

Older Adults and Insomnia Resource Guide

Introduction

Almost half of all older adults report problems with insomnia, defined as difficulty initiating and maintaining sleep. Insomnia has far-reaching and often subtle effects on health and quality of life, with substantial cost to society. Medically ill older adults are at particular risk for insomnia, since many medical illnesses disrupt sleep and impair alertness. Older adult insomnia is often treated pharmacologically, but older adults are especially vulnerable to adverse effects from hypnotic medication, such as memory impairment and impaired daytime performance. Fortunately, psychological interventions for insomnia have been developed and, especially in the last decade, applied to older adults with insomnia. The resource guide that follows includes research studies on a variety of important topics relevant to insomnia among older adults. These include the incidence and effects of insomnia, its causes, the measurement of insomnia, and outcome intervention studies. The interventions focus on psychological treatments of insomnia, including cognitive-behavioral techniques, sleep restriction and stimulus control approaches, and sleep hygiene. Additional resources, including health education materials for consumers, and national organizations, can be found at the end of this document.

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Books

Epidemiology of sleep: Age, gender, and ethnicity

Lichstein, K. L., Durrence, H. H., Riedel, B. W., Taylor, D. J., & Bush, A. J. (2004). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

This book is a description of epidemiological study of sleep. Specifically, the present study collected two weeks of sleep diaries and daytime functioning questionnaires from 772 randomly selected residents of Memphis, TN, and adjacent communities. The sample ranged in age from 20 to 98 years old, was equally divided by men and women, and achieved ethnic diversity with about 30% African American representation. The study produced an archive of normal sleep distributed by age, gender, and ethnicity.

Treatment of late-life insomnia

Lichstein, K. L., & Morin, C. M. (Eds.). (2000). Thousand Oaks, CA: Sage Publications, Inc.

As the proportion of Americans over the age of 65 steadily increases, so too does the importance of understanding the special health needs of this age group. In the past decade, there has been a great deal of clinical research directed toward the development of effective treatment of insomnia among older adults. Methods of assessment have been developed and key diagnostic issues have crystallized. This book brings together articles from leading researchers in the field, providing a comprehensive book of interest to health care professionals.

Insomnia: Psychological assessment and management

Morin, C. M. (1993). Guilford Press: New York.

The author presents a multifaceted cognitive-behavioral treatment approach for chronic insomnia. Using a conceptual model that emphasizes the interplay between maladaptive behavior patterns and dysfunctional sleep cognitions, the book guides readers step-by-step through the program, showing how to implement treatment procedures in sequence and how to tailor specific elements to the needs of the individuals.

Book Chapters

Assessment and differential diagnosis

Espie, C. A. (2000). In K. L. Lichstein & C. M. Morin (Eds.), *Treatment of late-life insomnia* (pp. 81-108). Thousand Oaks, CA: Sage Publications, Inc.

The aim of this chapter is to provide an overview of assessment practice in working with people with insomnia. Particular emphasis is placed upon the sleep patterns and complaints of older adults with insomnia (OAWI). Self-report, behavioral, and physiological approaches to sleep assessment are described and their advantages and disadvantages discussed. Issues of differential diagnosis in working with OAWI are introduced.

Characteristics of older adults with insomnia

Fichten, C. S., Libman, E., Bailes, S., & Alapin, I. (2000). In K. L. Lichstein & C. M. Morin (Eds.), *Treatment of late-life insomnia* (pp. 37-79). Thousand Oaks, CA: Sage Publications, Inc.

The goals of this chapter are: (a) to describe the characteristics of three groups of healthy, independent, community dwelling older adults: good sleepers and poor sleepers with and without insomnia complaints; (b) to present a working operational definition of insomnia that is based on both sleep/wake parameters and distress experienced; and (c) to explore the multifaceted nature of the insomnia complaint in older adults. To arrive at an operational definition of insomnia in older adults, the authors discuss what is meant by "older adults" and briefly examine how existing classificatory systems deal with definitions of insomnia. The authors then evaluate the daytime and nocturnal components of the insomnia complaint, examine characteristics of older adults with and without insomnia, and explore how insomnia and related complaints are measured and evaluated.

Insomnia and Aging

Friedman, L. (2006). In T. L. Lee-Chiong (Ed.), *Sleep: A comprehensive handbook*. New York, NY: Wiley-Liss.

Discusses factors and issues in sleep disordered complaints of older age. Mood disorders, nocturia, circadian rhythms, and their impact on aging are examined.

The many faces of insomnia

Hauri, P. J. (2000). In D. Mosofsky & D. Barlow (Eds.), *The management and treatment of stress and anxiety in medical disorders* (pp. 143-159). Allyn & Bacon: Boston, MA.

The author presents an overview of the assessment, treatment and etiology of sleep insomnia. Treatments considerations change depending on whether the insomnia is acute, short-term or chronic. Distinguishing between these categories has implications for diagnosis and assessment.

