



University of North Dakota
UND Scholarly Commons

Occupational Therapy Capstones

Department of Occupational Therapy

2010

Evidence-Based Intervention for Sleep Disturbance in Healthy Elderly Individuals

Sarah Gregory
University of North Dakota

Heather Hoffman
University of North Dakota

Follow this and additional works at: <https://commons.und.edu/ot-grad>

 Part of the [Occupational Therapy Commons](https://commons.und.edu/ot-grad)

Recommended Citation

Gregory, Sarah and Hoffman, Heather, "Evidence-Based Intervention for Sleep Disturbance in Healthy Elderly Individuals" (2010). *Occupational Therapy Capstones*. 73.
<https://commons.und.edu/ot-grad/73>

This Scholarly Project is brought to you for free and open access by the Department of Occupational Therapy at UND Scholarly Commons. It has been accepted for inclusion in Occupational Therapy Capstones by an authorized administrator of UND Scholarly Commons. For more information, please contact zeinebyousif@library.und.edu.

EVIDENCE-BASED INTERVENTION FOR SLEEP DISTURBANCE IN HEALTHY
ELDERLY INDIVIDUALS

by

Sarah Gregory, MOTS

Heather Hoffman, MOTS

Advisor: Sonia Zimmerman, Ph.D., OTR/L, FAOTA

A Scholarly Project

Submitted to the Occupational Therapy Department

of the

University of North Dakota

In partial fulfillment of the requirements

for the degree of

Master's of Occupational Therapy

Grand Forks, North Dakota
May, 2010

This Scholarly Project Paper, submitted by Sarah Gregory, MOTS and Heather Hoffman, MOTS in partial fulfillment of the requirement for the Degree of Master's of Occupational Therapy from the University of North Dakota, has been read by the Faculty Advisor under whom the work has been done and is hereby approved.

Faculty Advisor

Date

PERMISSION

Title Evidence-based Intervention for Sleep Disturbance in Healthy Elderly Individuals

Department Occupational Therapy

Degree Master's of Occupational Therapy

In presenting this Scholarly Project in partial fulfillment of the requirements for a graduate degree from the University of North Dakota, we agree that the Department of Occupational Therapy shall make it freely available for inspection. We further agree that permission for extensive copying for scholarly purposes may be granted by the professor who supervised our work or, in her absence, by the Chairperson of the Department. It is understood that nay copying or publication or other use of this Scholarly Project or part thereof for financial gain shall not be allowed without our written permission. It is also understood that due recognition shall be given to us and the University of North Dakota in any scholarly use which may be made of any material in our Scholarly Project.

Signature _____ Date _____

Signature _____ Date _____

TABLE OF CONTENTS

AKNOWLEDGEMENTS.....	v
ABSTRACT.....	vi
CHAPTER	
I. INTRODUCTION.....	1-2
II. REVIEW OF LITERATURE.....	3
Definition of Sleep.....	3-5
Consequences of Sleep Disorder.....	5-8
Etiology of Sleep Disorder.....	8-11
Sleep Disturbance Issues in the Elderly Population.....	11-13
Intervention for Sleep Disturbance.....	13-30
Gerogogy.....	30-34
Role of OT.....	34-37
Summary.....	37-40
III. METHODOLOGY.....	41-42
IV. PRODUCT.....	43
Product Description.....	43
Intended Audience.....	44-45
Model and Frame of Reference.....	45-46
OT Role.....	47-50
Implementation Strategies.....	50-51

Product.....	52-87
Introduction.....	2
Chapter I: Sleep Education.....	3-5
Chapter II: Goal Setting.....	6-7
Chapter III: Review Your Sleep.....	8-10
Chapter IV: The Best Bed Time.....	11-13
Chapter V: Your Sleep Environment.....	14
Chapter VI: Sleep Thoughts.....	15-17
Chapter VII: Relaxation Activities.....	18-21
Chapter VIII: Exercise.....	22-23
Chapter IV: Weekly Schedule.....	24-27
Chapter X: Stick With It!.....	28
Additional Worksheets.....	29-33
References.....	34-36
V. SUMMARY.....	88
Limitations.....	88-89
Recommendations.....	89
Future Implementation.....	89-90
Conclusion.....	90
APPENDICES	
Appendix A: Rest and Sleep.....	91-93
Appendix B: Assessments.....	94-95
REFERENCES.....	96-111

ACKNOWLEDGEMENTS

The authors wish to thank Sonia Zimmerman, Ph.D., OTR/L, FAOTA for her guidance in the development of this Scholarly Project. We would like to thank our families for their support and patience throughout the project process. The authors would like to dedicate the product of this Scholarly Project to their grandparents:

Grandparents of Sarah Gregory

- ❖ Oliver Gregory and the late Susan (Fournier) Gregory
- ❖ Margaret “Peg” George and the late Clarence George

Grandparents of Heather Hoffman

- ❖ Betty Hoffman and the late Ray Hoffman,
- ❖ Helen Karpen and the late George Karpen,

ABSTRACT

Elderly individuals have a predisposition to experiencing sleep disorder, yet many remain untreated. Consequences of untreated sleep disturbance may result in decreased cognitive functioning, lowered perceived quality of life, and loss of independence. A literature review describes the definition of sleep, consequences of sleep disorder, sleep disturbance in the elderly population, intervention efficacy, principles of gerogogy, and the role of occupational therapy in sleep intervention.

The scholarly project presents a manual designed for use with well-elderly populations and intended to be guided and/or distributed by occupational therapists. The manual is entitled “Take Control of Your Sleep: An Occupational Therapy Manual to Improve Sleep Quality in Elderly Individuals” is a synthesis of cognitive-behavioral strategies and complimentary interventions aimed at life-style change and increased knowledge of sleep processes in elderly individuals. The Model of Human Occupation is selected to serve as a foundation for the sleep manual and addresses concepts of personal values and desires (volition), sleep routines (habituation), and metacognition (performance capacity), as well as attention to the sleep environment. The cognitive-behavioral therapy (CBT) approach is well-supported in the research literature for its application to the selected population and is the main intervention strategy used throughout the sleep manual. Principles of gerogogy specific to older adult learning are utilized to guide the development of chapter content in the self-help manual.

CHAPTER I

INTRODUCTION

The number of persons 65 and older is estimated to increase from approximately 35 million in 2000 to around 71 million in 2030 (Center for Disease Control [CDC], 2003). The growing number of older adults is expected to increase demands on the public health system and on medical and social services. Most American communities do not have adequate health care resources to meet the anticipated clinical demands (Colten & Altevogt, 2006). Based on estimates of the prevalence of sleep disorders, millions of individuals are living with undiagnosed and untreated sleep problems (Colten & Altevogt, 2006).

During the middle years of an individuals' life, the rate of insomnia reports are stable, however the prevalence rises abruptly in decades 70-79 and 80-89 (Lichstein et al., 2000). Between 12% and 25% of healthy seniors report chronic insomnia (Foley, 1995). Chronic diseases which affect older adults disproportionately, such as sleep disturbance, contribute to disability, lower perceived quality of life, and increased health care and long-term care costs (CDC, 2003; Lichstein et al., 2000).

It is the responsibility of health care professionals, including occupational therapists, to educate the public about sleep disturbance and to aid in the development and maintenance of a healthy lifestyle. The purpose of patient education is to increase the competence and confidence of clients for healthy self-management (Bastable, 2006). Patient education is a process used to aid individuals to learn new behaviors to implement

into everyday life. Disorders such as sleep disturbance have been related to life-style choices and thinking processes (Engle-Friedman, 1992). These factors can be prevented or remediated through occupational therapy. Occupational therapists promote healthy self-management of sleep through implementation of behavioral therapy while developing a sense of control over sleep through cognitive therapy.

“Take Control of Your Sleep” is a synthesis of cognitive-behavioral strategies and complimentary interventions aimed at life-style change and increased knowledge of sleep processes. The manual provides information in order to gain a sense of control and a perception of increased quality of life and sleep. The manual is designed as a tool an individual can personalize through interactive components. The consumer can document and directly record in the manual in order to effectively incorporate sleep intervention components. The manual will provide worksheets incorporating goal setting, progress toward achieving goals through the use of a sleep diary, calculating sleep efficiency, and designing a daily schedule.

Chapter II presents a literature review which provides the reader with information to understand evidence based research related to sleep. Chapter III is an overview of the methodology utilized to apply the information in the development of the end product. Chapter IV presents the product, “Take Control of Your Sleep”, which is based on the occupational therapy theory of Model of Human Occupation incorporating the cognitive-behavioral frame of reference. “Take Control of Your Sleep” is a self-help, sleep manual designed for elderly individuals who experience sleep disorder. Strategies for adaptations and access information for assessments utilized in conjunction with the manual are incorporated. Chapter V includes a summary of this scholarly project.

CHAPTER II

REVIEW OF LITERATURE

The Harvard Medical Division of Sleep (2009) highlights the fact that consequences of errors in judgment attributed to sleep deprivation critically played a role in major disasters throughout American history such as Chernobyl, Challenger, and Exxon Valdez. The U.S. Department of Health and Human Services (2003) presents the statistic that over 50 million Americans report having a sleep-related problem. While insomnia is occurring in significant proportions and connections have been made to several U.S. disasters, Sivertsen et al. (2006) report that 85% of cases of insomnia are left untreated, secondary to lack of information or financial reasons.

Definition of Sleep

Sleep problems are referred to in the literature by a variety of titles; such as sleep disorder, sleep deprivation, inability to sleep, sleeplessness, wakefulness, dyssomnia, or sleep disturbance. For the purpose of this scholarly project, the terms such as sleep disorder, sleep disturbance, and insomnia are utilized interchangeably to encompass the variety of sleep related terminology currently used in research literature. Sleep disorders can be broadly categorized into sleep restriction, a primary sleep disorder, or as a secondary sleep disorder (U.S. Department of Health and Human Services, 2003). Sleep restriction is a sleep problem resulting from lifestyles or work schedules imposing on obtaining sufficient sleep to function effectively. Primary sleep disorders are chronic, medically diagnosed disorders that directly impair sleep (U.S. Department of Health and

Human Services, 2003), such as insomnia, obstructive sleep apnea and periodic limb movements (Adivan, 2005). Secondary sleep disorders are a direct result of an underlying medical, psychiatric, environmental, or behavioral condition or to drug side effects such as pain, anxiety, or decreased activity (Petit, Azad, Byszewski, Sarazan, & Power, 2003). Current research generally focuses on insomnia, a specific type of sleep disorder, to determine outcome measures and to quantify effectiveness of sleep therapies (Stone, Ensrud, & Ancoli-Israel, 2008; Bloom, et al. 2009; Summers, Crisostomo, & Stepanski, 2006; Nau, McCrae, Cook, & Lichstein, 2005). The focus on insomnia is attributed to the fact that insomnia is the most common sleep disorder in adults (Roth, 2007).

Insomnia can be differentiated into hypersomnia characterized by prolonged sleep or insomnia defined by shortened or fragmented sleep (Asplund, 1999). Shortened insomnia is further divided into initial, middle, and terminal insomnia characterized, respectively by: difficulty falling asleep (i.e. sleep-onset latency), difficulty remaining asleep through the night (i.e. awakenings after sleep onset), or waking up too early (World Sleep Foundation [WSF], 2009). Categorizing insomnia as a disorder requires the presence of a condition associated with negative consequences, which are abnormal results of the condition (Roth, 2007). For example, waking up not feeling restored or refreshed constitutes a pathological response indicating the presence of a sleep disorder (Neubauer, 2009).

The *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revised (DSM-IV-TR)* indicates that for a diagnosis of an insomnia disorder to be made, the difficulty with sleep must have a negative effect on daily function (American Psychiatric Association [APA], 2000). The *DSM-IV-TR* differentiates acute and chronic

insomnia with requirements that chronic insomnia symptoms persist for at least 1 month while acute insomnia occurs for less than 4 weeks; both of which, do not exclusively occur in the presence of another sleep disorder, mental disorder, or the direct physiological effects of a substance or medical condition. Diagnostic strategies utilized to determine diagnosis of insomnia including: sleep log records, structured questionnaires, psychological tests, a comprehensive history, physical exams, and thyroid tests (Krishnan & Hawranik, 2008; WSF, 2009).

Sleep can be categorized into two general states non-rapid eye movement (NREM) and rapid eye movement (REM) sleep (Passarella & Duong, 2008). NREM includes four stages of sleep, each progressing towards REM sleep. Stage 1 sleep is a transition period between wakefulness and the early stages of sleep. Stage 2 sleep, sometimes known as intermediate sleep, represents the largest percentage of total sleep time. Stages 3 and 4 sleep are referred to as deep sleep and is thought to restore sleep stages. REM sleep follows NREM sleep. REM sleep includes physiological changes (e.g., variations in blood pressure, heart rate, and respiratory rate) and quick, irregular eye movements occur (Passarella & Duong, 2008). Stages 1 and 2 are considered light sleep while stage 4 is the deepest level of sleep (Krishnan & Hawranik, 2008)

Consequences of Sleep Disorder

Consequences experienced as a result of a sleep disorder vary from person to person. Research indicates that when the ability to get restful sleep is compromised, the body may react negatively mainly affecting cognitive processes (Passarella & Duong, 2008; Rockwood, Davis, Merry, MacKnight, & McDowell, 2001). The negative effect

on cognitive processes may have a damaging effect on physical and psychosocial well being.

Cognition.

Passarella and Duong (2008) describe sleep as a vital component in the body and mind's restorative process, in the ability to conserve energy, in memory and learning processes, and in growth and development. Brassington, King, and Bliwise (2000) report that sleepiness caused by inadequate sleep results in diminished attention, memory, reaction time, problem solving and cognitive abilities. The World Sleep Foundation [WSF] (2009) reports that insomnia has the potential to decrease an individual's energy level, increase mood disturbances (i.e. irritability), and result in fatigue and disorientation. Insomnia decreases an individuals' ability to cope with an underlying medical condition by resulting in increased fatigue and the inability to think clearly (Neubauer, 2009).

Engagement in Occupation.

Falling, a probable consequence of poor sleep (Brassington et al., 2000), may result in depression, isolation from important relationships, and a feeling of reduced self-efficacy toward engaging in activities of daily living (Nevitt, 1990). Ancoloi-Israel (2005) links poor sleep to an overall decrease in performance ability, while Passarella and Duong (2009) report that poor sleep is linked to increased absenteeism from work.

An important activity of daily living directly affected by poor sleep is community mobility (Horne & Reyner, 1995). Poor sleep is related to disorientation, reduced attention-span, impaired reaction time, and compromised problem-solving capabilities (Brassington et al., 2000) which are all important components to safe and effective

community mobility. A reduced ability to safely navigate one's community may impact engagement in other areas of occupation such as social participation, instrumental activities of daily living, work and leisure.

Independence.

Left untreated, individuals with chronic insomnia experience vulnerability to decreased independence and accelerated placement in nursing facilities (Pollak, Perlick, Linsner, Wenston, & Hsieh, 1990). McCall (2004) reports that more than 50% of long term care admissions are directly related to sleep disturbances. Similarly, the incidence of falling has detrimental effects on independence and is largely associated with nursing home placement. Brassington et al. (2000) surveyed two hundred and eighty-four individuals who reported experiencing a fall, and report findings that nighttime sleep problems and daytime sleepiness are independently associated with both occurrence and frequency of falling. The researchers specify nighttime sleep problems correlated with falling as difficulty falling asleep, waking during the night, getting less than 8 hours of sleep, waking too early in the morning and not being able to fall asleep again.

Perception of Life.

Individuals reporting poor sleep more often express lower life satisfaction, diminished perceived health status, reduced ability to acquire income, and an increase in psychiatric complaints when compared to good sleepers (Tsai, Wong, & Ku, 2006). Research on 42 good sleepers compared to 42 poor sleepers indicates that life stress experiences were similar; however, poor sleepers perceive higher generalized anxiety (Friedman, Brooks, Bliwise, Yesavage, & Wicks, 1995). Krishnan and Hawranik (2008) report that the most common psychiatric disorders resulting from insomnia are depression

and anxiety. A European population-based study on 14,915 individuals found that insomnia more often precedes rather than follows occurrences of mood disorder (Ohayon & Roth, 2003).

Mortality.

Not only does poor sleep negatively affect engagement in occupations but may be a factor in mortality. Detrimental consequences, such as driver morbidity in motor vehicle accidents, are directly related to sleep problems (Horne & Reyner, 1995). In a survey of road accidents in England during the period of 1987-1992, 679 vehicle accidents were directly related to sleep; specifically, 36% of all general accidents were sleep related vehicle accidents.

Rockwood, Davis, and Merry (2001) contribute the feeling of constantly being tired (i.e. daytime sleepiness) to higher 5-year mortality. Manabe et al. (2000) conducted a study of 272 Japanese skilled nursing patients. Those found to have nighttime insomnia, daytime sleepiness, early awakening, and sleep-onset delay were followed for a 2-year period. Approximately forty-four percent of the patients were reported to have nighttime insomnia and 51% who had sleep-onset delay deceased in the 2-year study period. The researchers conclude that nighttime insomnia and sleep onset delay are significantly correlated with mortality.

Etiology of Sleep Disorder

Risk Factors.

