or (d) comparing treatment modalities described in this project with options not presented herein. A researcher could also act as a clinical investigator to gather data for area and/or national studies relating to insomnia. Thus, research opportunities in which the APN can participate are many, from both design and implementation aspects.

Summary

Insomnia is a primary health care problem that can be acute or chronic, simple, or complex. Insomnia affects all

aspects of individuals' lives. It affects how they feel and how they perform. Florence Nightingale asserted that the environment affected individuals and how they felt; thus, she promoted adjusting the environment to improve health. Adapting sleep hygiene, stimulus control, and pharmacological agents to the client's situation adjusts the client's environment toward improved sleep, hence reduced insomnia.

The literature indeed established insomnia as a frequent complaint, arising from the individual's internal or external environments. Most authors agreed that thorough assessment of the client's history, routines, and sleep patterns were necessary to identify and treat the problem. However, the literature did not reveal a tool for the health care provider to use to facilitate the assessment process.

This project sought to develop an assessment tool for insomnia based on Nightingale's premise that dys-ease is a person's lack of comfort, thus lack of health (Selanders, 1993). The tool focused on the elements of insomnia: history, symptoms, and internal/external causes. In the primary care setting, the information gathered should assist the APN in evaluating the problem, then develop a plan and direct interventions to move the client away from dys-ease and toward wellness. This tool can serve as a springboard

for the APN for future nursing research, education, and practice.

APPENDICES

APPENDIX A

DIAGNOSTIC CLASSIFICATIONS OF DISORDERS OF INITIATING AND MAINTAINING SLEEP (DIMS)

A. DIMS (Insomnia)
   1. Psychophysiological
      a. transient and situational
      b. persistent
   2. Associated with psychiatric disorders
      a. symptom and personality disorders
      b. affective disorders
      c. other functional psychoses
   3. Associated with use of drugs and alcohol
      a. tolerance to or withdrawal from CNS depressants
      b. sustained use of CNS stimulants
      c. chronic alcoholism
   4. Associated with sleep-induced respiratory impairment
      a. sleep apnea DIMS syndrome
      b. alveolar hypoventilation DIMS syndrome
   5. Associated with sleep-related (nocturnal) myoclonus and restless legs
      a. sleep-related (nocturnal) myoclonus DIMS syndrome
      b. restless legs DIMS syndrome
   6. Associated with other medical, toxic, environmental condition
   7. Childhood-onset DIMS
   8. Associated with other DIMS conditions
      a. repeated REM sleep interruptions
      b. atypical polysomnographic features
      c. not otherwise specified
   9. No DIMS abnormality
      a. short sleeper
      b. subjective DIMS complaint without objective findings
      c. not otherwise specified

B. Disorders of the sleep-wake schedule
   1. Transient
      a. rapid time zone change (jet lag) syndrome
      b. work shift change in conventional sleep/wake schedule
   2. Persistent
      a. frequently changing sleep/wake schedule
      b. delayed sleep phase syndrome
      c. advanced sleep phase syndrome
      d. non-24-hour sleep-wake syndrome
      e. irregular sleep-wake pattern
      f. not otherwise specified

APPENDIX B

COMMON STRESSORS CAUSING INSOMNIA

MAJOR LIFE CHANGES
- Death of a loved one
- marriage
- divorce
- birth of a child
- severe illness in a relative or friend
- moving to a new location

EMOTIONAL UPSET
- marital strife
- work-related problems
- guilt over sexual conflicts
- concerns about health
- test anxiety

ENVIRONMENTAL FACTORS
- sleeping in an unfamiliar bed, surroundings
- excessive noise, light, temperature
- extremes in weather
- too much, inadequate, uncomfortable attire and/or bedding

SYSTEMIC FACTORS
- ingesting alcohol before bedtime
- eating a large meal before bedtime

DISRUPTIONS IN NORMAL ROUTINE
- medical examination
- elective surgery
- hospitalization
- acute pain

DESYNCHRONIZATION OF CIRCADIAN RHYTHM
- rapid time zone change--jet lag
- variable shift work

MEDICATIONS CAUSING INSOMNIA
- antihistamines--including H2 blockers
- bronchodilator--including zanthinederivatives
- corticosteroids
- illicit drugs--stimulant, cocaine, amphetamines, narcotics
- thyroid replacement
- diuretics
- anticholinergics
- antidepressants--MAO inhibitors
- antihypertensives--beta blockers, quinidine (nightmares)
- chemotherapy

APPENDIX C

DISORDERS CAUSING CHRONIC INSOMNIA

PRIMARY SLEEP DISORDERS
- sleep apnea
- nocturnal myoclonus
- restless legs syndrome
- hypnic jerks

MEDICAL DISORDERS
- allergies, sinusitis--difficulty in breathing
- asthma--nocturnal cough
- arthritis, myalgia--pain
- chronic obstructive pulmonary disease--shortness of breath
- coronary or pulmonary insufficiency--angina
- diabetes, nocturnal diuresis, hypoglycemia at noc-nightmares
- dementia
- epilepsy
- fibrositis
- gastroesophageal reflux disease, esophagitis--pain
- hypertension--early AM wakening, 25% OSA
- hyperthyroidism--increased difficulty falling asleep
- Parkinson's disease--increased time awake, decreased REM
- PMS--hormonal shifts
- peptic ulcer disease--pain or indigestion
- nocturnal cardiac ischemia
- headaches--migraines, cluster, sinus

PSYCHIATRIC DISORDERS
- major depression
- anxiety
- panic disorder
- obsessive/compulsive disorder
- borderline personality disorder
- post-traumatic stress syndrome
- adjustment disorders
- anorexia nervosa
- dementia
- alcohol and substance abuse
- phobias