Insomnia in older adults

Riedel, B. W., & Lichstein, K. L. (2000). In S. K. Whitbourne (Ed.), *Psychopathology in later adulthood* (pp. 299-322). Hoboken, NJ: John Wiley & Sons Inc.

This chapter focuses on psychological treatment of insomnia in the elderly and includes information on distinguishing insomnia from other sleep disorders. After examining Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) criteria for insomnia, the author discusses the epidemiology of the disorder. Treatment for primary insomnia can include relaxation, stimulus control, cognitive-behavior therapy, and sleep education and sleep hygiene. Treatment for secondary insomnia includes pharmacological treatment. Psychological treatment of hypnotic-free older adults with insomnia can be expected to produce substantial subjective sleep improvement. Because of negative side effects and tolerance to therapeutic effects, long-term use of hypnotics for insomnia is not recommended. Psychological treatment of older hypnotic users has resulted in only modest sleep improvement. However, psychological treatments have helped older adults with insomnia reduce sleep medication without long-term sleep deterioration.

Sleep hygiene

Riedel, B. W. (2000). In K. Lichstein, & C. Morin (Eds.), *Treatment of late-life insomnia* (pp. 125-146). Sage Publications: Thousand Oaks, CA.

This chapter provides a literature review for the major sleep hygiene behaviors: caffeine consumption, exercise, alcohol use, smoking, napping, and exercise. Based on the literature and clinical experience the author outlines recommendations for delivering sleep hygiene instructions to older adults.

Geriatric psychopharmacology

Schneider, J. (1996). In L. Carstensen, & B. Edelman (Eds.), *The practical handbook of clinical gerontology* (pp. 481-542). Sage Publications: Thousand Oaks, CA.

The author reviews general pharmacological factors to be considered in prescribing drugs for elderly patients and the use of psychotropic drugs for treating specific problems including insomnia, depression, anxiety, psychosis, mood swings and behavioral disturbance.

Primary insomnia

Van Brunt, D. L., & Lichstein, K. L. (2000). In M. Hersen & M. Biaggio (Eds.), *Effective brief therapies: A clinicians guide* (pp. 283-302). Academic Press: San Diego, CA.

The authors discuss theoretical and practical considerations for treating primary insomnia through case conceptualization and treatment progression with a 47-year old female. The diversity of symptoms and symptom overlap with other disorders makes careful assessment and differential diagnosis critical for treatment planning.

Objective assessments should be used; however, treatment providers should not ignore the patient's subjective perceptions of the disorder. Several behavioral treatments are effective at reducing symptoms but their success is dependent on patient compliance. Pharmacotherapy is contraindicated for the treatment of chronic insomnia.

Sleep in depression and anxiety

Ware, J. C., & Morin, C. M. (1997). In M. R. Pressman & W. C. Orr (Eds.), *Understanding sleep: The evaluation of sleep disorders. Application and practice in health psychology* (pp. 483-503). American Psychological Association: Washington, DC.

This chapter discusses the effects of anxiety, depression, and insomnia treatment on sleep patterns. The authors' review sleep-specific events such as bruxism, rocking, night terrors, sleepwalking, nightmares and sleep talking. Scientific evidence suggests a high rate of comorbidity between insomnia, anxiety and depression. Insomnia often begins with anxiety due to stressful life events whereas persistent insomnia may be a risk factor for development of depression.

Journal Articles

Role of nocturnal cognitive arousal in the complaint of insomnia among older adults

Alapin, I., Libman, E., Bailes, S., & Fichten, C. S. (2003). *Behavioral Sleep Medicine*, 1, 155-170.

Examined nocturnal sleep parameters, daytime functioning and psychological adjustment cross-sectionally in four groups of older adults: good and poor sleepers with high and low cognitive arousal. Results indicate that when sleep quality was controlled for, individuals with high and low nocturnal cognitive arousal did not differ on either nocturnal or daytime aspects of the insomnia complaint. They were, however, less well adjusted psychologically. The pattern of findings suggests that high cognitive arousal contributes indirectly to the overall insomnia experience through its association with psychological maladjustment, rather than interfering with sleep per se. Treatment of late-life insomnia should include assessment and, possibly, clinical management of psychological adjustment.

Diagnosis and treatment of sleep disorders in older adults

Ancoli-Israel, S., & Ayalon, L. (2006). *American Journal of Geriatric Psychiatry*, 14, 95-103.

Among the most common complaints of older adults are difficulty initiating or maintaining sleep. These problems result in insufficient sleep at night, which then results in an increased risk of falls, difficulty with concentration and memory, and overall decreased quality of life. Difficulties sleeping, however, are not an inevitable part of aging. Rather, these sleep complaints are often secondary to medical and psychiatric illness, the medications used to treat these illnesses, circadian rhythm changes, or other sleep disorders. The task for the geriatric psychiatrist is to identify the causes of these complaints and then initiate appropriate treatment.