Predisposing factors for insomnia include being female, older and those who are obese (Roth, 2007; Neubauer, 2009). Tsai et al. (2006) identifies significant predictors of poor sleep as having no spouse and/or a low education level in a sample of 196 nursing

home patients. Internal factors causative for insomnia symptoms include experiencing subclinical worry, blue mood, or conditioned arousal in the bedroom (Lichstein, Wilson, & Johnson, 2000). Friedman et al. (1995) identify stressful events associated with sleep disorders as bereavement, retirement, and divorce.

Psychiatric Illness.

The most common co-morbidity associated with insomnia is the presence of a psychiatric disorder with anxiety and depression being most prevalent (Roth, 2007). Roth (2007) estimates 40% of individuals with insomnia have co-morbid anxiety and depression. The World Sleep Foundation (2009) reports that individuals experiencing depression are 2.5 times more likely to report insomnia; in some cases insomnia was the only symptom reported.

In a large scale study of about 15,000 individuals it was found that insomnia preceded versus followed co-morbid psychiatric illnesses (Ohayon & Roth, 2003). Cho et al. (2008) conducted a two-year longitudinal study of 145 individuals with a history of depression and 205 individuals without depression. The findings suggested that the presence of a sleep disorder is a strong predictor of depression recurrence.

Behavioral Factors.

Behavioral factors that contribute to sleep disturbance include stimulants (i.e. caffeine and nicotine), engaging in high stimulus activities before bedtime, staying in bed too late in the morning, excessive sleeping during the day, and having irregular bedtimes (Krishnan & Hawranik, 2008; Nau, McCrae, Cook, & Lichstein, 2005). Shift work and consuming heavy meals or liquids before bedtime may contribute to poor sleep quality (U.S. Department of Human and Health Services, 2003; WSF, 2009).

Tamaki, Shirota, Hayashi, and Hori (2000) investigate effects of a short afternoon nap of 30 minutes or less versus doing restful activities such as watching television. Regular napping significantly reduced subjective sleepiness and fatigue in the afternoon, whereas restful activities did not result in similar benefits. The benefits of napping explored by Campbell, Murphey, and Stauble (2004) illustrate that napping, between the hours of 2 and 4 p.m., has little effect on night time sleep quality or duration. Napping results in improvements in cognitive and psychomotor performance (i.e. logical reasoning, reaction time). These findings suggest that a short afternoon nap is beneficial for elderly persons in improving their daytime psychological, behavioral and physiological arousal (Campbell et al., 2004; Tamaki et al., 2000).

Medical Complications.

According to Roth (2007), having multiple medical complications is a risk factor for developing a sleep disorder (Roth, 2007). Seventy-five to ninety percent of individuals with insomnia have increased risk for a co-morbid medical disorder. Chronic illnesses such as conditions resulting in hypoxemia and dyspnea, gastroesophageal reflux disease, pain conditions, and neurodegenerative diseases are a significant risk for insomnia (Roth, 2007). Sleep-related movement disturbance (restless leg), which may be genetic or secondary to iron or folic acid deficiency anemia, may cause insomnia (Floyd, Medler, Ager, & Janisse, 2000). The experience of menopause, asthma, hypertension, and diabetes may exacerbate symptoms of insomnia (WSF, 2009).

Medication Side Effects.

Medical conditions that coincide with insomnia often require polypharmacy in order to alleviate the primary underlying condition (Ancoli-Israel, 2005). However,

multiple medications increase susceptibility to experiencing symptoms of insomnia. Lichstein et al. (2000) listed examples of medications that likely include insomnia as a side effect such as energizing anti-depressants, anti-hypertensives, and bronchodilators. Sedative hypnotic medications, commonly used as a front-line medication to alleviate insomnia (Neubauer, 2009), may have negative affects on daytime alertness, psychomotor function, and the ability to perform daily tasks (Glass, Lanctot, Herrmann, Sproule, & Busto, 2005).

The use of hypnotics and psychostimulant drugs can disrupt the normal sleep wake architecture and affect perceived sleep quality (U.S. Department of Health and Human Services, 2003). Over-the-counter medications also carry a risk for causing sleep problems (Ancoli-Israel, 2005). Persons who self-medicate run the risk of dose-related impairments in sleep/wake architecture and may experience side effects that can cause or exacerbate sleep disturbance (U.S. Department of Health and Human Services, 2003; Bloom et al., 2009).

Sleep Disturbance Issues in the Elderly Population

Many factors are associated with an increased risk for disrupted sleep in older age such as health problems and medication use combined with lifestyle adjustments including retirement, nursing home placement, or loss of loved ones (Morgan & Clark, 1997). From an epidemiological study of community-dwelling elderly individuals, Foley et al. (1995) conclude that between 12% and 25% of healthy seniors report chronic insomnia. The researchers report that this statistic is even higher among adult individuals with co-morbid illnesses. From a sample of 1,500 elderly individuals 83% reported having one or more medical conditions (Foley, Ancoli-Israel, Britz, & Walsh, 2004). Of

that sample 44 % reported experiencing one or more symptoms of insomnia at least a few nights per week (Foley et al., 2004).

Lichstein et al. (2000) report that during the middle years of an individuals' life the rate of insomnia reports are stable. However, the prevalence rises abruptly in decades 70-79 and 80-89. The amount of awakenings per night and the time spent awake trying to sleep is greater in older adults (Lichstein et al., 2004). Ohayon, Carskadon, Guilleminault, and Vitiello (2004) conducted a meta-analysis of 65 studies including over 3,500 individuals from ages 5 to 102 years. The analysis reveals that sleep latency, percentage of stages 1 and 2 light sleep, and waking after sleep onset increased with age (specifically, these changes were constant over the age of 60). Additionally, sleep efficiency (i.e. total sleep time/total bed time), the percentage of slow-wave sleep, the percentage of rapid eye movement (REM), and REM sleep latency all decrease with age.

Krishnan and Hawranik (2008) associate changes in sleep patterns with age to a loss of neurons resulting in changes of sleep architecture and development of desynchronization between the circadian pacemaker and environmental cues. Melatonin (a neurohormone) released at night, is an important factor in the sleep/wake cycle decreases with age (Holcomb, 2006). Further, the circadian rhythm (i.e. 24 hour physiological sleep/wake rhythm) is directly synchronized by external cues such as light to the 24 hour day in which, diminished light exposure can indirectly desynchronize that rhythm. In older adults, the circadian rhythm shifts and this is believed to be secondary to changes in core body temperature, diminished light exposure, and genetics (Ancoli-Israel & Cook, 2005).

A large sample of 9,008 community dwelling Canadians, 65 and older, reported experiencing changes in sleep in accordance with old age (Rockwood et al., 2001). Analyses of data showed that 18.6% experienced early morning awakenings, 18.1% had difficulty falling asleep, and 30.9% reported daytime sleepiness. Pressman and Fry (1998) note that some changes in sleep patterns are normal as one ages such as an increased amount of light sleep (stages 1 and 2); a decreased amount of deep sleep (stages 3 and 4); and less time spend in the rapid eye movement (REM) stage of sleep. Overall, sleep quality and sleep efficiency (total sleep time/total bed time) seem to decrease with normal aging to 70-80%. The researchers note that individuals may express this as an experience of lighter and more fragmented sleep. A recommended sleep pattern for the older person is developed by Pressman and Fry (1998) to include: allowing time to fall asleep of up to 30 minutes, getting an average of 6 hours of sleep at night, and obtaining a sleep efficiency of around 85% (e.g. getting 7 hours of sleep while in bed for 8 hours).

Intervention for Sleep Disturbance

Pharmaceutical.

There are currently 10 drugs approved for the treatment of insomnia by The Food and Drug Administration (FDA, 2009). The 10 drugs fall under the category of hypnotics which are separated into benzodiazepines, nonbenzodiazepines, and a melatonin receptor agonist (FDA, 2009). Benzodiazepines are comprised of hypnotic, sedative, anxiolytic, anticonvulsant, muscle relaxant, and amnestic properties (Bloom et al., 2009) including; Flurazepam, Quazepam, Estazolam, Temazepam, and Triazolam (FDA, 2009). Nonbenzodiazepines, also called benzodiazepine receptor agonists, are structurally

different than benzodiazepines but act similarly (Bloom et al., 2009). There are four drugs available in the classification of nonbenzodiazepines including Eszopiclone (Lunesta), Zolpidem (Ambien) ER, Zolpidem, and Zaleplon (FDA, 2009). The melatonin receptor agonist, Ramelteon, is relatively new and is thought to be involved in the maintenance of the circadian rhythm by acting on melatonin receptors (Bloom et al., 2009).

Bloom et al. (2009) explains that older people may be at greater risk for increased side effects secondary to pharmacokinetic factors such as reduced ability to eliminate drugs from the blood (e.g. prolonged sedative effects from hypnotics). Ramelteon, used primarily for sleep onset insomnia (FDA, 2009), includes adverse events of headaches, somnolence, and dizziness (Bloom et al., 2009). Glass et al. (2005) report that hypnotic medication could have adverse effects on cognitive function (i.e. daytime alertness), psychomotor function, and in the ability to perform daily activities. A study conducted by Ensrud et al. (2003) on 8,127 older, community-dwelling women concludes that benzodiazepine use increases the risk of falling. The analyses attributed benzodiazepine use with 34% increased risk of experiencing at least one fall and a 51% increased risk of multiple falls compared to non-users.

To determine the efficacy and common side effects of benzodiazepines in comparison to placebo and other treatments for insomnia, researchers conducted a meta-analysis on the short-term effect of benzodiazepines for treatment of primary insomnia (Holbrook, Crowther, Lotter, & Endeshaw, 2000). The researchers obtained 45 randomized control trials which represented a total of 2,672 patients, in which 19 of the studies included participants age 65 and older. The analysis of data demonstrates

decreases in sleep latency and significant increases in total sleep time with benzodiazepine use compared to placebo (Holbrook et al., 2000). Morin, Colecchi, Stone, Sood, and Brink (1999) compared drug efficacy to behavior treatment finding triazolam to be more effective than behavioral therapy in reducing sleep latency; however, drug efficacy declined by the second week and behavioral therapy remained effective throughout the 9-week follow-up. The researchers report an increase in side effects with the use of benzodiazepines, however increase reports of adverse effects did not relate to discontinuation (Holbrook et al., 2000).

Petit et al. (2003) reports that the use of pharmacological treatment should be limited to 4 weeks secondary to short periods of efficacy, dependence and withdrawal symptoms. Hypnotic dependent insomnia (HDI) is a disorder related to the chronic use of sleep medication (Nau et al., 2005). HDI consists of patterns of tolerance/dependence and the intensification of symptoms (i.e. rebound insomnia) once a medication use is stopped (Nau et al., 2005). Older adults are at a higher risk for developing HDI caused by increased use of hypnotic medications (Nau et al., 2005). Ohayon, Caulet, Preist, and, Guilleminault (1998) portrayed utilization rates of older adults as between 3-21% in older men and 7-24% in older women while younger age groups utilized 2-4%. Although the use of medications for insomnia have been shown to be effective for acute insomnia symptoms, there are significant risks involved including increased side effects, tolerance, and dependency. The risks are substantially greater in the elderly population secondary to physiological changes with age.

Complimentary and Alternative Treatments.

Acupuncture

Acupuncture is a clinical treatment modality in an independent medical system of Traditional Chinese Medicine developed over 3000 years (FDA, 2006). The process of acupuncture involves piercing specific body areas with fine needles, which is believed to treat imbalances of the body's air, blood, and fluid known as the body's Yin and Yang (Cheuk, Yeung, & Chung, 2009). Huang, Kutner, and Bliwise (2009) conducted a systematic review of effects of acupuncture treatment for insomnia in English and Chinese research based literature. Acupuncture treatments included: regular body acupuncture, tolling needle, acupoint taping with herbal preparation, auricular treatment with seed pressing or magnetic pearls, and acupressure. Thirty studies were incorporated in the literature review, 93% of which demonstrated positive intervention effects of acupuncture on sleep.

Two studies that included follow-up measures found long-term treatment efficacy of acupuncture on sleep (Wang, Kang, Zhou, Hu, & Li, 2006; Suen, Wong, Leung, & Ip, 2003). Research comparing acupuncture to medication control (i.e. benzodiazepines) show superior benefits from acupuncture (Cui & Zhou, 2003; Li, Liu, & Zhu, 2005); one study, however, found medication to have quicker benefits while acupuncture required more treatments to surpass the effectiveness of medication (Lian & Yan, 1990). Acupuncture treatment for insomnia has been shown to be effective in the long-term and efficacy is related to the number of treatment sessions.

Exercise

Moderate-intensity exercise programs have resulted in improvements in overall sleep quality among the elderly population (King, Oman, Bliwise, & Haskell, 1997; King, Pruitt, Woo, & Castro, 2008). King et al. (1997) compared a moderate intensity exercise program of 30-40 minute endurance training sessions (e.g. low-impact aerobics, fast walking) to a wait-listed control group. Participants experiencing 16-week exercise programs showed significant improvement in the Pittsburgh Sleep Quality Index (PSQI), rated sleep quality, sleep-onset latency, and sleep duration.

King et al. (2008) studied the long-term impact of increasing exercise on objective and subjective sleep quality in previously inactive older individuals with mild to moderate sleep complaints. Exercise sessions included 60-minute exercise classes 2 days/week in the morning and early afternoon hours. Moderate-intensity exercise sessions included aerobic movement using step platforms for 35-40 minutes along with basic stretching, strengthening, and balance exercises. Participants were instructed to complete 30 minute at-home exercises 3 days/week at their target heart range (which the researchers described as 60%-85% of baseline treadmill-based peak heart rate using Polar monitors). The treatment group, experiencing a 12 month exercise program, spent more time in stage 2 sleep and had significantly fewer awakenings during the first 1/3 of the sleep period. At the 12 month follow-up, the exercise group reported greater improvements than the control group in the Pittsburgh Sleep Quality Index, reported less minutes to fall asleep, and felt more rested in the morning compared to the control group. Overall moderate-intensity exercise is shown to improve sleep-onset latency and sleep duration while promoting a feeling of restfulness and a better perception of sleep quality.

Bright Light Therapy

The circadian rhythm is directly synchronized by external cues such as light to the 24 hour day; diminished light exposure can indirectly desynchronize that rhythm (Ancoli-Israel & Cook, 2005). Ancoli-Israel (2005) suggests that the best source of light is the sun and encourages older adults to spend time outdoors while the sun is shining. However, when sunlight is unavailable, substituting a bright light box on the dinner table, television, or desired location is beneficial.

The effect of bright light therapy was studied on 18 nursing home participants with sleep problems (Fetveit & Bjorvatn, 2004). For 14 days, bright light treatment consisted of light box exposure for 2 hours a day between 8 a.m. and 11 a.m. Analyses of outcomes reveal that bright light treatment improves sleep efficiency, total wake time, sleep-onset latency and early morning awakening. Beneficial effects remained until 12 weeks post-treatment, after which participants sleep patterns returned to baseline. The conclusions of the study demonstrate that bright light therapy is effective as long as the intervention is being provided. It is important to encourage exposure to natural sunlight, however if natural exposure is not feasible bright light therapy is an effective substitute.

Biofeedback

Biofeedback works by providing an immediate signal that reflects tension level via electromyographic activity or EEG activity. The theory of biofeedback is that the patient will learn how to sufficiently relax when given immediate feedback at times of stress and/or tension in order to improve sleep (Summers, Crisostomo, & Stepanski, 2006). The patient is prompted to utilize relaxation strategies once alerted to increased tension. The researchers note that patients may require 30 to 90 sessions in order to

achieve relative mastery in incorporating relaxation strategies for the improvement of sleep.

Nicassio, Boylan, and McCabe (1982) conducted a study comparing progressive muscle relaxation, biofeedback, and placebo. Progressive muscle relaxation and biofeedback lead to significantly reduced sleep-onset latency and depressive symptoms. When compared individually neither treatment resulted as significantly more effective than the other. Biofeedback requires commitment from individuals to achieve relative mastery. In order to experience benefits of biofeedback, the ability to achieve a relaxed state when prompted is essential.

Tai Chi Chih

Irwin, Olmstead, and Motivala (2008) included Tai Chi Chih in a clinical study and defined it as a health-management intervention incorporating meditation and repetitive physical movements to promote well-being. Tai Chi Chih intervention compared to health education with a sample of 112 healthy elderly individuals resulted in improved perception of sleep quality (Irwin et al., 2008). To assess perceived sleep quality participants completed the Pittsburgh Sleep Quality Index, in which a global score higher than 5 indicates poor sleep quality. At the 25 week follow-up, 19 of 30 participants receiving Tai Chi Chih reported global scores of less than 5 compared to 7 of 22 in the health education group reporting scores less than 5 (Irwin et al., 2008).

In a randomized controlled trial of 118 community-dwelling elderly individuals, Tai Chi Chih resulted in improvement of five PSQI subscores (sleep quality, sleep-onset latency, sleep duration, sleep efficiency, sleep disturbance) in comparison with low-impact exercise (Li et al., 2004). The utilization of meditation practices and repetitive

physical movements, in the art of Tai Chi Chih, leads to a better perception of sleep quality.

Self-Management

A study conducted on nursing home patients by Tsai, Wong, and Ku (2006) found that the participants' main source of self-management techniques came from self learning, while the majority of participants did not have any self-care strategies to deal with their disturbances. The study participants reported extremely low effectiveness of used strategies, such as 'ignore it', 'stare blankly', 'clear ones mind' and 'sit down'. Tsai et al. (2006) state that deficits in self-management abilities may be because of lack of knowledge and suggest future interventions should address older persons' knowledge about and skills for managing sleep disturbance.