PSYCHOLOGICAL DISORDERS
- pre-existing emotional problems
- inadequate coping strategies
- internalization of emotions
- persistent hypochondria
- obsessive worrying

APPENDIX D

SLEEP HYGIENE

1. Maintain a regular sleep schedule with a regular arising time and set number of hours of sleep. This will strengthen circadian rhythm.
2. Make certain bedroom is quiet, comfortable, cool, and secure. May need to sound screen room (ear plugs, "white" noise, fan, opaque shades, heavy curtains) to muffle outside noises or light.
3. Keep bedroom for sleep only, not for TV, readings, eating, or work. Sexual activity is the only exception. This, too, will reinforce cues to initiate sleep.
4. Hide alarm clock to avoid clock watching.
5. Avoid naps.
6. Avoid worry or frustration in bed.
7. Schedule time to wind down and relax before going to bed. Quiet activities (i.e., hot bath, reading, meditation) will help relaxation before going to bed and reinforce cues to initiate sleep.
8. Do not consume caffeine after noon; caffeine is metabolized within 8-12 hours.
9. Avoid alcohol 3-5 hours before bedtime as it may fragment sleep.
10. If necessary, restrict fluids at bedtime.
11. Avoid heavy meals or hunger at bedtime. Instead have light snack of milk, tuna, cheese, crackers. Avoid heavy or spicy foods which may cause indigestion.
12. Abstain from stimulating drugs (caffeine, decongestants) in the evening.
13. Get regular exercise around midday. Walk 2-3 miles/day. Aerobic or strenuous exercise should be 6 hours before bedtime.
14. Get out of bed if awake.
15. If unable to sleep, get out of bed (see Stimulus Control).

Sources: Becker, 1993; Hauri, 1993; Jamieson & Becker, 1992; Lahmeyer, 1995; Nakra et al., 1991; Rakel, 1993; Walsh & Mahowald, 1991.

APPENDIX E

ASSESSMENT TOOL FOR ENVIRONMENTALLY-INDUCED INSOMNIA

I. SLEEP INVENTORY

CLIENT DIRECTIONS: *The following are questions to help us evaluate your sleep difficulties. Most answers are short, but when more information is needed, please answer as completely as possible.*

How long (weeks, months, years) have you been experiencing insomnia?_____
How many times a week?_____
Do you have difficulty **going** to sleep?_____ Difficulty **staying** asleep?_____
Does your insomnia interfere with your daytime activities or school or work?_____
If so, please explain how:

Bedtime Routines:

A. How many hours do you sleep each night during the week?_____
   Do you feel refreshed when you wake up?_____
B. Do you "sleep in" on weekends?_____
   Do you feel refreshed when you wake up?_____
C. What time do you typically go to bed?_____
D. What time do you typically wake up?_____
E. Do you wake up during the night?_____ If yes, how often?_____
   Why?

   Are you able to go back to sleep?_____
   On the nights you wake up, do you feel refreshed in the morning?_____
F. Do you have to keep busy to stay awake during the day?_____
G. How often do you fall asleep while watching TV?_____
   Have you ever fallen asleep while driving?_____ How often?_____
H. Do you sleep well while on vacation?_____
I. Do you eat in bed?_____ Watch TV?_____ work?_____
J. Describe your routine before bedtime (EXAMPLE: Do you take a bath, exercise, listen to music, read, have a snack?)

K. Before going to bed, do you have a cocktail?_____ or smoke?_____

L. Have you ever used home remedies to help you sleep?_____
Which ones worked?

Which ones didn't work?

M. What makes your insomnia worse?

N. What other problems have you had since your insomnia started?

II. SLEEP ENVIRONMENT

CLIENT DIRECTIONS: *The following questions relate to your sleeping arrangements and the environment in which you sleep. Most of these questions can be answered "yes" or "no" or with a checkmark.*

A. Do you sleep alone?_____ With a partner?_____ Pets?_____ Children?_____

B. What type of bed do you sleep in?

C. Are you a light_____ or heavy_____ sleeper?

D. Is your partner a light_____ or heavy_____ sleeper?

E. How many pillows do you use?_____

F. What is your usual (favored) sleeping position?
Side_____ Back_____ Stomach_____

G. What is the usual temperature in your room?_____
For you, is this temperature too hot?____ or too cold?_____

H. Is your room dark?_____
Does light bother you?_____ Does light wake you up?_____

I. Is your room quiet?_____
Does noise bother you?_____ Does noise wake you up?_____

J. Do you snore?_____
Does your bed partner snore?_____ Does it wake you up?_____

K. Are there other things not mentioned above that disturb your sleep?_____
Please describe them.

III. SLEEP ASSESSMENT

FOR COMPLETION BY HEALTH CARE PROVIDER	Yes	Describe How Interferes
PAST MEDICAL HISTORY (PMH) *If yes, describe how condition interferes with sleep* Allergies Asthma-COPD-emphysema Arthritis-RA CAD-CHF-MI-Angina HA-seizures-dementia		
SYMPTOMS DURING SLEEP *If yes, describe how client is bothered in sleep* Cough Shortness of breath Nasal congestion Pain HA Angina Arthralgia Joint Muscle Dysmenorrhea Esophagitis Nocturia Any extremity movements		
MEDICATIONS/SOCIAL HABITS Rx meds OTC meds, herbs, vitamins Smoking Caffeine Exercise routine		
PSYCHO-SOCIAL HISTORY Routine during work/school hours Any known precipitating factors for "Why you're not sleeping" Situational stress, crisis, loss, grief History of psychological dx Depression Anxiety (worrier)		

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