Use of wrist activity for monitoring sleep/wake in demented nursing-home patients

Ancoli-Israel, S., Clopton, P., Klauber, M. R., Fell, R., & Mason, W. (1997). *Sleep*, 20, 24-27.

The authors report a validation study of a wrist activity monitor, the Actillum, which compared it to traditional polysomnogram recordings and to observations among 10 74-96 year old infirm and demented nursing-home patients. The authors concluded that the Actillum is the most feasible technique for studying sleep and wake activity in demented nursing-home patients.

Morbidity, mortality and sleep-disordered breathing in community dwelling elderly

Ancoli-Israel, S., Kripke, D. F., Klauber, M. R., Fell, R., Stepnowsky, C., Estline, E., Khazeni, N, & Chinn, A. (1997). *Sleep*, 19, 277-282.

In order to determine the relationship among sleep-disordered breathing, morbidity and mortality, 462 community dwelling elderly participants were studied from 1981 to 1986. Participants were divided into three groups: minimal or no sleep apnea, mild-moderate sleep apnea, and severe sleep apnea. The three groups were compared on the basis of diagnoses, causes of death, demographics, sleep questionnaires, and objective sleep measures. Results showed that elderly people with severe sleep apnea were at a higher risk for shorter survival, dying as much as two years earlier than others.

Psychological correlates of sleep apnea

Bardwell, W. A., Berry, C. C., Ancoli-Israel, S., & Dimsdale, J. E. (1999). *Journal of Psychosomatic Research*, 47, 583-596.

The authors examined relationships between psychological and sleep variables in individuals with and without sleep apnea. Participants were (n=112) of ideal weight and had no other major illness. For participants with sleep apnea, depression, anger and total mood disturbance correlated positively with deep sleep, REM, and hypoxemia. For participants without sleep apnea, vigor correlated positively with sleep quantity and negatively with hypoxemia. The correlations of many psychological variables with sleep apnea may be explained by correlating age, body mass and hypertension. Anger and vigor however appear to remain associated with sleep variables.

Self-reported sleep disturbance among African-American elderly: The effects of depression, health status, exercise and social support

Bazargan, M. (1996). *International Journal of Aging & Human Development*, 42, 143-160.

The author examined the prevalence and correlates of self-reported difficulties initiating and maintaining sleep in elderly African-American participants. Participants completed the Brief Symptom Inventory and the Inventory of Socially Supportive Behavior. Over 14.5% of the men and 23.6% of the women reported sleep latencies exceeding 30 minutes. Compared to men, women had longer sleep latency, woke more frequently at night, and were more likely to visit a health practitioner for sleeping problems. Multivariate analyses indicated that self-reported sleep problems were greater among elderly African-American women with higher depression/anxiety and chronic illness, and lower exercise and emotional support.

Prediction of outcome in behaviorally based insomnia treatments

Bliwise, D. L., Friedman, L., Nekich, J. C., & Yesavage, J. A. (1995). *Journal of Behavior Therapy & Experimental Psychiatry*, 26, 17-23.

The authors employed the NEO Personality Inventory to predict successful treatment outcome. Sleep restriction therapy and relaxation training were utilized to treat 322 elderly adults with insomnia. After two baseline weeks, subjects underwent four weeks of individual treatment. Participants showing the greatest improvement in total sleep time with both treatments tended to be more traditional, conventional and rigid. Improvement in sleep latency was unrelated to NEO scores. Sleep restriction therapy seemed to be more effective for increasing total sleep time.

Effectiveness and safety of hypnotic drugs in the treatment of insomnia in over 70-year old people

Cotroneo, A., Gareri, P., Nicoletti, N., Lacava, R., Grassone, D., Maina, E., De Sarro, G., & Cabodi, S. (2007). *Archives of Gerontology and Geriatrics*, 44, 121-124.

Studied 60 older adults with history of insomnia and concomitant diseases: depression, dementia and behavioral disturbances. All the patients of the study were visited in the outpatients' department. Three hypnotic drugs were used for the treatment of insomnia: zolpidem, or triazolam, or oxazepam, respectively at doses of 10 mg/day, 0.125-0.25 mg/day and 15.0 mg/day. All the three drugs showed to be effective and safe; no paradoxical effects were observed.

Impact of cognitive behavior therapy on health-related quality of life among adult hypnotic users with chronic insomnia

Dixon, S., Morgan, K., Mathers, N., Thompson, J., & Tomeny, M. (2006). *Behavioral Sleep Medicine*, 4, 71-84.