Utilizing self-help methods as an approach to treatment of sleep disorders was evaluated by Adachi, Sato, Kunitsuka, Hayama, and Doi in 2008. Included in the program were self-assessments, target-setting, educational booklets, self-monitoring, and reinforcement. Forty-seven Japanese participants reported baseline sleep onset latency of over 30 minutes and sleep efficiency of less than 85%. After one year participants reported less working and watching television in the bedroom. Overall analyses showed an increase total sleep time of 27 minutes, while sleep onset latency was reduced by 20 minutes. Participants spent an average of 14 less minutes awake at night and sleep efficiency improved an average of 6.9 points at the one year follow up of the self-help program. Self-help techniques are effective in the management of sleep; however, self-care strategies based solely on self learning has been shown to be ineffective. Incorporating a program that provides support, tailored educational strategies, and

effective sleep management techniques have resulted in promotion of healthy habits, improved sleep efficiency, increased total sleep time, while reducing sleep onset latency.

Cognitive-Behavioral Therapy (CBT).

The basis of cognitive-behavioral therapy in the treatment of sleep disorder is to replace irrational beliefs and attitudes with more adaptive substitutes resulting in a sense of control or self-efficacy over sleep (Krishnan & Hawranik, 2008). The cognitive component of CBT is accomplished through the use of several cognitive restructuring techniques and sleep hygiene education. Behavioral modifications are addressed through relaxation techniques, sleep restriction, and stimulus control. The combination of several different interventions for the treatment of insomnia is also referred to as multi-component therapy (Petit et al., 2003). Belanger, Savard, and Morin (2006) attribute maintained and exacerbated sleep disturbances to behaviors, beliefs, attitudes, and interpretations of initial sleep difficulties.

Cognitive restructuring is a type of cognitive therapy that modifies dysfunctional cognitive processes (Summers et al., 2006). Often individuals exclusively attribute insomnia to external factors such as hormonal changes or aging which is likely to promote the belief that nothing can be done to improve sleep patterns (Belanger et al., 2006). This thought process results in feelings of helplessness and justifies feelings of victimization. Cognitive restructuring challenges the victimization thought process and guides patients to consider alternative explanations for sleep disturbance.

The aim of cognitive restructuring therapy is to identify, challenge, and change dysfunctional beliefs about sleep and to replace them with more rational substitutes (Morin et al., 1999). This process provides individuals with a sense of control and self-

efficacy over their sleep patterns (Petit, 2003). The consequences of dysfunctional beliefs about sleep can result in reactions of worrying over sleep loss and rumination over daily consequences as a result (Belanger et al., 2006). Belanger et al. (2006) explains that individuals often blame sleep problems on daily fatigue, performance deficits, and mood disturbances. The thinking process relating insomnia to all daytime impairments perpetuates insomnia. Often bedtime is a time individuals experience sleep disturbing thoughts which increase anxiety such as worrying about uncontrollable factors such as past negative life events, tomorrow's work load, exams, or chores.

Cognitive restructuring therapy works by challenging perceptions and guiding individuals to realistic contributing factors of daytime impairments. The process of cognitive restructuring guides individuals in identifying negative automatic thoughts related to sleep dysfunction and in recognizing the relationship between thought processes, emotions, success in daily functions, and behaviors (Belanger et al., 2006). Next individuals are prompted to challenge their dysfunctional automatic thoughts and begin to substitute rational interpretations for their thought processes. The last step of cognitive restructuring entails modification of core beliefs that contribute to dysfunctional perceptions of the problem.

Specific recommendations include maintain realistic expectations, don't attribute sleep problems to all daytime impairments, don't over analyze after experiencing one bad nights sleep, challenge attributions given to sleep dysfunction, and develop coping strategies to the effects of sleep loss. At times individuals have unrealistic expectations on achieving a specific sleep standard which results in exacerbation of sleep disturbance secondary to increased arousal from performance anxiety.

Cognitive behavioral therapy is the most utilized psychological nonpharmacological treatment for insomnia (Bain, 2006). Cognitive-behavioral therapy for sleep improvement includes components of sleep restriction, sleep hygiene, stimulus control and relaxation therapy (Krishnan & Hawranik, 2008). Based on a review of previous research, Bain (2006), reports that stimulus control therapy and sleep restriction are considered to be the most effective single therapies, whereas sleep hygiene education is not as effective as a mono-therapy. Durability, safety, lack of dependency, and the cost effectiveness of CBT warrants the intervention as high priority in the treatment of geriatric insomnia even when pharmacotherapy is needed (Kamel & Gammack, 2006; Ancoli-Israel & Ayalon, 2006).

The focus on CBT utilization in the treatment of sleep disorder is also related to efficacy of treatment maintenance over time (Morin et al., 1999). Belanger et al. (2006) analyzed a series of meta-analyses of CBT treatment efficacy and results from the controlled clinical trials support the utilization of CBT with findings that 70% to 80% of patients with primary insomnia sustain treatment gains over time (Morin, Culbert, & Schwartz, 1994; Morin et al., 1999; Murtagh & Greenwood, 1995; Smith et al., 2002).

Bloom et al. (2009) reports that past studies have shown combination therapy to be effective, while medications provided short-term improvements and behavior therapy lead to longer-term sustained benefit. Morin et al. (1999) conclude that combination therapy is more effective than pharmacological or behavioral interventions alone. However a study conducted by Jacobs, Pace-Schott, Stickgold, and Otto (2004) found that combination therapy resulted in improved sleep-onset latency at one-month however

these results were not significant three-, six-, and 12-month follow-ups whereas CBT alone maintained improvement at the 12-month follow-up.

Studies that have tested CBT, pharmacological therapy, a combination of both, and placebo have found that CBT alone is more effective in short and long-term outcomes (Jacobs et al., 2004; Siversten et al., 2006). CBT alone resulted in improved sleep efficiency, total wake time, slow-wave-sleep time, sleep onset latency, and in maintenance of goals over time (Jacobs, et al., 2004; Siversten et al., 2006). CBT alone was the most effective intervention producing significantly more improved changes in sleep-onset latency and sleep efficiency (Jacobs et al., 2004). CBT alone maintained therapeutic gains at the 12-month follow-up while pharmacotherapy produced only moderate improvement during drug administration and after drug discontinuation measures returned to baseline (Jacobs et al., 2004). The CBT group, analyzed by Sivertsen et al. (2006), improved their sleep efficiency from 81.4% at pretreatment to 90.1% at 6 month follow up compared to a pharmacological group which saw a decrease in sleep efficiency from 82.3% to 81.9%.

A meta-analysis conducted by Nau et al. (2005) report similar results of three different studies, as CBT was found to produce a decrease in wake after sleep onset and increases in sleep efficiency (Benson, 1975; Edinger et al., 1992; Morin et al., 1999; Morin, Kowatch, Barry, & Walton, 1993). One of the study results demonstrated slight improvement in sleep onset latency (Benson, 1975). Morin et al. (1999) report qualitative findings that behavioral therapy, alone or in combination with pharmacotherapy, was identified by participants, significant others, and practicing clinicians as more effective than pharmacological therapy alone. Participants who

received the CBT reported higher satisfaction with benefits experienced over drug therapy (Morin et al., 1999). CBT therapy is effective in short-term remediation of insomnia symptoms, is perceived by consumers as an effective single therapy, and the effects of CBT treatment are well-maintained over long periods of time.

Stimulus Control

Bootzin developed stimulus control therapy in 1991 with the goal to create an environment that promotes sleep (Montgomery & Dennis, 2009). This is achieved by developing a consistent sleep rhythm, strengthening the bed as a prompt for sleep and inversely weakening any alert response to the bed (Engle-Friedman et al., 1992).

Montgomery and Dennis (2009) explain Bootzin's stimulus control instructions as: retire to bed only when sleepy; leave the bedroom after lying awake for 20 minutes and engage in activities until drowsy; designate the bedroom be used for sleep and sex only; and to develop habits of regular morning rise times and evening bedtimes.

To educate on components of stimulus control therapy, Petit et al. (2003) discourage reading, watching television, eating or worrying while in bed. Neubauer (2009) describes a sleep promoting environment as dark, cool, and comfortable with minimal disturbing noises. White noise such as a fan or sound machine can block out disturbing noises. Alcohol, caffeine, and nicotine should be avoided late in the day and that exercise routines should be scheduled at least 3 hours before bedtime. Large meals should be avoided before bedtime; small snacks such as warm milk or turkey have a natural sleep inducer called L-tryptophan that may induce sleepiness (Neubauer, 2009).

Through a meta-analysis of current evidence-based studies, Nau et al. (2005) show consistency of 5 studies with stimulus control instructions resulting in at least mild

to moderate improvement in sleep onset latency and wakening after sleep onset (Davies, Lacks, Storandt, & Bertelson, 1986; Engle-Friedman et al., 1992; Morin & Azrin, 1988; Paleesen et al., 2003; Puder, Lacks, Bertelson, & Storandt, 1983). Data analysis show that stimulus control instructions were most effective in improving sleep perception on sleep diaries in comparison to relaxation therapy and sleep hygiene (Engle-Friedman et al., 1992). Engle-Friedman et al. (1992) report higher patient compliance with stimulus control instructions compared to relaxation therapy. Stimulus control therapy is shown to improve perception of sleep quality while improving sleep-onset latency and reducing the number of awakenings after sleep onset. Stimulus control therapy requires minimal treatment sessions as individuals can easily use the information to readily guide themselves in future use.

Sleep Restriction

Sleep restriction therapy is based on incorporating mild sleep deprivation to improve sleep efficiency (Spielman, Saskin, & Thorpy, 1987). This is accomplished through following a program that limits time in bed (Neubauer, 2009). In order to establish an individuals' average sleep time, keeping a sleep diary logging time in bed versus time spent asleep for a two-week period is advised (Petit et al., 2003). The average amount of time spent asleep is the baseline for the amount of time that can be spent in bed (Krishnan & Hawranik, 2008). The goal for sleep efficacy (total sleep time/total time in bed x100) is between 80-90% (Petit et al., 2003). If an individual has a sleep efficacy of greater than 90%, time allowable in bed is increased by increments of 15-20 minutes. Inversely, if sleep efficacy is below 80% time in bed is decreased by 15-20 minute increments. Petit et al. (2003) recommend weekly re-evaluation of sleep efficacy and

permit elderly individuals to take brief midday naps. Sleep compression is similar to sleep restriction; however individuals make changes in sleep habits in a more gradual process (Ancoli-Israel, 2005).

A study investigating the effectiveness of sleep restriction as a behavioral treatment found that sleep onset latency was reduced, combined medication use lessened, and therapeutic gains were maintained over time (Baillargeon, Demers, & Ladouceur, 1998). The researchers included 15 chronic insomniac patients, 80% of them reduced their sleep-onset latency, six of the seven using hypnotics at the beginning of the study reduced or stopped their medications, while all therapeutic gains were maintained at 3 and 6 months (Baillargeon et al., 1998).

Further, Lichstein, Riedel, Wilson, Lester, and Augillard (2001) compared sleep restriction to relaxation strategies and found that both produced significant improvements in sleep latency and number of awakenings after sleep-onset. Sleep restriction resulted in better maintenance of outcomes at the one-year follow-up compared to relaxation techniques (Lichstein et al., 2001). Nau et al. (2005) examined the efficacy of sleep restriction or sleep compression in four clinical studies and found moderate improvement in at least one major sleep variable including sleep onset latency, wakening after sleep onset, sleep efficiency, or total sleep time (Friedman et al., 1991; Friedman et al., 2000; Lichstein, et al., 2001; Riedel, Lichstein, & Dwyer, 1995). Studies conducted by Friedman et al. (1991) and Riedel et al. (1995) showed results in large mean decreases in sleep onset latency after receiving sleep restriction therapy. The effectiveness of sleep restriction is evident in maintenance of benefits over time such as, reductions of sleep-

onset latency and number of awakenings. The process requires the ability to continually re-evaluate sleep efficiency and to subsequently adjust sleep patterns accordingly.

Sleep Hygiene

The process of sleep hygiene consists of teaching individuals the impact of certain lifestyle habits and the influence of environmental factors on sleep (Bastien, Morin, Ouellet, Blais, & Bouchard, 2004). Summers et al. (2009) reports that around 30% of individuals seeking treatment for insomnia from a sleep center have insufficient sleep hygiene as either a primary or secondary diagnosis. The goal of sleep hygiene education is to implement lifestyle and environmental changes to optimize sleep quality (Petit et al., 2003). Sleep hygiene recommendations highlight behaviors that promote better quality sleep, and advise against behaviors that negatively influence sleep (Nau et al., 2005). Teaching about normal sleep changes with aging helps to teach individuals how to sleep better by shaping realistic expectations (Nau et al., 2005).

Sleep hygiene has been utilized in conjunction with other treatments and found to have beneficial effects. A clinical study comparing sleep hygiene education alone to a combination of acupuncture and sleep hygiene showed combination therapy as more effective (Da Silva, Nakamura, Cordeiro, & Kulay, 2005). Lichstein et al. (2000) report that combining sleep hygiene education to stimulus control and relaxation therapies result in less awakenings, a greater sleep efficiency percentage, and sleep quality rating.

The lack of a standard sleep hygiene procedure results in an inability to compare treatment efficacy between clinical trials (Nau et al., 2005). Researchers have come to mixed conclusions about sleep hygiene effectiveness as a stand alone therapy. Bloom et al. (2009) reports that sleep hygiene education is not sufficient enough to be used alone

for the treatment of insomnia. In a meta-analysis conducted by Nau et al. (2005) sleep hygiene was found to be consistently effective, though less effective than compared treatments (Engle-Friedman, 1992; Friedman et al., 2000; Riedel et al., 1995). After receiving sleep hygiene support alone participants reported feeling more refreshed upon awakening, total naptime declined, as well as awakenings longer than 10 minutes throughout a 2 year assessment period (Engle-Friedman et al., 1992). Users of sleep-hygiene therapy report increased self-efficacy and decreased concern in regard to sleep however, it is recommended to utilize sleep-hygiene therapy as a conjunctive treatment method.

Relaxation Therapy

The purpose of incorporating relaxation techniques in the treatment of sleep is to decrease physiological, cognitive, or emotional arousal (Krishnan & Hawranik, 2008). Relaxation therapy includes progressive muscle relaxation, meditation, deep breathing, and guided visual imagery. Engle-Friedman et al. (1992) implemented progressive relaxation training in a study comparing the effects to stimulus control therapy. The researchers utilized relaxation training described by Bernstein and Borkovek in 1973. Participants focused on muscles of the arms, neck, face, chest, and legs implementing tension cycles lasting 5 seconds and release cycles lasting 35 seconds. The tension release cycles were practiced twice per day, one cycle prior to bedtime. The group receiving relaxation therapy reported the most restful sleep at the 3-week follow-up and reported feeling more refreshed in the morning at the 2-year follow-up compared to subjects who received stimulus control. Additionally, individuals reported less time to

fall asleep, increased self-efficacy, and decreased concern in regard to sleep (Engle-Friedman et al., 1992).

In a meta-analysis conducted by Nau et al. (2005) progressive muscle relaxation therapy was found to be moderately effective (Eng-Friedman et al., 1992; Friedman, Bliwise, Yesavage, & Salom, 1991) and mildly to moderately effective (Friedman et al., 1991) in studies comparing sleep onset latency. However, the researchers note that the effects of progressive relaxation have been inconsistent (Edinger et al., 1992; Pallesen et al., 2003; Lick & Heffler, 1977; Nicassio & Bootzin, 1974).

Lichstein et al. (2000) combined a hybrid relaxation therapy to sleep hygiene and stimulus control and report improvement on wake time, sleep efficiency, and sleep quality. The hybrid relaxation procedure consisted of promoting a relaxed attitude, deep breathing with self-talk stating “relax” with each exhale, focusing on relaxed sensations, and repeating the phrase “I am at peace, my arms and legs are heavy and warm” (Lichstein et al., 2000, p.235). Nau et al. (2005) report that efficacy of relaxation therapy is more consistent in passive forms such as hybrid passive relaxation (Lichstein & Johnson, 1993; Lichstein et al., 2000) and imagery training (Morin & Azrin, 1988) than for progressive muscle relaxation. Imagery training consists of visualizing a scene that is thought to be calm and relaxing (Summers et al., 2006). Both active and passive forms of relaxation methods appear to be effective in the treatment of sleep with improvements in sleep efficiency, sleep quality, and sleep-onset latency.

Gerogogy

In order to incorporate self-help education practices appropriate to the older adult learner, it is necessary to understand gerogogy. Teaching of older persons is known as

gerogogy in which effective teaching must accommodate the normal psychosocial, cognitive, and physical changes that happen as the aging process occurs (Weinrich & Boyd, 1992). In order to function as an educator it is important to be knowledgeable not only about the content of the information being conveyed, but about the capability of the learner and the teaching-learning process as well (Ager, 1986).

Psychosocial.