Results were combined from representative surveys of health related quality of life (HRQoL; n = 11,877; age range = 16-104) with data from a randomized controlled trial of cognitive behavior therapy for chronic insomnia (n = 209; age range = 31-92). Secondary analyses of scores from the SF-36 measure of HRQoL were conducted in order: (a) to compare the health related quality of life profiles of adult hypnotic users with chronic insomnia with those of population norms, and (b) to assess the impact of cognitive behavior therapy (CBT) for insomnia on HRQoL outcomes over 6 months. Compared with the primary care reference values, HRQoL among the trial participants at baseline was generally poorer. The magnitude of these decrements reduced markedly with advancing age. In the evaluation of the CBT intervention, statistically significant differences in SF-36 scores in favor of the intervention were present for physical functioning, emotional role limitation, and mental health over 6 months. Overall, this study shows that the SF-36 can play an important role in describing HRQoL in this patient group, and in the evaluation of interventions within this group.

Insomnia and the eye of the beholder: Are there clinical markers of objective sleep disturbances among adults with and without insomnia complaints?

Edinger, J. D., Fins, A. I., Glenn, D. M., Sullivan, R. J., Jr., Bastian, L. A., Marsh, G. R., Dailey, D., Hope, T. V., Young, M., Shaw, E., & Vasilas, D. (2000). *Journal of Consulting and Clinical Psychology*, 68, 586-593.

A study was conducted to see if mood, anxiety, and sleep related beliefs might relate to perceived sleep disturbance. Thirty-two women and 32 men with primary insomnia were compared to an age-matched sample of 61 normal sleepers. The groups with primary insomnia and the normal sleepers completed 6 nocturnal sleep recordings as well as the Beck Depression Inventory, the Trait portion of the State-Trait Anxiety Inventory, and the Dysfunctional Beliefs

and Attitudes about Sleep Questionnaire The findings suggest that the psychological factors scrutinized in this study may mediate sleep satisfaction and/or predict sleep difficulties.

Cognitive behavioral therapy for treatment of chronic primary insomnia

Edinger, J., Wohlgenuth, W. K., Radtke, R. A., Marsh, G. R., & Quillian, R. E. (2001). *JAMA*, 285, 1856-1864.

Seventy-Five adults with chronic primary sleep-maintenance insomnia were randomly assigned to receive either cognitive behavioral therapy, progressive muscle relaxation training or a quasi-desensitization treatment. Out patient treatment lasted 6 weeks with follow-up conducted at 6 months. Cognitive behavioral therapy produced larger improvements across the majority of outcome measures than did either the relaxation condition or the desensitization condition. The authors concluded that CBT represents a viable intervention for primary sleep-maintenance insomnia. Improvements endured through 6-months of follow-up.

The role of dysfunctional beliefs and attitudes in late-life insomnia

Ellis, J., Hampson, S. E., & Cropley, M. (2007). *Journal of Psychosomatic Research*, 62, 81-84.

This study examined the role of individual and combined sleep-related dysfunctional beliefs in late-life insomnia. 382 older adults who responded to an advertisement in a magazine took part in a cross-sectional survey. Respondents completed self-report measures of dysfunctional beliefs about sleep (Dysfunctional Beliefs and Attitudes to Sleep Scale) as well as measures of their current sleep patterns. Overall, people with insomnia (PWI) endorsed more extreme ratings of dysfunctional beliefs than "good sleepers" did. However, some sleep-related dysfunctional beliefs did not discriminate PWIs from good sleepers nor were they related to experiencing a longer duration of insomnia. This article demonstrates that not all sleep-related dysfunctional beliefs are related to reporting insomnia and that some are not related to a longer reported duration of insomnia, possibly changing through personal experience.

Incidence and remission of insomnia among elderly adults: An epidemiologic study of 6,800 persons over three years.

Foley, D. J., Monjan, A., Simonsick, E. M., Wallace, R. B., & Blazer, D. G. (1999). *Sleep*, 22 (Suppl. 2), 366-372.

In a three-year longitudinal study, the incidence and remission rates of insomnia in older adults were examined. Difficulty falling asleep, early morning arousal, physician diagnosis of heart disease, stroke, cancer, hip fracture, physical disability, perceived health status, and use of medications were ascertained at base-line and at three year follow-up. Data suggested an annual incidence rate of about 5%. Insomnia was associated with depressed mood, respiratory symptoms, physical disability, fair to poor perceived health, use of prescribed sedatives and widowhood. Only 7% of the incident cases of insomnia occurred in the absence of associated risk factors.

An actigraphic comparison of sleep restriction and sleep hygiene treatments for insomnia in older adults.

Friedman, L., Benson, K., Noda, A., Zarcone, V., Wicks, D. A., O'Connell, K., Brooks, J. O., III, Bliwise, D., & Yesavage, J. A. (2000). *Journal of Geriatric Psychiatry and Neurology*, 13, 17-27.