Knowles, Holton, and Swanson (2005) identify several assumptions about adult learners: motivation is directly related to the experience of a need or interest, orientation to learning is life-centered, experience is the best source of learning, there is a need for adult learners to be self-directed, and individual differences increase with age. Others have agreed that motivation and experience are important as Ellison (1985) reports that reminiscing over memories and significant life experiences can be very stimulating, enhances the therapeutic relationship, and are powerful in the motivation process. Kick (1989) identifies a successful teaching and learning process within the geriatric patient if it is individualized to the older person and their experiences during the aging process.

The U.S. Department of Education (2003) report that individuals 65 and older were found to have health literacy skills at or below basic literacy levels. The low literacy levels in the older adult population contribute to difficulty reading and comprehending written health materials (Bastble, 2006). Estey, Musseau, and Keehn (1991) advises that materials be written at a fifth or sixth grade reading level, as the average reading level of the population is approximately eighth grade. Pearson and Wessman (1996) report that learning will be accomplished if motivation is present as motivation can compensate for a

lower educational level. Pearson and Wessman (1996) identify the fear of living in a nursing home as the greatest incentive for learning in the elderly.

Cognitive.

People have two kinds of intellectual ability-crystallized and fluid intelligence (Kray & Lindenberger, 2000; Theis & Merritt, 1994). Crystallized intelligence is the intelligence gathered throughout a life span, which usually increases with age (Theis & Merritt, 1994). Fluid intelligence which is responsible for reasoning and abstract thinking usually declines with older age (Kray & Lindenberger, 2000). As individuals age cognitive ability changes due to a loss of neurons in the brain (Pearson & Wessman, 1996). This loss of neurons causes lessened ability to comprehend new skills, memory loss, and decline in intelligence (Pearson & Wessman, 1996). Common occurring changes noted in the elderly are decreases in sensory processing, short-term memory, and memory sequencing. Older adult learners have a slower processing time and need more time to process and react to information (Kray & Lindenberger, 2000). However, when time restraints are not a factor elderly individuals perform equally to younger adults (Kray & Lindenberger, 2000).

Charlene Ager, MA, OTR conducted a review of the literature related to learning and age-related changes (1986). Ager identified recommendations specific to occupational therapists and physical therapists in structuring learning environments and in adapting teaching methods to enhance the learning process for the elderly. Ager reports that when elderly are given instructions in the use of memory strategies, learning and performance improves. Ager reports that using concrete language will enable older adults to learn concepts more accurately and efficiently. Ager (1986) advises information

be presented in a highly organized fashion with an emphasis on important information, as elderly persons seem to be unable to ignore irrelevant and/or redundant information.

Visual displays should be simple and demonstrate a few significant points (Ager, 1986) and directions should be short, distinct, and step-by-step (Ahroni, 1996).

Physical.

As the body matures, adjustments must be made to the teaching style in order to accommodate these age-related changes. Bastable (2006) provides an overview of physical changes elderly individuals experience. Physical changes with age include sensory and motor deficits (Bastable, 2006, Table 5). Auditory changes occur such as decreased sensitivity to high pitched tones and rapid speech. Visual changes happen such as farsightedness, glare problems, and a decreased ability to adapt to darkness (Bastable, 2006, Table 5).

In order to address these physical changes, Bastable (2006, Table 5) suggests a few main teaching strategies such as speak-slowly and distinctly in low-pitched tones and to face the learner when speaking. The environment should be adapted to minimize distractions. Learning is enhanced with the utilization of visual aids to supplement verbal lessons. Pearson and Wessman (1996) report preferred methods of teaching in the elderly as incorporating large, 1-inch black letters on white paper with lines, implementing lessons no longer than 15-20 minutes.

Education results in improved quality of life, enhances independence and performance of daily activities, and empowers individuals (Bastable, 2006). Creating the just right challenge in order to effectively teach the geriatric learner requires consideration of psychosocial needs such as motivation and the need for the elder to be

self-directed in the learning process. Cognitive changes such as a decline in fluid intelligence support the need to provide adequate time to learn and to incorporate memory strategies. Physical changes necessitate a need for the teaching environment to be adapted to have minimal distractions with sufficient support for auditory and visual changes. A general rule is to provide education in a supportive manner in order to enhance performance.

Role of OT

The 2008 Occupational Therapy Practice Framework revised the range of activities categorized as ‘areas of occupation’ to include ‘Rest and Sleep’. ‘Rest and Sleep’ as an area of occupation, “includes activities related to obtaining restorative rest and sleep that supports healthy active engagement in other areas of occupation” (American Journal of Occupational Therapy Association [AOTA], 2008, p. 632). Activities related to ‘Rest and Sleep’ include rest, sleep, sleep preparation, and sleep participation. See Appendix A for further description.

‘Rest and Sleep’ were not included in the OT Practice Framework until 2008 secondary to a historical conflict of what defines ‘occupation’. Although few perspectives disagree about the negative effects that result from inadequate sleep, discussion on the parameters of occupation describe occupations as consciously executed (Larson, Wood, & Clark, 2003) and are activities engaged in during time awake (Kielhofner & Burke, 1985). These arguments attempt to rule out sleep as an occupational behavior through the mind frame that sleep, “is an unconscious process that cannot be influenced or directed” (Persson, Erlandsson, Eklund, & Iwarsson, 2001, p. 12). Howell and Pierce (2000) suggest that these messages and the thought that time spent asleep is time wasted

disregard Meyer's message on the importance of sleep in the promotion of health and well-being.

Adolf Meyer, one of the founders of occupational therapy philosophy, identifies sleep, work, play, and rest as the 'Big Four' factors associated with a healthy, balanced lifestyle (Meyer, 1922). Occupation is described by Crepeau, Cohn, and Schell (2003, p.1031) as "daily activities that reflect cultural values, provide structure to living, and meaning to individuals...". Sleep as an 'area of occupation' is supported as Green, Hicks, and Wilson (2007) identify sleep as an important factor around which individuals arrange their time and occupations. Christiansen and Mutaska (2006) note that insufficient sleep may cause lifestyle imbalance and inversely, lifestyle imbalance may result in poor sleep.

Martin (2002) suggests that sleep is often regarded as unproductive; therefore lifestyle balance may be sought at the expense of sleep with an increased likelihood of stealing sleep time. The occupational therapist role is focused on enabling individuals to participate in sleep and rest roles (West, 2009) with emphasis on the importance of sleep in the balance of daily activity. Occupational therapists can approach intervention of sleep through a combination of education and consultation; preparatory, purposeful, and occupation-based intervention; and in promoting environmental modification (West, 2009). Consulting on sleep importance and its complex relationship to balanced engagement in occupation, health, and well-being is warranted (Green, et al., 2007; West, 2009). Education provided on prevention of sleep loss or on improving rest and sleep is accomplished through establishing habits, routines, rituals, and roles that incorporate regular sleep patterns (West, 2009).

Green et al. (2007) compiled patient experiences and concerns through a focus group in order to provide a foundation for future therapy focus. Six individuals, with an average age of 50 years, expressed the desire for their insomnia symptoms and consequences of insomnia in daily life activities to be taken seriously. They reported the need for comprehensive information about methods for management and want evidence of efficacy (Green et al., 2007). The participants communicate a need for a collaborative partnership with their doctor [therapist] and want to be responsible for managing their problem (Green et al., 2007).

Green et al. (2007) suggest that the first step in management of insomnia is through occupational therapists' providing information that is applicable to patients' experience and expressed in terms they can relate to. Intervention for sleep can be applied with clients as part of inpatient rehabilitation programs or hospice care; in skilled nursing facilities, as a part of community/peer groups, mental health programs, or home health care programs; as well as in childcare centers or schools (West, 2009). Sleep intervention could benefit a variety of populations such as the geriatric population, individuals experiencing psychiatric illness, pregnant women, parents of young children, students, shiftworkers, individuals with chronic/acute illness, as well as individuals who experience obesity (West, 2009).

Historically, sleep has been an important aspect of everyday life activity. Just recently sleep has been incorporated into OT scope of practice as an area of occupation. Expert opinion suggests that sleep disturbance be approached through incorporating education, consultation, and intervention activities and can take place with multiple

populations in virtually any given setting. OT focus should be on enabling an individual to participate in sleep and rest roles as well as incorporating balanced, healthy routines.

Summary

The current literature has shown that elderly individuals have a predisposition to experiencing sleep disorder and highlights its impact on daily living; however 85% of cases of insomnia are left untreated due to lack of information or financial reasons (Sivertset et al., 2006). The incidence of sleep disturbance in the elderly is connected to lifestyle changes and normal physiological changes such as a reduction of melatonin and shifts in the normal circadian-rhythm. The body reacts negatively to the experience of sleep disorder affecting cognitive processes, the ability to safely and independently participate in daily occupations, and affects overall quality of life.

Healthcare providers are not fully recognizing the implications of compromised sleep and rest on an individuals' ability to participate in daily occupations at their full potential. The role of occupational therapy is to provide education on healthy habits, roles, and routines in order to promote a balanced, healthy lifestyle. The current literature has shown a variety of intervention techniques to be beneficial in the treatment of sleep disturbance.

The strongest evidence suggests that a comprehensive program should include components of CBT. CBT therapy is effective in the short-term remediation of insomnia symptoms, and is perceived by consumers as an effective single therapy. The effects of CBT treatment are well-maintained over long periods of time and have resulted in clients reporting a greater control of their sleep, that insomnia interfered less in their daily lives, and that they were less depressed (Baillargeon et al., 1998; Engle-Freidman, 1992;

Lichstein et al., 2000; Nau et al., 2005). CBT is a multi-component intervention which includes relaxation therapy, stimulus control, sleep restriction, and sleep hygiene.

Both active and passive forms of relaxation methods appear to be effective in the treatment of sleep with improvements in sleep efficiency, sleep quality, and sleep-onset latency. The effectiveness of sleep restriction is evident in maintenance of benefits over time such as, reductions of sleep-onset latency and number of awakenings. The process requires the ability to continually re-evaluate sleep efficiency and to subsequently adjust sleep patterns accordingly.

Stimulus control therapy is shown to improve perception of sleep quality while improving sleep-onset latency and reducing the number of awakenings after sleep onset. Stimulus control therapy requires minimal treatment sessions as individuals can use the information to readily guide themselves in future use. Users of sleep-hygiene therapy report increased self-efficacy and decreased concern in regard to sleep however, it is recommended to utilize sleep-hygiene therapy as a conjunctive treatment method.

The current literature has demonstrated an adequate amount of support for the utilization of complimentary and alternative approaches to the treatment of sleep disturbance. Exercise programs have resulted in improvements in sleep quality, sleep-onset latency, awakening after sleep-onset and have resulted in feeling refreshed upon waking (King et al., 1997; King et al., 2008). Overall moderate-intensity exercise is shown to improve sleep-onset latency and sleep duration while promoting a feeling of restfulness and a better perception of sleep quality.

Acupuncture treatment for insomnia has been shown to be effective in the long-term while efficacy is related to the number of treatment sessions. Biofeedback resulted

in sleep improvements yet requires commitment from individuals to achieve relative mastery. In order to experience benefits of biofeedback, the ability to achieve a relaxed state when prompted is essential.

The utilization of meditation practices and repetitive physical movements, in the art of Tai Chi Chih, leads to a better perception of sleep quality. Bright light therapy is an effective intervention for sleep disturbance as long as the intervention is being provided. It is important to encourage exposure to natural sunlight, however if natural exposure is not feasible bright light therapy is an effective substitute.

Despite the advantages of nonpharmacological interventions for insomnia, these therapies remain underused mainly due to their limited accessibility (Bastien et al., 2004). Additionally, time and effort constraints further encourage the use of pharmacotherapy (Bastien et al., 2004). Although the use of medications for insomnia have been shown to be effective for acute insomnia symptoms, there are significant risks involved including increased side effects, tolerance, and dependency. The risks are substantially greater in the elderly population secondary to physiological changes with age.

The review of literature demonstrates limited occupational therapy evidenced-based research focusing on the area of occupation of 'Rest and Sleep'. Currently the OT literature consists of expert opinion and initial research studies on focus groups in order to lay a foundation for future programming development. There is a need to develop OT programming specific to this problem that can be researched. The first step in developing adequate sleep programming is to look at existing literature across fields, to incorporate expert opinion, and to follow a model that guides occupation-based practice.

Expert opinion has highlighted the need for establishing healthy and balanced roles, habits, and routines that directly affect or are affected by sleep. An assumption of adult learning is that the learner is motivated directly by experiencing a need or interest (Knowles, Holton, & Swanson, 2005). The Model of Human Occupation is a good choice because a main premise in MOHO is in considering an individuals' volition while focusing on roles, habits, and routines (Kielhofner, 2004). Elderly individuals experience motivation as they have experienced a need- they can't sleep. Secondary consequences such as the relationship of sleep disturbance to experiencing a fall, driving accident, or accelerated placement into a nursing home promote incentive for seeking out intervention for sleep disorders.

This scholarly project aims to develop a program that provides support, tailored educational strategies, and effective sleep management techniques in promotion of healthy habits and sleep routines. Expert opinions suggest the use of comprehensive information about methods for management and evidence of efficacy while identifying the need for individuals to be responsible for their management of sleep problems. The use of a self-help method as an approach to treatment of sleep disorders will address expert opinion and incorporate cross-field evidenced-research. Chapter IV introduces the product, "Take Control of Your Sleep". This sleep manual is a low cost, self-help approach utilizing multi-component therapies that is aimed to meet the needs of elderly individuals residing in the community.

CHAPTER III

METHODOLOGY

The product, “Take Control of Your Sleep”, is a collection of intervention methods based on current evidence based practice. A thorough review of the literature was conducted through research data bases such as PubMed, OT Search, Cochrane Library, Academic Search Premiere, AOTA, and OT Seeker. Reviews focused on the definition of sleep, consequences of sleep disorder, sleep disturbance in the elderly population, intervention efficacy, principles of gerogogy, and the role of occupational therapy in sleep intervention. Findings from a total of 115 research based articles were incorporated to provide a thorough review of sleep related information. Inclusion criteria for each intervention strategy incorporated in the literature review required at least two quantitative research articles. Data from five meta-analyses were included to distinguish efficacy of pharmacotherapy, acupuncture, and cognitive-behavioral (CBT) approaches. Three of the five meta-analyses were focused on CBT research.

CBT approach is the main intervention strategy throughout the sleep manual as the literature review found this approach to be research-supported. Each CBT component was found to be effective either as stand-alone or when used in combination. Each CBT approach is included as a chapter in the sleep manual. Exercise is included as a chapter as there is strong evidence supporting its benefits for sleep intervention. Components of complimentary or alternative strategies which were found to have statistically significant positive effect such as bright light therapy and Tai Chi Chih are merged into CBT

chapters. For example, encouragement to get exposure to light on a daily basis is incorporated and Tai Chi Chih is used as an option in the moderate-intensity exercise regimen.

Principles of gerogogy are utilized to guide the development of chapter content in the self-help manual. Principles of gerogogy support the self-help learning style in elderly individuals as this approach provides adequate time for learning and processing. The introduction to the manual recommends that individuals move through the manual at their own pace. Principles of gerogogy included in the sleep manual are directly related to self-help learning techniques such as: large text, concise information, and reminders for memory.

The Model of Human Occupation was selected to serve as a foundation for the sleep manual and addresses concepts of volition, habituation, and personal causation. Volition is addressed through opportunities to share personal experiences and inclusion of choices for meaningful activity. Habituation is reinforced through establishing routines with the aid of a weekly planner including sleep intervention reminders. Personal Causation is reinforced as the client begins to develop control over sleep disturbance through intervention strategies, especially cognitive restructuring and relaxation activities.

Chapter IV presents the occupational therapist's role in assessment, follow-up measuring, and implementation of the intervention, "Take Control of Your Sleep". Chapter IV contains an overview of the target audience and possible implementation strategies of the sleep manual. Chapter V presents as a summary of the literature review and the product.

CHAPTER IV

PRODUCT

“Take Control of Your Sleep” is a sleep manual which provides occupational therapists with a guide for program or intervention planning with elderly who experience sleep disturbance. The sleep manual contains multi-component therapies which are aimed to meet the needs of elderly individuals in the clinic or residing in the community. The manual will facilitate learning through implementation of concepts central to Gerogogy. The manual is built upon Model of Human Occupation (MOHO) theory and contains cognitive-behavioral therapy (CBT) techniques throughout. Exercise recommendations, goal setting, daily scheduling, and self-monitoring are elements in the manual.

The sleep manual, “Take Control of Your Sleep”, is a synthesis of CBT strategies and complimentary interventions that aim at life-style change and increase knowledge of sleep processes. The manual is based on concepts of MOHO and provides CBT information in order to gain a sense of control and a perception of increased quality of life and sleep. The manual is a tool an individual can personalize through interactive components. The consumer can document and directly record in the manual in order to effectively incorporate sleep intervention components. The manual provides worksheets incorporating goal setting, progress toward achieving goals through the use of a sleep diary, calculating sleep efficiency, and designing a daily schedule.

Intended Audience

The number of persons 65 and older is estimated to increase from approximately 35 million in 2000 to around 71 million in 2030 (Center for Disease Control [CDC], 2003). The number of persons 80 and older is expected to increase from 9.3 million in 2000 to 19.5 million in 2030 (CDC, 2003). The growing number of older adults increases demands on the public health system and on medical and social services.