The authors compared the efficacy of sleep restriction therapy combined with sleep hygiene, nap modification of sleep restriction combined with sleep hygiene, and sleep hygiene alone as treatments of insomnia. The wrist

actigraph was used as an objective outcome measure for all participants at baseline, end of treatment, and at three-month follow-up. Results show few between group differences in treatment efficacy. This lack of treatment effect may be due to the efficacy of sleep hygiene as a treatment and also the relatively low symptom level of the sample.

Association between memory impairment and insomnia among older adults

Haimov, I. (2006). *European Journal of Ageing*, 3, 107-115.

Examined whether late-life insomnia is associated with the memory status of older adults. The study population comprised two groups: 50 older adult subjects without sleep disorders, and 23 older adult insomniacs. Memory processing for each of the two groups was evaluated using the Rey Auditory Verbal Learning Test (AVLT). The results demonstrate that chronic insomnia in older adults is associated with impairment in memory. Specifically, we found that older people suffering from late-life insomnia exhibit significantly reduced performance in learning rate and in temporal order judgment as well as significantly reduced resistance to proactive interference. The present findings suggest that late-life insomnia may be one of the factors contributing to the decline in memory processing seen among older people.

Symptoms of stress and depression as correlates of sleep in primary insomnia.

Hall, M., Buysse, D. J., Nowell, P. D., Nofzinger, E. A., Houck, P., Reynolds, C. F., & Kupfer, D. J. (2000). *Psychosomatic Medicine*, 62, 227-230.

The authors examined the extent to which symptoms of stress and depression are associated with subjective sleep complaints. Fourteen participants who met DSM-IV criteria for primary insomnia completed a modified Impact of Event Scale, the Hamilton Rating Scale for Depression, and the Pittsburgh Sleep Diary before a 2-night laboratory sleep series. A tendency to experience stress-related intrusive thoughts was associated with decreases in delta power. Elevations in subclinical symptoms of depression were correlated with greater sleep complaints and elevations in alpha power.

Comparative meta-analysis of behavioral interventions for insomnia and their efficacy in middle-aged adults and in older adults 55+ years of age

Irwin, M. R., Cole, J. C., & Nicassio, P. M. (2006). *Health Psychology*, 25, 3-14.

Meta-analyses support the effectiveness of behavioral interventions for the treatment of insomnia, although few have systematically evaluated the relative efficacy of different treatment modalities or the relation of old age to sleep outcomes. In this meta-analysis of randomized controlled trials, moderate to large effects of behavioral treatments on subjective sleep outcomes were found. Evaluation of the moderating effects of behavioral intervention type (i.e., cognitive-behavioral treatment, relaxation, behavioral only) revealed similar effects for the three treatment modalities. Both middle-aged adults and persons older than 55 years of age showed similar robust improvements in sleep quality, sleep latency, and waking after sleep onset.

Primary versus secondary insomnia in older adults: subjective sleep and daytime functioning

Lichstein, K.L., Durrence, H.H., Reidel, B.W., & Bayen, U.T. (2001). *Psychology and Aging*, 16, 264-271.

The authors examined the daytime and nighttime functioning in older adults with primary and secondary insomnia. Self-report assessments of sleep revealed no significant difference between the 2 insomnia groups. Daytime functioning measures found significant differences in impairment between the groups, with SI having the worst daytime functioning, followed by PI, which was worse than a comparison group of older adults with no insomnia. Further analysis revealed substantial independence between sleep and daytime functioning.

Relaxation and sleep compression for late-life insomnia: A placebo-controlled trial

Lichstein, K. L., Riedel, B. W., Wilson, N. M., Lester, K. W., & Aguillard, R. N. (2001). *Journal of Consulting and Clinical Psychology*, 69, 227-239.

Older adults (ages 59-92) with insomnia were recruited from the community and randomized to treatments: relaxation, sleep compression, and placebo desensitization. Questionnaire data collected at baseline, posttreatment, and 1-year follow-up and polysomnography data collected at baseline and follow-up yielded the following conclusions: All treatments improved self-reported sleep, but objective sleep was unchanged. Clinical significance analyses yielded the strongest findings supporting the active treatments and suggested that sleep compression was most effective. Results partially supported the conclusion that individuals with high daytime impairment (i.e., fatigue) respond best to treatments that extend sleep, as in relaxation, and individuals with low daytime impairment respond best to treatments that consolidate sleep, as in sleep compression. Strong methodological features including a placebo condition and a treatment implementation scheme elevate the confidence due these findings.

Occult sleep apnea in a recruited sample of older adults with insomnia

Lichstein, K. L., Riedel, B. W., Lester, K. W., & Aguillard, R. N. (1999). *Journal of Consulting and Clinical Psychology*, 67, 405-410.