During the middle years of an individual's life the rate of insomnia reports are stable, the prevalence rises abruptly in decades 70-79 and 80-89 (Lichstein et al., 2000). Between 12% and 25% of healthy seniors report chronic insomnia (Foley, 1995). Chronic diseases, which affect older adults disproportionately, such as sleep disturbance, contribute to disability, lower perceived quality of life, and increased health care and long-term care costs (CDC, 2003; Lichstein et al., 2000). With the rate of chronic insomnia present in elderly individuals and taking into account the aging population trend, targeting healthy elderly adults with chronic insomnia is required to meet the anticipated demand.

The geriatric client requires adaptation to the traditional adult teaching methods. Creating the '*just right challenge*' in order to effectively teach the geriatric learner requires consideration of psychosocial needs such as motivation and the need for the elder to be self-directed in the learning process. Cognitive changes such as a decline in fluid intelligence support the need to provide adequate time to learn and to incorporate memory strategies. Physical changes necessitate a need for the teaching environment to be adapted to have minimal distractions with sufficient support for auditory and visual changes. The "Take Control of Your Sleep Manual" is written in primary or black and

white colors and includes the most basic information necessary in order to accommodate visual and cognitive changes in the older adult learner.

Model & Frame of Reference

Sleep intervention future is focused on enabling individuals to participate in sleep and rest roles while maintaining a balanced lifestyle. Participation in sleep roles is accomplished through establishing habits, routines, rituals, and roles that incorporate regular sleep patterns. In order to establish healthy and balanced lifestyles in individuals who experience sleep disturbance, motivation for change and learning is necessary. The Model of Human Occupation (MOHO) focuses on the motivation for occupation, establishing and maintaining meaningful life roles and routines, skills necessary to perform life tasks, and takes into consideration the influence of environment on occupational performance (Kielhofner, 2009).

Motivation is addressed throughout the sleep manual as opportunities are provided to share personal experiences. The chapters provide suggestions for a range of choices for meaningful activity and strategies to increase motivation such as encouraging use of support systems. Habituation is reinforced through establishing routines with the aid of a weekly planner including sleep intervention reminders. The use of sleep thought logs, daily sleep planners, and sleep hygiene education assist the client to develop healthy sleep habits and routines. Personal causation is reinforced as the client begins to develop control over sleep disturbance through intervention strategies, especially cognitive restructuring and relaxation activities. Lastly, a chapter in the sleep manual addresses the influence of the environment and provides strategies to promote a better sleep atmosphere.

The experience of sleep disturbance is related to behaviors, beliefs, attitudes, and interpretations of sleep performance. The basis of cognitive-behavioral therapy in the treatment of sleep disorder is to replace irrational beliefs and attitudes with more adaptive substitutes resulting in a sense of control or self-efficacy over sleep. Keilhofner (2009) reports that CBT is utilized in occupational therapy because errors in thinking are commonly experienced by clients facing impairments or disorders, such as sleep disorder. Maladaptive thoughts often interfere with the client's occupational adaptation. Cognitive distortions are often a part of a clients' volition which is a main concept within MOHO. Personal causations may reflect inaccurate beliefs concerning abilities or realistic preoccupations with limitations of their ability. The correlation between thought processes and volition justifies CBT as an important adjunctive tool while utilizing MOHO theory (Kielhofner, 2009).

Through utilization of MOHO concepts, "Take Control of Your Sleep", will promote practice of necessary skills to improve sleep activities and provide learning opportunities for new habits that shape sleep patterns. The use of CBT as a frame of reference provides a format for the sleep manual that addresses clients' cognitions, emotions, and behavior. This is accomplished through the use of sleep hygiene education, relaxation techniques, sleep restriction, and stimulus control. The incorporation of MOHO theory and CBT techniques will promote a feeling of competence through gaining a sense of control over one's sleep resulting in an improved satisfaction of sleep and life quality.

OT Role

Prevention and assessment of rest and sleep are pertinent components in providing holistic care to clients receiving OT services. Krishnan and Hawranik (2008) report that frequently older adults do not voluntarily initiate discussions about sleep problems with their clinicians. An OT clinicians' role is to initiate conversations regarding potential sleep problems within the elderly population.

A sleep evaluation process assists the OT in identifying potential client problems or assets and provides a basic understanding of the client. OT's may utilize a standard evaluation tool to develop an occupational profile. Self-assessment provides outcome measures to determine success. Outcome assessment provides information to facilitate future actions and serves as an evaluation measure of the overall efficacy of the treatment process. In order to provide best quality of care, implementation of evidence-based practices in assessing, treating, and measuring outcomes throughout the entire service delivery process is necessary.

Assessment.

In keeping with the occupational profile, the evaluation process focuses on finding out what the client wants and needs to do, determining what the client can do and has done, and identifying supports or barriers that influence sleep participation (AOTA, 2008). Occupational therapists evaluate clients through the use of informal interviewing and formal evaluations such as standardized questionnaires and rating scales. This process enables the client and therapist to collaborate on the best-fit intervention process.

Smith, Kielhofner, and Watts (1986) developed the Occupational Questionnaire (OQ) as an assessment tool that utilizes self-report to portray a picture of a clients' use of

time and value associated with activities. The OQ can be easily adapted by occupational therapists to incorporate night-time hours. The OQ requires the individual to list the activities they have performed every half hour during the week day. The addition of 'sleep' as a category is an adaptation necessary for use with clients experiencing sleep disturbance.

The research literature has highlighted assessment techniques such as the Pittsburgh Sleep Quality Index (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989), Dysfunctional Beliefs and Attitudes About Sleep (Morin, Stone, Trinkle, Mercer, & Remsberg, 1993), and sleep history questions that would supplement in the identification of clients wants, needs, abilities, supports and barriers (Smyth, 2008; Bastien et al., 2004; Bloom, et al. 2009). The PSQI functions as an assessment tool which is a self-administered questionnaire focusing on subjective measures of sleep quality and patterns. The questionnaire consists of 18 questions addressing areas of sleep problems over the previous month and can be completed in about 18 minutes (Smyth, 2008). The questionnaire looks at subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, the use of sleep-promoting medication, and daytime dysfunction. Smyth (2008) examined reliability and validity of utilizing The PSQI as an assessment tool. The PSQI correctly identified sleep quality 88.5% of the time with a sensitivity of 89.6% and specificity of 86.5%. Reliability was examined through achieving an acceptable internal consistency with Cronbach's coefficients ranging from .77 to .83.

Bastien, et al. (2004) suggest utilization of the Beliefs and Attitudes About Sleep Scale to identify perceived causes and consequences of insomnia, control over sleep,

predictability of sleep patterns, and identify unrealistic expectations. Additionally, sleep history questions of time spent in bed awake versus asleep, difficulty initiating sleep, and number of awakenings are necessary to understand the severity of sleep disturbance issues the client experiences (Bloom, et al. 2009). Refer to Appendix B for assessment retrieval information.

Follow-up Monitoring.

Outcome measures are important to both the client and the therapist. It is important for a client to develop faith in the intervention process and trust in the therapist's knowledge. When the client has a method to calculate or track sleep changes their perception of control over their sleep increases. The therapist must evaluate the effectiveness of the intervention implemented and make modifications as needed.

Sleep diaries or sleep logs are a useful form of monitoring for clients to subjectively track sleep patterns and changes (Lack & Morin, 1992). Lacks and Morin (1992) direct individuals to make entries prior to bedtime and after arising time; to record sleep latency, awakenings, and sleep duration; as well as napping, medication intake, sleep quality and daytime functioning. It is an occupational therapists role to educate the client on the function of the sleep diary and to encourage daily use and monitoring of changes.

Clients need to be educated to utilize relapse prevention strategies when they notice negative sleep changes beyond a few days, a decrease in sleep quality, or difficulties in daytime functioning (NSF, 2009). Relapse prevention strategies include: start stimulus control procedures immediately, maintain sleep schedule in order to

counter compensation for sleep loss, re-engage in relaxation strategies and sleep restriction (NSF, 2009).

Intervention.

The “Take Control of Your Sleep” manual is introduced in this scholarly project as an evidenced-based intervention program that occupational therapists while providing interventions to elderly individuals experiencing sleep disturbance. It is the responsibility of health care professionals, including occupational therapists, to educate the public about sleep disturbance and to aid in the development and maintenance of a healthy lifestyle. The purpose of patient education is to increase the competence and confidence of clients for healthy self-management (Bastable, 2006). Patient education is a process used to aid individuals to learn new behaviors to implement into everyday life. Disorders such as sleep disturbance have been related to life-style choices and thinking processes that can be prevented through education approaches to promote a sense of control (Engle-Friedman et al., 1992).

Implementation Strategies

Implementation of this manual is recommended for well-elderly individuals who are independent in the community and experience sleep disturbance. The sleep manual will be provided through OT consultation services. These services are provided at assisted living facilities, senior citizens centers, and community centers. The manual is designed as a self-help manual in which well-elderly individuals are able to guide themselves through the manual’s steps.

An alternative use for this sleep manual is with elderly individuals receiving OT services who experience sleep problems. These clients may require therapist assistance to

successfully complete the sleep manual. The OT acts as a guide to promote motivation and success in the completion of the sleep manual. The manual is designed in a self-help format while the teaching strategies are targeted to accommodate the geriatric learner. It is recommended that the therapist encourage the completion of the manual chapters as homework while therapy time will be allotted for questions and discussion.

Take Control of Your Sleep: A Guide to Improved Sleep



**Developed by: Sarah Gregory, MOTS
Heather Hoffman, MOTS**

Advisor: Sonia S. Zimmerman, Ph.D., OTR/L, FAOTA

Table of Contents

Introduction.....	2
Chapter I: Sleep Education.....	3-5
Chapter II: Goal Setting.....	6-7
Chapter III: Review Your Sleep.....	8-10
Chapter IV: The Best Bed Time.....	11-13
Chapter V: Your Sleep Environment.....	14
Chapter VI: Sleep Thoughts.....	15-17
Chapter VII: Relaxation Activities.....	18-21
Chapter VIII: Exercise.....	22-23
Chapter IV: Weekly Schedule.....	24-27
Chapter X: Stick With It!.....	28
Additional Worksheets.....	29-33

Introduction to “Take Control Your Sleep”

The goal of this sleep manual is to educate you on the importance of healthy behaviors that will improve your sleep quality. The following chapters contain information that you can use throughout your daily life to improve *your* sleep, it gives *you* the control. The recommendations identified throughout this manual are there to give you an idea of potential behaviors that may be interfering with your sleep as well as behaviors that may improve your sleep.

The chapters and activities in this book are based on research evidence. Individuals who have completed activities, such that are in this manual, have reported improved sleep and life quality. The effectiveness of these sleep strategies may be decreased if you are taking sleep medications.

Please keep in mind that everyone has individual needs so every suggestion may not work for you. This book helps you identify sleep tips that may improve your sleep quality in the future. It is important to complete each chapter and every activity. This book was designed for you to be able to go at your own pace.

Chapter I: Sleep Education

Activity 1: Do's and Don'ts of Healthy Sleep

<i>Do's</i>	<i>Don'ts</i>
Maintain a regular exercise schedule (not within 4 hours of bed time)	Frequent daytime napping
Engage in daytime activities	Spend too much time in bed
Get as much light (both natural or artificial) as you can	Late evening exercise
Maintain comfortable sleeping environment (not too bright, too loud, too cold)	Eat late, heavy dinners
Maintain a regular sleep schedule 7 days a week	Use tobacco, stimulants, caffeine, and alcohol 6 hours prior to bed
Eat a light, bed time snack prior to bed	Drink excessive liquids 3 hours prior to bed time
Engage in relaxation activities (reading, bath, board games) prior to bed	Watch the clock
Develop a sleep routine prior to bedtime (ex. brush teeth and get into pajamas at the same time)	Engage in mentally stimulating or emotionally upsetting prior to bed (ex. don't watch TV in bed)
Leave stress at the bedroom door (ex. journal in the living room before bed or do a relaxing activity before entering the bedroom)	Go to bed hungry or thirsty

*Answer questions on the next page

Chapter I: Sleep Education

Activity 2: How well do I know my sleep hygiene education

1. What are two things you could DO to improve your sleep?

*Tip: Maintain a daily and nightly routine.
Engage in relaxation activities throughout the day.
Exercise.*

2. What is one thing you should NOT do in order to improve sleep?

*Tip: Use any form of stimulant after 3 p.m.
Watch a scary movie before bed.
Go to bed hungry.
Have a large, lit up clock facing your bed.*

3. Do you have a usual nighttime routine?

*Tip: Have a usual order of brushing teeth, washing face, changing into your night wear.
Keep a regular routine of either bathing at night or bathing in the morning.*

4. Have any parts of your sleep routine changed in the past year?

Chapter I: Sleep Education

Activity 3: Is Your Bedroom In Order?

Is it too hot or too cold? Or too bright?



Do I need white noise (like a fan) to cancel out noise or silence?

Is my bed comfortable? Too soft or too firm?

Is my bed partner too loud?

Am I in a comfortable sleeping position?

Using the above questions as a guide, note things in your bedroom you would like to change. Write down solutions you are considering.

Tips:

Purchase a more comfortable mattress pad or sheets.

Keep the thermostat on one temperature.

Use a fan or radio for background noise.

Include shades or blinds on bedroom windows.

Area	Problem	Ideas for Solutions
Bed		
Sleeping position		
Lighting		
Temperature		
Noise		

Chapter II: Goal Setting

Activity 1: Sample Goals

During the course of this sleep program, it is important to set personal goals that you would like to gain from this program. Below are a few questions that may guide you to find areas to focus on for goal setting.

<i>Sleeping Problems</i>	<i>Sample Goals</i>
Do you find it stressful lying in bed at night awake?	<i>Within 1 month, I will feel relaxed while I lay in bed at night.</i>
Are you worried about not being able to function throughout the next day because of losing sleep?	<i>Within 1 month, I will be able to identify when I have dysfunctional cognitions.</i>
Does it normally take you a long time to fall asleep?	<i>Within 1 month, I will be able to fall asleep within 20 minutes in my bed.</i>
Do you feel like you never get restful sleep?	<i>Within 1 month, I will wake up after a night of sleeping and feel refreshed.</i>
Do you wake up frequently (2 to 3 times) throughout the night?	<i>Within 1 month, I will be able to sleep through the entire night.</i>
Do you have a regular bedtime routine?	<i>Within 1 month, I will have a bedtime routine established.</i>

Chapter II: Goal Setting

Activity 2: Setting Goals

Are there any other sleep related problems that you experience?

Now that you have thought of a few ideas related to sleep that are important to you. Pick the top three that you would like to see improve and write it in the space provided for goals. Goals should be specific to what you would like to achieve for yourself and should be given a timeframe to be completed.

Goal

#1 _____

Goal

#2 _____

Goal

#3 _____

Chapter III: Review Your Sleep

Activity 1: Daily Sleep Diary

In order to gain a better understand and track your sleep routine, please fill out this schedule every morning, starting today.

Complete in the morning	Date: 10/27						
Bedtime	10:45						
Rise time	7:15						
Time to fall asleep	45 min						
# of awakenings and time awake	3 times; 2 hours						
Amount of sleep obtained	6 hours						
Complete at bedtime							
# of naps, time of day, and amount of time of nap	1 at 1:45; 30 min						
Did you complete bedtime routine?	Yes						
How you felt during the day 1=Very sleepy/tired 2=Somewhat sleepy/tired 3=Moderately alert 4=Wide awake	2						
Sleep quality 1=None 2=Fair 3=Good 4=Very Good	3						

Chapter III: Review Your Sleep

Activity 2: Monthly Review of your Sleep Quality

Complete this questionnaire today and once every month. By completing this questionnaire every month, you will gain a better understanding of activities you do throughout your day and night, the value of those activities, and how they change after completing this sleep manual.

<i>Occupational Questionnaire</i>				
Today's date:				
	QUESTION 1	QUESTION 2	QUESTION 3	QUESTION 4
	I consider this activity to be: 1-work 2-daily living work 3-recreation 4-rest	I think that I do this: 1-Very well 2-Well 3-About average 4 -Poorly 5-Very poorly	For me this activity is: 1-Extremely important 2-Important 3 -Take it or leave it 4-Rather not do it 5-Total waste of time	How much do you enjoy this activity: 1-Like it very much 2-Like it 3-Neither like it nor dislike it 4-Dislike it 5-Strongly dislike it
Record your typical activities in the space provided for the half hour beginning at:				
5:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
6:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
6:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
7:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
7:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
8:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
8:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
9:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
9:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
10:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
10:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
11:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
11:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

12:00 p.m.	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
12:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
1:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
1:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
2:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
2:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
3:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
3:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
4:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
4:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
5:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
5:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
6:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
6:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
7:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
7:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
8:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
8:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
9:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
9:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
10:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
10:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
11:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
11:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
12:00 a.m.	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
12:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
1:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
1:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
2:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
2:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
3:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
3:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
4:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
4:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
5:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Adapted and used with permission from: Smith, Kielhofner, & Watts, 1986

Chapter IV: The Best Bedtime

Activity 1: Example Calculation for Time Spent Asleep

Refer to your sleep log to get information for the total amount of time you spent in bed compared to the time you spent asleep each night of the week. Record the numbers into the sleep equation below:

	Monday
Bed time	<i>10:00pm</i>
Rise time	<i>7:00am</i>
Estimated time to fall asleep	<i>30 minutes</i>
Estimated number of awakenings AND Total time awake	<i>5 times</i> <i>2 hours</i>
Estimated amount of sleep obtained	<i>6.5 hours</i>

→ Calculate time in bed by counting the hours between bed time (10:00pm) and rise time (7:00am). For this example total bed time is 9 hours.