Media announcements were used to recruit individuals with insomnia who were 59 years or older for an insomnia treatment research program. Thorough screening evaluations progressed in four stages: telephone interview, hospital interview, sleep diaries, and PSG. The present polysomnography (PSG) screening of a recruited sample of older adults with insomnia found a 29%-43% rate of undiagnosed sleep apnea (SA), depending on whether an apnea-hypopnea index of 15 or 5 was used, after interviews had already screened out obvious cases of SA. Also, PSGs revealed a 4% rate of occult periodic limb movements. A discriminant analysis identified overweight men reporting dry mouth at highest risk for occult SA, with an apnea-versus-insomnia classification success rate of 78%. Using PSG evaluations in research on insomnia in recruited older adults is requisite to preclude substantial representation of occult SA.

Insomnia in the older adult

Liu, L., & Ancoli-Israel, S. (2006). *Sleep Medicine Clinics*, 1, 409-421.

Insomnia is common in older adults. Untreated insomnia is correlated with poor health, cognitive impairment, and poor quality of life and also may be associated with increased risk of morbidity and mortality. Chronic insomnia usually is comorbid with medical or psychiatric conditions, medications, disrupted circadian rhythms, inadequate sleep hygiene, primary sleep disorders, and psychosocial or environmental factors. Unfortunately many older adults and their health care providers see poor sleep quality as a part of "normal" aging. It therefore is critical that clinicians

ask older adults about their sleep quality and then effectively assess and recommend treatment for difficulties with sleep.

Research evaluating brief behavioral sleep treatments for rural elderly (RESTORE): A preliminary examination of effectiveness

McCrae, C. S., McGovern, R., Lukefahr, R., & Stripling, A. M. (2007). *American Journal of Geriatric Psychiatry*, 15, 979-982.

The objective is to test the effectiveness of brief behavioral intervention for insomnia in rural elderly. Twenty older insomniacs (=65 years of age) were randomly assigned to sleep hygiene education or multicomponent behavioral treatment. Rural care providers individually administered treatment. Training involved a two-day workshop. Brief behavioral intervention for late-life insomnia can be quickly taught and effectively delivered by "real-world" care providers in rural primary care settings.

Evidence-based psychological treatments for insomnia in older adults

McCurry, S. M., Logsdon, R. G., Teri, L., & Vitiello, M. V. (2007). *Psychology and Aging*, 22, 18-27.

The review describes evidence-based psychological treatments (EBTs) for insomnia in older adults. Following coding procedures developed by the American Psychological Association's Committee on Science and Practice of the Society for Clinical Psychology, two treatments were found to meet EBT criteria: sleep restriction-sleep compression therapy and multicomponent cognitive-behavioral therapy. One additional treatment (stimulus control therapy) partially met criteria, but further corroborating studies are needed. At the present time, there is insufficient evidence to consider other psychological treatments, including cognitive therapy, relaxation, and sleep hygiene education, as stand-alone interventions beneficial for treating insomnia in older adults. Additional research is also needed to examine the efficacy of alternative-complementary therapies, such as bright light therapy, exercise, and massage. This review highlights potential problems with using coding procedures proposed in the EBT coding manual when reviewing the existing insomnia literature. In particular, the classification of older adults as persons age 60 and older and the lack of rigorous consideration of medical comorbidities warrant discussion in the future.

Self help treatment for insomnia: Bibliotherapy with and without professional guidance

Mimeault, V., & Morin, C. M. (1999). *Journal of Consulting & Clinical Psychology*, 67, 511-519.

The authors report the results of a study in which 54 participants were assigned to a cognitive-behavioral bibliotherapy treatment, a bibliotherapy treatment with weekly phone contacts or a wait-list control group. Participants in the treatment groups were mailed 6 treatment booklets at the rate of one per week, and half of the treatment participants also received weekly 15-minute phone consultations. Participants in both treatment conditions improved significantly on total wake time and sleep efficiency, whereas the wait-list group remained unchanged. The results suggest that bibliotherapy, with or without minimal guidance is an effective treatment for primary insomnia.

Age-related differences in the lifestyle regularity of seniors experiencing bereavement, care-giving, insomnia, and advancement into old-old age

Monk, T. H., Buysse, D. J., Hall, M., Nofzinger, E. A., Thompson, W. K., Mazumdar, S. A., & Reynolds III, C. F. (2006). *Chronobiology International*, 23, 831-841.

Thirty-three subjects were challenged by spousal bereavement or the need to care for a spouse at home with dementia (Challenged); 33 were suffering from formally diagnosed (DSM-IV) insomnia (Insomnia); and 38 were healthy, well-functioning older seniors in the second half of their eighth decade of life or later (Healthy Older). The objective of this study was to determine whether lifestyle regularity increased as a function of age within each of these three senior groups. Overall, age was significantly correlated with SRM-5, with the SRM score increasing by 0.67 units/decade. The same was true for the Challenged and Insomnia groups, which also showed a significant correlation between SRM and age (Challenged: $r = 0.48$, $p < 0.01$; Insomnia: $r = 0.36$, $p < 0.05$), though with a slightly faster rate of SRM increase in the Challenged than Insomnia group. The study thus confirmed that the previously observed increase in lifestyle regularity over the adult lifespan persists into later life. This may represent an adaptive behavioral response that might be used in future therapeutic approaches.

Behavioral and pharmacological treatments for late-life insomnia: A randomized controlled trial

Morin, C. M., Colecchi, C., Stone, J., Sood, R., & Brink, D. (1999). *Journal of the American Medical Association*, 281, 991-999.

The authors evaluated the effects of behavioral and pharmacological treatments for insomnia in older adults. Subjects were randomly assigned to either cognitive behavioral treatment, pharmacological treatment or combined cognitive behavioral and pharmacological treatment. Follow-up data were collected at three, 12 and 24 months after treatment completion. The authors concluded that behavioral and pharmacological treatments, either alone or in combination, were effective in the short-term management of late life insomnia. Subjects treated with medication alone had returned to their baseline by the 24-month follow-up.

Nonpharmacological treatment of late-life insomnia

Morin, C. M., Mimeault, V., & Gagne, A. (1999). *Journal of Psychosomatic Research*, 46, 103-116.

The authors reviewed outcome data regarding the efficacy of nonpharmacological interventions for the treatment of late-life insomnia. The data reviewed indicated that behavioral approaches produce reliable and durable therapeutic benefits such as improved sleep efficiency, and continuity and improved satisfaction with sleep patterns. Treatment methods such as stimulus control and sleep restriction, which target maladaptive habits are especially helpful for older insomniacs but relaxation techniques, which are aimed at decreasing arousal, produce more limited effects. Cognitive and educational interventions are helpful in altering age-related dysfunctional beliefs and attitudes about sleep.

Psychological management of insomnia: A clinical replication series with 100 patients

Morin, C. M., Stone, J., McDonald, K., & Jones, S. (1994). *Behavior Therapy*, 25, 291-309.

The authors report on a study that evaluated the efficacy of a short-term multifaceted intervention combining behavioral, cognitive, educational, and sleep medication components. Results from daily sleep diaries indicated that

participants were sleeping more efficiently after treatment and significant reductions in the usage of sleep aids were also noted.

The influences of physical activity on patterns of sleep behavior of patients with Alzheimer's disease

Namazi, K. H., Zadorozny, C. A., & Gwinnup, P. B. (1995). *International Journal of Aging & Human Development*, 40, 145-153.

The authors investigated the effect of exercise on the patterns of sleep of patients with Alzheimer's disease. The sleeping behaviors of 11 patients enrolled in a light exercise program and the sleeping behaviors of another 11 patients who were not enrolled in an exercise program were documented. Those who participated in the exercise program manifested 40% less restless behavior, while those in the non-exercise group had an increase of 3%.

Treatment of insomnia in older adults

Nau, S. D., McCrae, C. S., Cook, K. G., & Lichstein, K. L. (2005). *Clinical Psychology Review*, 25, 645-672.

The present review of evaluation and treatment covers the effects of aging on ability to sleep, the insomnia classification system, the treatment efficacy database, and critical outcome research methodology. Clinical trial methodology with older adults includes familiar challenges; for example, the need for placebo controls, and frequent failures to document the adequacy of treatment implementation. Recommendations for improving methodology are offered. A new review of treatment for primary insomnia in older adults shows strong improvement and consistent results for popular behavioral treatments. Older adult clinical trials show proven efficacy of behavioral treatment for primary insomnia, efficacy for secondary insomnia, and efficacy for insomnia associated with hypnotic dependency.

Behavioral treatment of insomnia in older adults: An open clinical trial comparing two interventions

Pallesen, S., Nordhus, I. H., Kvale, G., Nielsen, G. H., Havik, O. E., Johnsen, B. H., & Skjotskift, S. (2003). *Behaviour Research and Therapy*, 41, 31-48.

55 insomniacs, 60 yrs or above, participated in a behavioral treatment program, comparing two interventions (sleep hygiene + stimulus control vs. sleep hygiene + relaxation tape). Half of the subjects (Ss) were randomized to a waiting-list condition prior to treatment. No significant changes were observed during the waiting-list period. During the treatment period however, the Ss improved on several sleep parameters, and treatment gains were maintained at a six month follow-up. The effects of treatment were greater for nocturnal measures as compared to daytime measures and not-targeted behavior (medication use). There were no differences in treatment effects for the two interventions.

Insomnia as a risk factor for onset of depression in the elderly

Perlis, M. L., Smith, L. J., Lyness, J. M., Matteson, S. R., Pigeon, W. R., Jungquist, C. R., & Tu, X. (2006). *Behavioral Sleep Medicine*, 4, 104-113.

In this study, archival data from a community sample of healthy older adults were used to assess the extent to which insomnia predicts future illness in this age cohort. Out of the 147 participants with no prior history of mental illness, 66 participants were classified as having no insomnia, 47 had indeterminate insomnia, and 34 had persistent insomnia.