Amount of Sleep Obtained	/	Time in Bed	=	Time Spent Asleep
Monday <u>6.5</u>	/	<u>9</u>	=	<u>.72</u>
Tuesday _____	/	_____	=	<u>.80</u>
Wednesday _____	/	_____	=	<u>.75</u>
Thursday _____	/	_____	=	<u>.90</u>
Friday _____	/	_____	=	<u>.78</u>
Saturday _____	/	_____	=	<u>.85</u>
Sunday _____	/	_____	=	<u>.65</u>

Add up Time Asleep: $.72 + .80 + .75 + .90 + .78 + .85 + .65 = 5.45 / 7 = .78$

Percentage of Time Asleep: $\underline{.78} \times 100 = \underline{78\%}$

Chapter IV: The Best Bed Time

Activity 2: How to Calculate Your Weekly Amount of Sleep

	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Sun.
Bed time							
Rise time							
Estimated amount of sleep obtained							

Amount of sleep obtained / Time in Bed = Time Spent Asleep

Monday _____ / _____ = _____
 Tuesday _____ / _____ = _____
 Wednesday _____ / _____ = _____
 Thursday _____ / _____ = _____
 Friday _____ / _____ = _____
 Saturday _____ / _____ = _____
 Sunday _____ / _____ = _____

Add up the Time Spent Asleep:

_____ + _____ + _____ + _____ + _____ + _____ = _____ / 7 = _____

Percentage of Time Spent Asleep: _____ x 100 = _____

Tip:

Choose one day a week and set aside time to complete this worksheet.

Record the day you choose in your weekly schedule.

Chapter IV: The Best Bed Time

Activity 3: Changing Your Bed Time

Adjust the time you spend in bed in order to spend more time asleep rather than lying awake.

My Percentage of Time Spent Asleep Last Week: _____%

If your percentage is greater than 90%	Go to bed 20 minutes earlier than you did in your previous week
If your percentage is below 80%	Go to bed 20 minutes later than you did in the previous week
If your percentage is between 80% and 90%	Practice your usual bed time and morning rise routines of your previous week

Tip:

Use this activity on a weekly basis.

Record your bedtime and morning rise time in your weekly schedule.

Your morning rise times stay the same.

Your bed time may change each week.

Chapter V: Your Sleep Environment

Bedroom Guidelines

The goal is that you will connect being sleepy to your bed.

Directions: Look over bedroom guidelines below to help identify healthy habits and routines in order to improve sleep quality.

Guidelines to follow:

- Lie down for sleep only when sleepy
- Use your bed for sleep and sex only
- Do not watch stimulating TV from bed
- Do not work in bed
- If unable to sleep after 20 min...
 - ✓ leave bedroom
 - ✓ complete a meaningful relaxing activity (read, draw) until sleepy
 - ✓ return to bed
- Maintain regular routines for bed time and rise time
- Napping should be limited to 30 min and should be taken prior to 2:00 p.m.
- Avoid heavy exercise and large meals within 2 hours of bedtime
- Avoid stimulant substances such as caffeine, nicotine, and alcohol

What things in the list have you already been doing?

If you have been tossing and turning in her bed for the past 45 minutes what should you do and why?

What is one thing you could change about your sleeping routine to your improve sleep?

Chapter VI: Sleep Thoughts

Activity 1: Log for Sleep Thoughts

Negative thoughts about sleeping habits can have a negative effect on your sleeping performance.

1. In the left column, record situations that bring to mind sleep thoughts.
2. In the right column, write down negative thoughts you say to yourself during those situations.

Log for Sleep Thoughts

Situation	Thought
Getting ready for bed.	"I need to hurry up and get into bed so I can try to get a full 8 hours of sleep tonight."

Chapter VI: Sleep Thoughts

Activity 2: How to Change Your Sleep Thoughts

Positive sleep thoughts results in a feeling of control over your sleep. Look over these examples to see ways that you can change negative thoughts to positive thoughts.

Situation	Thought	Positive Thought
<i>Getting into bed.</i>	<i>"I need 8 hours of sleep every night in order to be well rested."</i>	<i>"Every individual is different with how much sleep they require. Some only need 5 hours where others may need 10. I will still be able to complete activities tomorrow if I do not get exactly 8 hours of sleep tonight."</i>
<i>Awoke from sleep during the night.</i>	<i>"My sleep disturbance is caused by my aging."</i>	<i>"Although sleep disturbance can be made worse by external causes, in general external causes are not the main cause. I need to think about what is really causing me to awake frequently in the night and how can I fix it. Is it too much caffeine? Too much stress? Am I depressed?"</i>
<i>Daydreaming in the afternoon.</i>	<i>"If I do not get to sleep tonight, I will not be able to do my job tomorrow."</i>	<i>"Even though I may not feel the greatest if I do not get my necessary amount of sleep, I will still be able to get the job done tomorrow."</i>
<i>Awake in bed.</i>	<i>"If I stay in bed until I fall asleep I will remain in a comfortable spot and be able to sleep faster."</i>	<i>"I need to get out of bed, relax, take my mind off sleep, and return to bed once I have relaxed."</i>

Chapter VI: Sleep Thoughts

Activity 3: Changing to Positive Sleep Thoughts

1. Record your sleep log information from activity 1 into the left and middle columns of this table.
2. Change the negative thought to a positive thought using the examples in activity 2 or through brainstorming with a support person.

Situation	Thought	Positive Thought

Chapter VII: Relaxation Activities

Activity 1: Promoting Daily Relaxation

The purpose of relaxation activities for sleep is to decrease your body's excitement from day to day living. Complete relaxation activities twice per day; one time before bedtime.

Do you do anything to help you feel relaxed? _____

Some activities that promote a relaxed feeling and that improve sleep quality include:

Progressive Muscle Relaxation

Guided Imagery

Deep Breathing

The steps to complete these relaxation activities are described in the next 3 pages.

For all exercises you will want to get into a comfortable position, either sitting in a chair or lying on a bed with limited distractions. You may want to play soft, soothing music during this exercise.

Tips:

Choose relaxation activities that you enjoy.

Complete relaxation activities at least two times per day.

Make sure one time is right before bedtime.

Record time for relaxation activities in your weekly schedule.

Chapter VII: Relaxation Activities

Activity 2: Progressive Muscle Relaxation

1. Start your focus on the muscles of your arms.
2. Begin by squeezing the muscles of the **right** arm for 5 seconds
3. Slowly let the tension go for 30 seconds
4. Squeeze the muscles of the **left** arm for 5 seconds
5. Slowly let the tension go for 30 seconds

**Repeat the steps 1-5 on muscles of the hands, face, chest, legs, and feet.

Chapter VII: Relaxation Activities

Activity 3: Guided imagery

1. Think of a time when you felt completely relaxed.
2. Where were you? Can you picture what was around you?
3. What were the smells? What were the noises?
4. Close your eyes. Think about that time. Begin to let your body relax and your mind daydream.



Chapter VII: Relaxation Activities

Activity 4: Deep Breathing Exercises.

1. Start the exercise by sitting in a comfortable chair or lying down on your back.
2. Place one hand on the part of your stomach that rises and falls as you breathe.
3. Breathe in through your nose for 3 seconds and out through your mouth for 5 seconds.
4. Repeat cycle 10 times as you relax and focus on the sound and feeling of the slow, deep breaths.

Chapter VIII: Exercise

Activity 1: Moderate-Intensity Exercise

It is recommended that you incorporate moderate-intensity exercise into your routine for 30-40 minutes, 5 days a week to improve your sleep.

Everyone's fitness level is different. What's important is that you do physical activities that are meaningful to you and match your abilities.

The talk test is a simple way to measure relative intensity. As a rule of thumb, if you're doing moderate-intensity activity you can talk, but not sing, during the activity.

Get motivated by:

- Remembering that doing some activity is better than none;
- Learning a new skill you have always been interested in;
- Planning ahead and write it on your calendar;
- Inviting a friend to exercise with you;
- Developing friendships with physically active people; or
- Joining an exercise group or class of your interest at the local senior citizens center, YMCA, or fitness center.

Think about your weekly routine. In what activities are you already engaged? For example, walking to see your family or putting away groceries both count as exercise.

Chapter VIII: Exercise

**Activity 2: Incorporating Exercise
Into your Daily Routine**

Find and circle exercise activities that are meaningful to you. Here are a few choices:

Walk the dog	Hand washing and waxing your car	Putting away groceries	Walk at your favorite park
Walk at the mall during shopping trips	Yoga or Tai Chi	Fishing while walking along a river bank	House chores: scrub the floors, wash windows, vacuum
Weight Training	Water aerobics	Aerobic dancing	Saddling/grooming a horse
Stationary bicycling	Bicycling on a level terrain	Gardening/yard work	Hunting: deer, pheasant, or grouse
Ballroom/Line dancing	Light shoveling or bagging leaves	Tennis	Mow the lawn
Golf (without using a cart)	Sailing	Swimming leisurely	Taking care of a loved one: bathing/dressing

Which of these new activities would you like to add to your weekly routine:

Tips:

Incorporate exercise into your daily routine at least 4 hours before retiring to bed.

Make a plan for your weekly routine, so that you remember to incorporate exercise at least 5 times per week.

Choose exercise activities that are meaningful and interesting to you and plan your weekly schedule with those activities in mind.

Activity IV: Weekly Schedule

Activity 1: Starting Your Weekly Schedule

Many people find it helpful to keep a weekly schedule. A schedule is a good way to ensure that you are completing the steps that will improve your sleep.

I prefer to keep the same schedule week-to-week.	I prefer to change my schedule week-to-week.
<ol style="list-style-type: none">1. Fill out your weekly schedule completely.2. Make one or two copies.3. Put your schedule somewhere you can easily access it (ex: refrigerator, kitchen table).	<ol style="list-style-type: none">1. Choose one day a week and set aside time to plan your week ahead Choose a time of day that you feel awake and alert.2. Record the day you have chosen to update your schedule.3. Make copies of your schedule for future use.4. Put your schedule somewhere you can easily access it. Remember to replace each new schedule weekly.

Chapter IV: Weekly Schedule

Activity 2: Planning Your Weekly Schedule

An important step in planning your days and weeks is to incorporate activities that are meaningful to you.

For example, if you value your role as a grandparent, then it is important to make time in your week to complete activities such as playing with your grandchildren. If you value your role as a sister or brother, you may schedule time out of your week to write letters or have phone conversations.

First, write down what roles are important to you. You may want to list a few roles in your work, hobbies, or community service in which you wish to invest time and energy on a regular basis. You may have roles in church or community affairs.

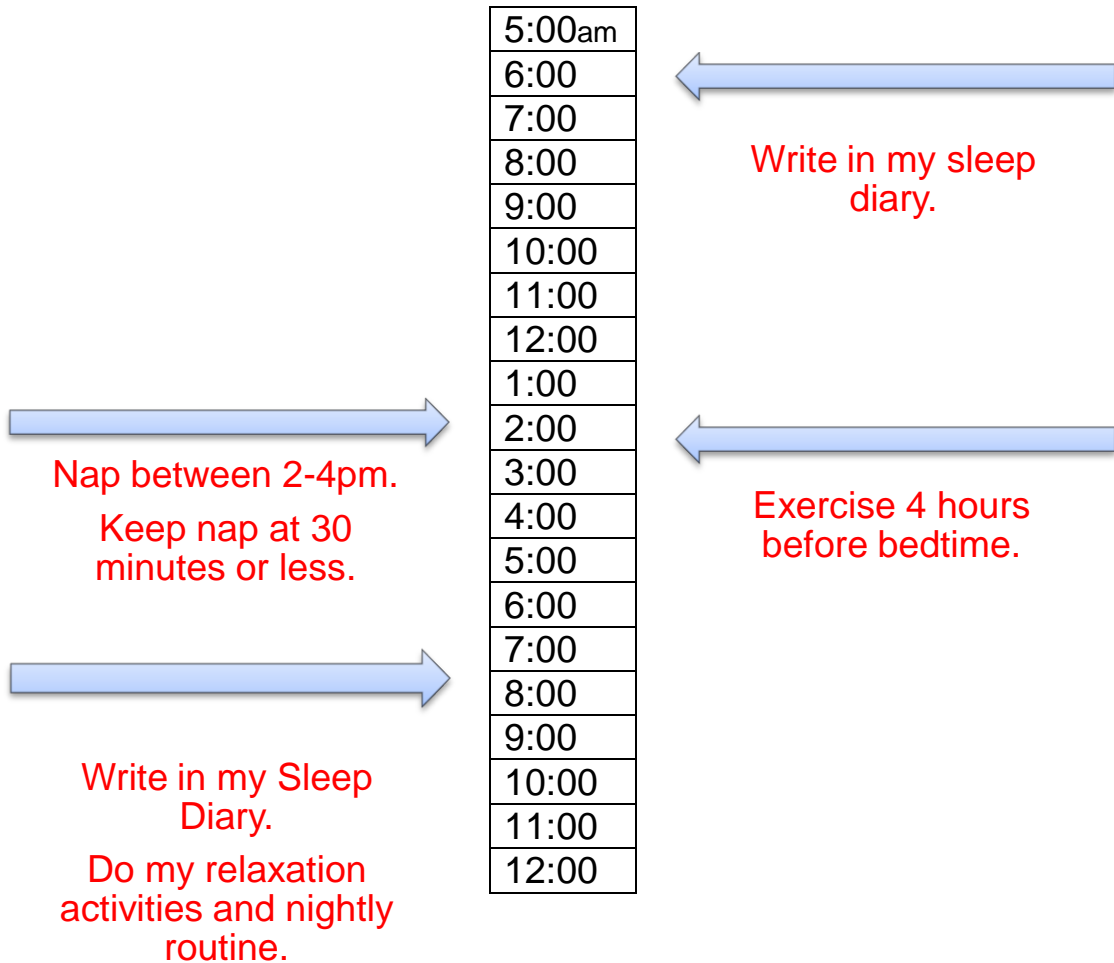
Think of one or two things you want to accomplish in each role during the next week. These are your goals for each week:

Role	Goal

Chapter IV: Weekly Schedule

Activity 3: A Guide for Healthy Sleep Habits

Use this template as a guide to incorporate sleep recommendations into your schedule:



	Sun.	Mon.	Tues.	Wed.	Thurs.	Frid.	Sat.
5:00							
7:00							
9:00							
10:00							
12:00							
2:00							
4:00							
6:00							
8:00							
10:00							
12:00							

Tips

1. Roles-goals
2. Sleep diary (am/pm)
3. Relaxation activities (one before bedtime)
4. Moderate-intensity exercise (30-40min/5days)
5. Naps
6. Bed time routine
7. One day for calculating weekly bed time
8. Occupational Questionnaire-once/month

Chapter X: Stick With It!

Look over your monthly goals. Compare your sleep diary and Occupational Questionnaire results each month.

If you notice:

- negative sleep changes beyond a few days*
- difficulties in daytime functioning*
- decreased quality of sleep*

Then you should:

1. Review sleep education material. Are you following the Do's and Don'ts of Healthy Sleep?
If no, then focus on these areas and make them your goals for the next month.
2. Is your bedroom in order?
Is your mattress comfortable?
Is the room temperature comfortable?
Is the room dark?
3. Are you going to bed according the guidelines on page 13?
Compare your calculations to the example.
Record the time you should be in bed on your schedule, and follow it.
4. Are you incorporating exercise and relaxation in your daily routine?
Look through the 'get motivated' tips on page 22.
Choose activities that are meaningful to you.
5. Do you notice that you are thinking negative sleep thoughts?
Write these thoughts down, and brainstorm with your therapist or support person on ways to turn them into positive thoughts.
6. Are you following your weekly schedule?
Put your weekly schedule somewhere you see often.
Make check-marks next to activities you complete.

Additional Worksheets

Additional worksheets such as the sleep diary template, the Occupational Questionnaire, and bed time calculation worksheets are available for copying. It is recommended that you copy these worksheets as soon as you can in order to continue with your sleep manual routine.

Tips:

The sleep diary and bed time calculation templates are used weekly, so it is suggested to start off by making 52 copies to be ready for the next year.

The Occupational Questionnaire is completed monthly, so it is suggested to make 12 copies.

Daily Sleep Diary

In order to gain a better understand and track your sleep routine, please fill out this schedule every morning, starting the first day you get your manual.

Complete in the morning	Date:						
Bedtime							
Rise time							
Time to fall asleep							
# of awakenings and time awake							
Amount of sleep obtained							
Complete at bedtime							
# of naps, time of day, and amount of time of nap							
Did you complete bedtime routine?							
How you felt during the day 1=Very sleepy/tired 2=Somewhat sleepy/tired 3=Moderately alert 4=Wide awake							
Sleep quality 1=None 2=Fair 3=Good 4=Very Good							

Monthly Review of your Sleep Quality

Complete this questionnaire today and once every month. By completing this questionnaire every month, you will gain a better understanding of activities you do throughout your day and night, the value of those activities, and how they change after completing this sleep manual.

<i>Occupational Questionnaire</i>				
Today's date:				
	QUESTION 1	QUESTION 2	QUESTION 3	QUESTION 4
	I consider this activity to be: 1-work 2-daily living work 3-recreation 4-rest	I think that I do this: 1-Very well 2-Well 3-About average 4 -Poorly 5-Very poorly	For me this activity is: 1-Extremely important 2-Important 3 -Take it or leave it 4-Rather not do it 5-Total waste of time	How much do you enjoy this activity: 1-Like it very much 2-Like it 3-Neither like it nor dislike it 4-Dislike it 5-Strongly dislike it
Record your typical activities in the space provided for the half hour beginning at:				
5:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
6:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
6:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
7:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
7:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
8:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
8:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
9:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
9:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
10:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
10:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
11:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
11:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
12:00 p.m.	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
12:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
1:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

1:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
2:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
2:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
3:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
3:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
4:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
4:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
5:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
5:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
6:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
6:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
7:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
7:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
8:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
8:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
9:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
9:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
10:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
10:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
11:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
11:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
12:00 a.m.	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
12:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
1:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
1:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
2:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
2:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
3:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
3:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
4:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
4:30	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
5:00	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Adapted and used with permission from: Smith, Kielhofner, & Watts, 1986

Calculate Your Weekly Amount of Sleep

	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Sun.
Bed time							
Rise time							
Estimated amount of sleep obtained							

Amount of sleep obtained / Time in Bed = Time Spent Asleep

Monday	_____	/	_____	=	_____
Tuesday	_____	/	_____	=	_____
Wednesday	_____	/	_____	=	_____
Thursday	_____	/	_____	=	_____
Friday	_____	/	_____	=	_____
Saturday	_____	/	_____	=	_____
Sunday	_____	/	_____	=	_____

Add up the Time Spent Asleep:

+

+

+

+

+

+

=

/ 7 =

Percentage of Time Spent Asleep: _____ x 100 = _____

Tips:

Choose one day a week and set aside time to complete this worksheet.

Record the day you choose in your weekly schedule.

References

- American Occupational Therapy Association. (2008). Occupational therapy practice framework: Domain and process (2nd ed.). *American Journal of Occupational Therapy, 62*, 625-683.
- Bastable, S.B. (2006). *Essentials of patient education*. Sudbury, Massachusetts: Jones and Bartlett Publishers.
- Bastien, C.H., Morin, C.M., Ouellet, M.C., Blais, F.C., & Bouchard, S. (2004). Cognitive-behavioral therapy for insomnia: Comparison of individual therapy, group therapy, and telephone consultations. *Journal of Consulting and Clinical Psychology, 72*(4), 653-659.
- Bloom, H.G., Ahmed, I., Alessi, C.A., Ancoli-Israel, S., Buysse, D.J., Kryger, M.H., Phillips, B.A., Thropy, M.J., Vitiello, M.V., & Zee, P.C. (2009). Evidence-based recommendations for the assessment and management of sleep disorders in older persons. *Journal of American Geriatric Society, 57*,761-789.
- Buysse, D.J., Reynolds, C.F., Monk, T.H., Berman, S.R., & Kupfer, D.J. (1989). The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research. *Psychiatry Research, 28*,193-213.
- Center for Disease Control (2003, February). Public health and aging: Trends in aging-United States and worldwide. *Morbidity and Mortality Weekly Report,52*(6), 101-106.

- Engle-Friedman, M., Bootzin, R. R., Hazlewood, L., & Tsao, C. (1992). An evaluation of behavioral treatments for insomnia in the older adult. *Journal of Clinical Psychology, 48*, 77-90.
- Foley, D.J., Monjan, A.A., Brown, S.L., Simonsick, E.M., Wallace, R.B., & Blazer, D.G. (1995). Sleep complaints among elderly persons: an epidemiologic study of three communities. *Sleep, 18*, 425-432.
- Kielhofner, G. (2009). *Conceptual foundations of occupational therapy practice*. Philadelphia, PA: F.A. Davis Company.
- Krishnan, P., & Hawranik P. (2008). Diagnosis and management of geriatric insomnia; A guide for nurse practitioners. *Journal of the American Academy of Nurse Practitioners, 20*, 590-599.
- Lacks, P., & Morin, C.M. (1992). Recent advances in the assessment and treatment of insomnia. *Journal of Consulting and Clinical Psychology, 60(4)*, 586-594.
- Lichstein, K.L., Wilson, N.M., & Johnson, C.T. (2000). Psychological treatment of secondary insomnia. *Psychology & Aging, 15(2)*, 232.
- Morin, C.M., Stone, J., Trinkle, D., Mercer, J., & Remberg, S. (1993). Dysfunctional beliefs and attitudes about sleep among older adults with and without insomnia complaints. *Psychology and Aging, 23*, 263-271.
- National Sleep Foundation. (2009). Cognitive behavior therapy for insomnia. Retrieved on September 16, 2009 from <http://www.sleepfoundation.org/article/hot-topics/cognitivebehavioral->

therapy-insomnia

Smith, N.R., Kielhofner, G., & Watts, J.H., (1986). The relationships between volition, activity pattern, and life satisfaction in the elderly.

American Journal of Occupational Therapy, 40, 278-283.

Smyth, C.A. (2008). Evaluating sleep quality in older adults: The Pittsburgh Sleep Quality Index can be used to detect sleep disturbances or

deficits. *American Journal of Nursing, 108(5), 42-50.*

CHAPTER V

SUMMARY

The area of occupation of ‘Sleep and Rest’ was recently added to the 2008 OT Practice Framework (American Occupational Therapy Association, 2008). Limited occupation-based research evidence is available; the current OT literature presents anecdotal statements and recommendations for future study. There is evidence supporting the use of nonpharmacological interventions for sleep, however these well-studied intervention strategies are not based on occupational theory. Combining OT anecdotal recommendations to evidence-supported intervention strategies provides a foundation for continued OT-based sleep intervention research. The product of this scholarly project is an evidence-based sleep intervention tool which may facilitate future research opportunities in occupational therapy sleep intervention.

“Take Control of Your Sleep” is a self-help sleep manual that is designed to be implemented by OTs as a sleep intervention tool aimed towards the well elderly population. The manual is based on the Model of Human Occupation and incorporates concepts of CBT approaches throughout. Principles of gerogogy are included in the manual to enhance learning within the elderly population.

Limitations

“Take Control of Your Sleep” is designed for well elderly individuals living independently in the community. The research evidence utilized to justify incorporation

of CBT intervention strategies focused on the elderly population, limiting the use of the product to other populations. Principles of gerogogy are included to support success in utilizing this manual within a self-help approach, however individual variables may decrease a well-elderly individual's ability to complete the manual independently.

Evidence supporting the product is from research literature other than occupational therapy research. The supporting evidence is not based on an occupational perspective. As a result, the existing intervention strategies are adapted and enhanced in order to incorporate the occupational perspective. Even though the product incorporates well-studied intervention strategies, it has not been research-tested as a comprehensive intervention for sleep based on an occupational perspective.

Recommendations

Prior to using this product with an age group other than the elderly, it is recommended to research current evidence literature for interventions appropriate to the specific age group. Until such time as the OT profession produces OT-based research, therapists will find it necessary to continue to adapt research-based interventions from related professions. Psychology and nursing literature, in particular, were found to have a high level of evidence. It is recommended this product be considered for implementation and research to support its use within the OT profession.

Future Implementation

“Take Control of Your Sleep” is designed as a self-help manual to be utilized by well elderly individuals living in the community who experience sleep disturbance. Reaching this population requires marketing throughout occupational therapy professionals with the specific target of consulting and outpatient occupational therapists.

Occupational therapy consultants may distribute the intervention tool to community centers, senior citizen centers, assisted living communities, or local senior events to reach the target population.

The sleep manual is designed as a self-help tool, which includes interactive components with examples and helpful tips to promote independent use. It is essential that occupational therapist grade the amount of guidance given to each individual elderly client. Depending on client factors one individual may need step-by-step guidance while another has the ability to independently move through the manual. Client factors that may necessitate an occupational therapist's support to use the manual include, but are not limited to: reduced attention span, decreased metacognition, and the inability to generalize information.

Conclusions

Occupational therapists are traditionally concerned with the holistic treatment of each client by addressing their body, mind, and spirit. The use of the Model of Human Occupation places them in a unique position to address the problem of sleep disturbance within this holistic perspective. MOHO enables the therapist to emphasize the individual's values and interests, their habits and routines, the environment in which they do things, as well as the skills that enable them to be successful. "Take Control of Your Sleep", serves as a tool for occupational therapists to apply research evidence to practice to effectively address sleep disturbance in elderly individuals.

APPENDIX A
REST AND SLEEP

Appendix A

Rest and Sleep

Includes activities related to obtaining restorative rest and sleep that supports healthy active engagement in other areas of occupation (AOTA, 2008, p.632).

Rest.

Quiet and effortless actions that interrupt physical and mental activity resulting in relaxed state (Nurit & Michel, 2003, p.227). Includes indentifying the need to relax; reducing involvement in taxing physical, mental, or social activities; and engaging in relaxation or other endeavors that restore energy, calm, and renewed interest in engagement.

Sleep.

A series of activities resulting in going to sleep, staying asleep, and ensuring health and safety through participation in sleep involving engagement with the physical and social environments.

Sleep preparation.

(1) Engaging in routines that prepare the self for a comfortable rest, such as grooming and undressing, reading or listening to music to fall asleep, saying goodnight to others, and meditation or prayers; determining the time of day and length of time desired for sleeping or the time needed to wake; and establishing sleep patterns that support growth and health (patterns are often personally and culturally determined). (2) Preparing the physical environment for periods of unconsciousness, such as making the bed or

space on which to sleep; ensuring warmth/coolness and protection; setting an alarm clock; securing the home, such as locking doors or closing windows or curtains, and turning off electronics or lights.

Sleep participation.

Taking care of personal need for sleep such as cessation of activities to ensure onset of sleep, napping, dreaming, sustaining a sleep state without disruption, and nighttime care of toileting needs or hydration. Negotiating the needs and requirements of others within the social environment. Interacting with those sharing the sleeping space such as children or partners, providing nighttime care giving such as breastfeeding, and monitoring the comfort and safety of others such as the family while sleeping (AOTA, 2008, p.632)

APPENDIX B
ASSESSMENTS

Appendix B

Assessments

The following information is provided to permit therapists with easy access to assessments associated with this project:

- 1.) The Occupational Questionnaire adapted from MOHO Clearinghouse can be accessed at: [www.moho.uic.edu/mohorelated rsrsrcs.html#Other](http://www.moho.uic.edu/mohorelated/rsrsrcs.html#Other)
- 2.) The Pittsburgh Sleep Quality Index is available from the University of Pittsburgh at: <http://www.sleep.pitt.edu/content.asp?id=1484&subid=2316>
- 3.) The Dysfunctional Beliefs and Attitudes about Sleep (DBAS) scale can be accessed at: www.journalsleep.org/Articles/301114.pdf

References

- Adachi, Y., Sato, C., Kunitsuka, K., Hayama, J., & Doi, Y. (2008). A brief behavior therapy administered by correspondence improves sleep and sleep-related behavior in poor sleepers. *Sleep and Biological Rhythms*, 6, 16-21.
- Ager, C.L. (1986). Teaching strategies for the elderly. *Physical & Occupational Therapy in Geriatrics*, 4(4), 3-14.
- Ahroni, J.H. (1996). Strategies for teaching elders from a human development perspective. *Diabetes Educator*, 22(1), 47-52.
- Alford, D.M. (1982). Tips for teaching older adults. *Nursing Life*, 2(5), 60-63.
- American Occupational Therapy Association. (2008). Occupational therapy practice framework: Domain and process (2nd ed.). *American Journal of Occupational Therapy*, 62, 625-683.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: American Psychiatric Publishing.
- Ancoli-Israel, S. (2005). Sleep and Aging: Prevalence of disturbed sleep and treatment considerations in older adults. *Journal of Clinical Psychiatry*, 66 (9), 24-30.
- Ancoli-Israel, S., & Ayalon, L. (2006). Diagnosis and treatment of sleep disorders in older adults. *American Journal of Geriatric Society*, 14, 95-103.

- Ancoli-Israel, S., & Cook, J.R. (2005). Prevalence and comorbidity of insomnia and effect on functioning in elderly populations. *Journal of American Geriatric Society*, 53(7), S264-S271.
- Asplund, R. (1999). Sleep disorders in the elderly. *Drugs & Aging*, 14, 91–103.
- Baillargeon, L., Landreville, P., Verreault, R., Beauchemin, J.P., Gregoire, J.P., & Morin, C.M. (2003). Discontinuation of benzodiazepines among older insomnia adults treated with cognitive-behavioral therapy combined with gradual tapering: A randomized trial. *Canadian Medical Association Journal*, 169, 1015-1020.
- Bain, K.T. (2006). Management of chronic insomnia in elderly persons. *The American Journal of Geriatric Pharmacotherapy*, 4(2), 168-192.
- Bastable, S.B. (2006). *Essentials of patient education*. Sudbury, Massachusetts: Jones and Bartlett Publishers.
- Bastien, C.H., Morin, C.M., Ouellet, M.C., Blais, F.C., & Bouchard, S. (2004). Cognitive-behavioral therapy for insomnia: Comparison of individual therapy, group therapy, and telephone consultations. *Journal of Consulting and Clinical Psychology*, 72(4), 653-659.
- Belanger, L., Savard, J., & Morin, C.M. (2006). Clinical Management of Insomnia using cognitive therapy. *Behavioral Sleep Medicine*, 4 (30), 179-202.
- **Benson, H. (1975). *The relaxation response*. New York: Morrow.
- Brassington G.S., King, A.C., & Bliwise, D.L. (2000). Sleep problems as a

risk factor for falls in a sample of community-dwelling adults aged 64-99 years. *Journal of American Geriatric Society*, 84, 1234-1240.

Bloom, H.G., Ahmed, I., Alessi, C.A., Ancoli-Israel, S., Buysse, D.J., Kryger, M.H., Phillips, B.A., Thropy, M.J., Vitiello, M.V., & Zee, P.C. (2009). Evidence-based recommendations for the assessment and management of sleep disorders in older persons. *Journal of American Geriatric Society*, 57, 761-789.

Buysse, D.J., Reynolds, C.F., Monk, T.H., Berman, S.R., & Kupfer, D.J. (1989). The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research. *Psychiatry Research*, 28, 193-213.

Campbell, S.S., Murphy, P.J., & Stauble, T.N. (2005). Effects of nap on nighttime sleep and waking function in older subjects. *Journal of American Geriatric Society*, 53 (1), 48-53.

Center for Disease Control (2003, February). Public health and aging: Trends in aging-United States and worldwide. *Morbidity and Mortality Weekly Report*, 52(6), 101-106.

Cheuk, D.K.L., Yeung, J., Chung, K.F., & Wong, V. (2009). Acupuncture for insomnia: Review. *The Cochrane Library*, (3), 1-50.

Cho, H.J., Lavretsky, H., Olmstead, R., Levin, M.J., Oxman, M.N., & Irwin, M.R. (2008). Sleep disturbance and depression recurrence in community-dwelling older adults: A prospective study. *American Journal of Psychiatry*, 165, 1543-1550.

- *Cui, R., Zhou, D. (2003) Treatment of phlegm- and heat-induced insomnia by acupuncture in 120 cases. *Journal of Traditional Chinese Medicine*, 23(1), 57-58.
- Da Silva, J.B.G., Nakamura, M.U., Cordeiro, J.A., & Kulay Jr, L. (2005). Acupuncture for insomnia in pregnancy: A prospective, quasi-randomized, controlled study. *Acupuncture Medicine*, 23(1), 47-51.
- **Davies, R., Lacks, P., Storandt, M., & Bertelson, A.D. (1986). Counter control treatment of sleep-maintenance insomnia in relation to age. *Psychology and Aging*, 3, 233-238.
- **Edinger, J.D., Hoelscher, T.J., Marsh, G.R., Lipper, S., & Ionescu-Pioggia, M. (1992). A cognitive-behavioral therapy for sleep-maintenance insomnia in older adults. *Psychology and Aging*, 7, 282-289.
- Engle-Friedman, M., Bootzin, R. R., Hazlewood, L., & Tsao, C. (1992). An evaluation of behavioral treatments for insomnia in the older adult. *Journal of Clinical Psychology*, 48, 77-90.
- Ensrud, K.E., Blackwell, T., Mangione, C.M., Bowman, P.J., Whooley, M.A., Bauer, D.C., et al., (2003). Central nervous system-active medications and risk for fractures in older women. *Journal of American Geriatric Society*, 50 (10), 1629-1637.
- Fetveit, A., & Bjorvatn, B. (2004). The effects of bright-light therapy on actigraphical measured sleep last for several weeks post-treatment. A study in a nursing home population. *Journal of Sleep*, 13, 153-158.
- Floyd, J.A., Medler, S.M., Ager, J.W., & Janisse, J.J. (2000). Age-related

changes in initiation and maintenance of sleep: A meta-analysis.

Research in Nursing and Health, 23, 106-117.

Foley, D.J., Ancoli-Israel, S., Britz, P., & Walsh, J. (2004). Sleep disturbances and chronic disease in older adults: Results of the 2003 national sleep foundation sleep in America survey. *Journal Psychosomatic Research*, 56, 497-502.

Foley, D.J., Monjan, A.A., Brown, S.L., Simonsick, E.M., Wallace, R.B., & Blazer, D.G. (1995). Sleep complaints among elderly persons: an epidemiologic study of three communities. *Sleep*, 18, 425-432.

Food and Drug Administration. (2006) Guidance for industry on complementary and alternative medicine products and their regulation by the food and drug administration. U.S. Department of Health and Human Services. Retrieved on September 25, 2009, from www.fda.gov/downloads/RegulatoryInformation/Guidance/UCM145405.pdf

Food and Drug Administration. (2009). Sleep disorder (sedative-hypnotic) drug information. U.S. Department of Health and Human Services. Retrieved on September 23, 2009, from [www.fda.gov/Drugs/DrugSafety/PostmarketDrugSafetyInformationforPatientsand Providers/ucm101557.htm](http://www.fda.gov/Drugs/DrugSafety/PostmarketDrugSafetyInformationforPatientsandProviders/ucm101557.htm)

** Friedman, L, Benson, K., Noda, A., Zarcone, V., Wicks, D.A., O'Connell, K., et al. (2000). An actigraphic comparison of sleep restriction and sleep hygiene treatments for insomnia in older adults. *Journal of Geriatric Psychiatry and Neurology*, 13, 17-27.

- **Friedman, L., Bliwise, D.L., Yesavage, J.A., & Salom, S.R. (1991). A preliminary study comparing sleep restriction and relaxation treatments for insomnia in older adults. *Journal of Gerontology: Psychological Sciences*, *46*, 1-8.
- Friedman, L., Brooks, J.O., Bliwise, D.L., Yesavage, J.A., & Wicks, D.S. (1995). Perceptions of life stress and chronic insomnia in older adults. *Psychology of Aging*, *10*(3), 352-357.
- Glass, J., Lanctot, K.L., Herrmann, N., Sproule, B.A., & Busto, U.E. (2005). Sedative hypnotics in older people with insomnia: Meta-analysis of risks and benefits. *British Medical Journal*, *331*(726), 1169.
- Green, A., Hicks, J., & Wilson, S. (2007). The experience of poor sleep and its consequences: A qualitative study involving people referred for cognitive-behavioral management of chronic insomnia. *British Journal of Occupational Therapy*, *71*(5), 196-204.
- Hallburg, J.C. (1976). The teaching of aged adults. *Journal of Gerontological Nursing*, *2*(3), 13-19.
- Harvard Medical School Division of Sleep. (2007). Sleep, performance, and public safety. (2007). Retrieved September 16, 2009, from <http://www.healthysleep.med.harvard.edu/healthy/matters/consequences/sleep-performance-and-public-safety>
- Holbrook, A., Crowther, R., Lotter, A., & Endeshaw, Y. (2000). The role of benzodiazepines in the treatment of insomnia: Meta-analysis of benzodiazepine use in the treatment of insomnia. *Journal of American*

Geriatric Society, 49, 824-826.

Holcomb, S.S. (2006). Recommendations for assessing insomnia. *Nurse Practitioner, 31, 55-60.*

Horne, J.A., & Reyner, L.A. (1995). Sleep related vehicle accidents. *British Medical Journal, 310(6979), 565-567.*

*References marked with an asterisk indicate studies included in the meta-analysis.

*Huang, W., Kutner, N., & Bliwise, D.L. (2009). A systematic review of the effects of acupuncture in treating insomnia. *Sleep Med Rev. 13(1), 73-104.*

Irwin, M.R., Olmstead, R., & Motivala, S.J. (2008). Improving sleep quality in older adults with moderate sleep complaints: A randomized controlled trial of Tai Chi Chih. *Sleep, 31(7), 1001-1008.*

Jacobs, G.D., Pace-Schott, E.F., Stickgold, R., & Otto, M.W. (2004). Cognitive behavior therapy and pharmacotherapy for insomnia: A randomized controlled trial with direct comparison. *Archives and Internal Medicine, 164, 1888-1896.*

Kamel, N.S., & Gammack, J.K. (2006). Insomnia in the elderly: Cause, approach, and treatment. *American Journal of Medicine, 119, 463-469.*

Kielhofner, G., & Burke, J.P. (1985). Components and detriments of human occupation. In: Kielhofner, ed. *A model of human occupation: Theory and application*. Baltimore, MD: Williams and Wilkins, 12-36.

King, A.C., Oman, R.F., Brassington, G.S., Bliwise, D.L., & Haskell, W.L. (1997). Moderate-intensity exercise and self-rated quality of sleep in

- older adults: A randomized controlled trial. *Journal of American Medical Association*, 277(1), 32-37.
- King, A.C., Pruitt, L.A., Woo, S., & Castro, C.M. (2008). Effects of moderate-intensity exercise on polysomnographic and subjective sleep quality in older adults with mild to moderate sleep complaints. *The Journals of Gerontology*, 63A(9), 997-1004.
- Knowles, M.S., Holton III, E.F., Swanson, R.A. (2005). *The Adult Learner: The definitive classic in adult education and human resource development*. San Diego, California: Elsevier.
- Kray, J., & Lindenberger, U. (2000). Adult Age differences in task switching. *Psychology and Aging*, 15(1), 126-147.
- Krishnan, P., & Hawranik P. (2008). Diagnosis and management of geriatric insomnia; A guide for nurse practitioners. *Journal of the American Academy of Nurse Practitioners*, 20, 590-599.
- Lacks, P., & Morin, C.M. (1992). Recent advances in the assessment and treatment of insomnia. *Journal of Consulting and Clinical Psychology*, 60(4), 586-594.
- Larson, E., Wood, W., & Clark, F. (2003). Occupational science: Building the science and practice of occupation through an academic discipline.
- *Li, H.T., Liu, J.H., & Zhu, Q.X. (2005). Clinical observation on treatment of senile insomnia with application therapy on Shenque acupoint with ginkgo leaf preparation: A report of 25 cases. *Zhong Xi Yi Jie He Xue Bao*, 3(5), 398-399.
- *Li, F., Fisher, K.J., Harmer, P., Irbe, D., Tearse, R.G. & Weimer, C. (2004).

- Tai chi and self-rated quality of sleep and daytime sleepiness in older adults: A randomized controlled trial. *Journal of American Geriatric Society*, 52(6), 892-900.
- *Lian, N. & Yan, Q. (1990) Insomnia treated by auricular pressing therapy. *Journal of Traditional Chinese Medicine*, 10(3), 174-175.
- **Lichstein, K.L. & Johnson, R.S. (1993). Relaxation for insomnia and hypnotic medication use in older women. *Psychology and Aging*, 8, 103-111.
- Lichstein, K.L., Wilson, N.M., & Johnson, C.T. (2000). Psychological treatment of secondary insomnia. *Psychology & Aging*, 15(2), 232.
- Lichstein, K.L., Reidel, B.W., Wilson, N.M., Lester, K.W., & Aguillard, N. (2001) Relaxation and sleep compression for late-life insomnia: A placebo-controlled trial. *Journal of Consulting and Clinical Psychology*, 69, 227-239.
- **Lick, J.R., & Heffler, D. (1977). Relaxation training and attention placebo in the treatment of severe insomnia. *Journal of Consulting and Clinical Psychology*, 45, 153-161.
- Manabe, K., Matsui, T., Yamaya, M., Sato-Nakagawa, T., Okamura, N., Arai, H., et al. (2000). Sleep patterns and mortality among elderly patients in a geriatric hospital. *Gerontology*, 46, 318-322.
- McCall, W.V. (2004). Sleep in the elderly: Burden, diagnosis, and treatment. *Primary Care Companion Journal of Clinical Psychiatry*, 6 (1), 9-20.
- Meyer, A. (1977). The philosophy of occupational therapy. *American Journal Occupational Therapy*, 31 (10), 639-42 (Originally published in 1922).

- Montgomery, P., Dennis, J.A. (2009). Cognitive behavioural interventions for sleep problems in adults aged 60+: Review. *The Cochrane Collaboration*, 4, 1-37.
- Morgan, K., & Clark, D. (1997). Risk factors for late-life insomnia in a representative general practice sample. *British Journal of General Practice*, 47, 166-169.
- **Morin, C.M. & Azrin, N.H. (1988). Behavioral and cognitive treatments of geriatric insomnia. *Journal of Consulting and Clinical Psychology*, 56, 748-753.
- **Morin, C.M., Colecchi, C., Stone, J., Sood, R., & Brink, D. (1999). Behavioral and pharmacological therapies for late-life insomnia: A randomized controlled trial. *Journal of American Medical Association*, 281(11), 991-999.
- Morin, C.M., Culbert, J.P. & Schwartz, S.M. (1994). Nonpharmacological interventions for insomnia: A meta-analysis of treatment efficacy. *American Journal of Psychiatry*, 151, 1172-1180.
- **Morin, C.M., Kowatch, R.A., Barry, T., & Walton, E. (1993). Cognitive-behavior therapy for late-life insomnia. *Journal of Counseling and Clinical Psychology*, 61, 137-146.
- Morin, C.M., Stone, J., Trinkle, D., Mercer, J., & Remberg, S. (1993). Dysfunctional beliefs and attitudes about sleep among older adults with and without insomnia complaints. *Psychology and Aging*, 23, 263-271.

- Murtagh, D.R., & Greenwood, K.M. (1995). Identifying effective psychological treatments for insomnia: A meta-analysis. *Journal of Consulting and Clinical Psychology, 63*, 79-89.
- National Safety Council. (1997). Accident facts. *National Safety Council (1997 Ed.)* Retrieved on May 15, 2009, from <http://www.nsc.org/lrs/statstop.aspx>
- National Sleep Foundation. (2009). Cognitive behavior therapy for insomnia. Retrieved on September 16, 2009, from <http://www.sleepfoundation.org/article/hot-topics/cognitive-behavioral-therapy-insomnia>
- **References marked with two asterisks indicate studies included in the meta- analysis.
- **Nau, S.D., McCrae, C.S., Cook, K.G., Lichstein, K.L. (2005). Treatment of insomnia in older adults. *Clinical Psychology Review, 25(5)*, 645-672.
- Nevit, M.C. (1990). Falls in older adults: Risk factors and prevention. *National Academy of Sciences. 263-290.*
- Neubauer, D.N. (2009). Insomnia and Sleep. *National Sleep Foundation*, Retrieved on September 16, 2009, from http://www.sleepfoundation.org/site/c.huIXKjM0IxF/b.4815435/k.BD5F/Sleep_and_Insomnia.htm
- Nicassio, P.M., Boylan, M.B., & McCabe, T.G. (1982) Progressive relaxation, EMG biofeedback, and biofeedback placebo in the treatment of sleep-onset insomnia. *The British Journal of Medical Psychology, 55(2)*, 159-66.

- **Nicassio, P., & Bootzin, R. (1974). A comparison of progressive relaxation and autogenic training as treatments for insomnia. *Journal of Abnormal Psychology*, 83, 253-260.
- Nurit, W., & Michel, A. B. (2003). Rest: A qualitative exploration of the phenomenon. *Occupational Therapy International*, 10, 227–238.
- Ohayon, M.M. & Roth, T. (2003). Place of chronic insomnia in the course of depressive and anxiety disorders. *Journal of Psychiatric Research*, 37, 9–15.
- Ohayon, M.M., Carskadon, M.A., Guilleminault, C., & Vitiello, M.V. (2004). Meta-analysis of quantitative sleep parameters from childhood to old age in healthy individuals: Developing normative sleep values across the human lifespan. *Sleep*, 27, 1255-1273.
- Ohayon, M.M., Caulet, M., Preist, R.G., & Guilleminault, C. (1998). Psychotropic medication consumption patterns in the UK general population. *Journal of Clinical Epidemiology*, 51(3), 273-283.
- **Pallesen, S., Nordus, I.H., Kvale, G., Nielsen, G.H., Havik, O.E., Johnson, B.H., et al. (2003). Behavioral treatment of insomnia in older adults: An open clinical trial comparing two interventions. *Behavior Research and Therapy*, 41, 31-48.
- Passarella, S., & Duong, M.T. (2008). Diagnosis and treatment of insomnia. *American Journal of Health-System Pharmacists*, 65, 927-934.
- Pearson, M., & Wessman, J. (1996) Gerogogy: In patient education. *Home Health Nurse*, 14(8), 631-636.

- Persson, D., Erlandsson, L.K., Eklund, M., & Iwarsson, S. (2001). Value dimensions, meaning and complexity in human occupation-A tentative structure for analysis. *Scandinavian Journal of Occupational Therapy*, 8(1), 7-18.
- Petit, L., Azad, N., Byszewski, A., Sarazan, F.F., & Power, B. (2003). Non-pharmacological management of primary and secondary insomnia among older people: Review of assessment tools and treatments. *Age & Ageing*, 32, 19-25.
- Picariello, G. (1986). A guide for teaching elders. *Geriatric Nursing*, 7(1), 38-39.
- Pollak, C.P., Perlick., D., Linsner, J.P., Wenston, J., & Hsieh, F. (1990). Sleep problems in the community elderly as predictors of death and nursing home placement. *Journal of Community Health*, 15, 123-135.
- Pressman, M.R. & Fry, J.M. (1998). What is normal sleep in elderly? *Clinical Geriatric Medicine*, 4, 71-81.
- **Puder, R., Lacks, P., Bertelson, A.D., & Storandt, M. (1983). Short-term stimulus control treatment of insomnia in older adults. *Behavior Therapy*, 14, 424-429.
- **Riedel, B.W., Lichstein, K.L., & Dwyer, W.O. (1995). Sleep compression and sleep education for older insomniacs: Self-help vs. therapists guidance. *Psychology and Aging*, 10, 54-63.
- Roth, T. (2007). Insomnia: Definition, prevalence, etiology, and consequences. *Journal of Clinical Sleep Medicine*, 3(5), 7-10.

- Rockwood, K., Davis, H.S., Merry, H.R., MacKnight, C., & McDowell, I. (2001). Sleep disturbances and mortality: Results from the Canadian study of health and aging. *Journal of American Geriatric Society*, 49(5), 639-641.
- Sivertsen, B., Omvik, S., Pallesen, S., Bjorvatn, B., Havik, O.E., Kvale, G., et al. (2006). Cognitive behavioral therapy vs. zopiclone for treatment of chronic primary insomnia in older adults: A randomized controlled trial. *Journal of American Medical Association*, 295, 2851-2858.
- Smith, M.T., Perlis, M.L., Park, A., Smith, M.S., Pennington, J., Giles, D.E., et al. (2002). Comparative meta-analysis of pharmacotherapy and behavior therapy for insomnia. *American Journal of Psychiatry*, 159, 5-11.
- Smith, N.R., Kielhofner, G., & Watts, J.H., (1986). The relationships between volition, activity pattern, and life satisfaction in the elderly. *American Journal of Occupational Therapy*, 40, 278-283.
- Smyth, C.A. (2008). Evaluating sleep quality in older adults: The Pittsburgh Sleep Quality Index can be used to detect sleep disturbances or deficits. *American Journal of Nursing*, 108(5), 42-50.
- Spielman, A.J., Saskin, P., & Thorpy, M.J. (1987). Treatment of chronic insomnia by restriction of time in bed. *Sleep*, 10, 45-56.
- Stone, K.L., Ensrud, K.E., & Ancoli-Israel, S. (2008). Sleep, insomnia and falls in elderly patients. *Sleep Medicine*, 9(1), S18-S22.
- *Suen, L.K., Wong, T.K., Leung, A.W., & Ip, W.C. (2003). The long-term

- effects of auricular therapy using magnetic pearls on elderly with insomnia. *Complement Therapy Medicine*, 11(2), 85-92.
- Summers, M.O., Crisostomo, M.I., & Stepanski, E.J. (2006). Recent developments in the classification, evaluation, and treatment of insomnia. *CHEST*, 130,276-286.
- Tamaki, M., Shirota, A., Hayashi, M., & Hori, T. (2000). Restorative effects of a short afternoon nap (<30 min) in the elderly on subjective mood, performance and eeg activity. *Sleep Online*, 3 (3), 131-9.
- Theis, S.L., & Merritt, S.L. (1994). A learning model to guide research and practice for teaching of elder clients. *Nursing and Health Care*, 15(9), 464-468.
- Tsai, Y.F., Wong, T.K.S., Ku, Y.C. (2006). Self-care management of sleep disturbances and risk factors for poor sleep among older residents of Taiwanese nursing homes. *Journal of Clinical Nursing*, 17, 1219-1226.
- U.S. Department of Education. (2003). *National assessment of adult literacy*. Institute of Education Sciences. Retrieved October 27, 2009, <http://www.health.gov>
- U.S. Department of Health and Human Services. (2003). *National sleep disorder research plan*. Retrieved September 16, 2009, http://www.nhbi.nih.gov/health/prof/sleep/res_plan/sleep-rplan.pdf
- *Wang, C.W., Kang, J., Zhou, J.W., Hu, Y.P. & Li, N. (2006). Effect of rolling needle therapy on quality of life in the patient of non-organic chronic insomnia: A randomized controlled trial. *Zhongguo Zhen Jiu*,

26(7), 461-465.

Weinrich, S.P., & Boyd, M. (1992). Education in the elderly. *Journal of Gerontological Nursing, 18(1)*, 15-20.

West, L. (2009, May 11) Sleep: An emerging practice area? *OT Practice, 14(8)*, 9- 10.

World Sleep Foundation. (2009). *Insomnia*. Retrieved September 16, 2009 from <http://worldsleepfoundation.org/insomnia.htm>