Twelve participants developed major depressive disorder during the 1-year follow-up period. Two had no insomnia, 4 had indeterminate insomnia, and 6 had persistent insomnia. Persistent insomnia with onset of depression occurred only in female participants and was significantly associated with middle insomnia. These data suggest that older adults with persistent insomnia are at greater risk for the development of new onset depression.

Sleep disturbances in the elderly residing in assisted living: Findings from the Maryland Assisted Living Study

Rao, V., Spiro, J. R., Samus, Q. M., Rosenblatt, A., Steele, C., Baker, A., Harper, M., Brandt, J., Mayer, L., Rabins, P. V., & Lyketsos, C. G. (2005). *International Journal of Geriatric Psychiatry*, 20, 956-966.

This study estimates the prevalence, types, and associations of sleep disturbance in a stratified random sample of Assisted Living residents, and to explore the effect of sleep disturbance on cognitive and physical functioning, as assessed by the Mini-Mental State Exam (MMSE) and the Psychogeriatric Dependency Rating Scale (PGDRS). Participants were 198 randomly selected assisted living residents in 22 Maryland facilities. Participants were rated on an 11-item sleep questionnaire regarding insomnia and daytime sleepiness. Sleep disturbance was present in 69% of residents, insomnia (IN) in 42% and excessive daytime sleepiness (DS) in 34.6%. IN and DS scores were not significantly correlated. The prevalence of sleep disturbance in AL is similar to that reported in nursing homes. Daytime sleepiness is associated with poorer cognitive and day-to-day functioning, while insomnia is associated with better outcomes. Effective management of DS may lead to improved functioning in the AL residents.

Reported chronic insomnia is independent of poor sleep as measured by electroencephalography

Rosa, R. R., & Bonnet, M. R. (2000). *Psychosomatic Medicine*, 62, 474-482.

The authors examined several behavioral, physiological and subjective variables in 121 participants reporting chronic insomnia and 56 participants reporting no insomnia. Equal percentages of participants in each group had 0, 1, or 2 nights of poor EEG sleep during a 36 hour laboratory stay indicating that the insomnia group was not more likely to have impaired sleep in the laboratory. MMPI results indicated that participants reporting chronic insomnia had more pathological personality profiles. Chronic insomnia was also associated with worse mood ratings, less subjective sleepiness, poorer memory, and longer midafternoon sleep latencies.

Daytime consequences and correlates of insomnia in the United States: Results of the 1991 National Sleep Foundation Survey II

Roth, T., & Ancoli-Israel, S. (1999). *Sleep*, 22 (Suppl. 2), 354-358.

The National Sleep Foundation and the Gallup Organization surveyed 1000 randomly selected Americans (age 18 years and older) in order to examine the consequences and correlates of insomnia. There were significant differences in reported waking behaviors and psychosocial measures by those with insomnia compared to those reporting no sleep difficulty. Problems included impaired concentration, impaired memory, decreased enjoyment of interpersonal relationships and decreased ability to accomplish daily tasks. Most of these variables showed increasing impairment with greater frequency of sleep disturbance.

A placebo-controlled test of cognitive-behavioral therapy for comorbid insomnia in older adults

Rybarczyk, B., Stepanski, E., Fogg, L., Lopez, M., Barry, P., & Davis, A. (2005). *Journal of Consulting and Clinical Psychology*, 73, 1164-1174.

The present study tested cognitive-behavioral therapy (CBT) for insomnia in older adults with osteoarthritis, coronary artery disease, or pulmonary disease. Ninety-two participants (mean age = 69 years) were randomly assigned to classroom CBT or stress management and wellness (SMW) training, which served as a placebo condition. Compared with SMW, CBT participants had larger improvements on 8 out of 10 self-report measures of sleep. The type of chronic disease had no impact on these outcomes. The hypothesis that CBT would improve daytime functioning more than SMW was only supported by a global rating measure. These results add to findings that challenge the dichotomy between primary and secondary insomnia and suggest that psychological factors are likely involved in insomnias that are presumed to be secondary to medical conditions.

Home-based video CBT for comorbid geriatric insomnia: A pilot study using secondary data analyses

Rybarczyk, B., Lopez, M., Schelble, K., & Stepanski, E. (2005). *Behavioral Sleep Medicine*, 3, 158-175.

This study compares two older adults with comorbid insomnia who received a home-based video CBT program to the authors' previously published data on 24 participants who received classroom CBT or no treatment. All 36 participants were initially randomized within the same protocol, but the video arm was conducted 7 months after completion of the other two study arms. Compared to controls, the video CBT group demonstrated significant changes in five of eight self-report measures of sleep at posttreatment, including sleep latency, time awake after sleep onset, total time in bed, overall sleep quality, and dysfunctional beliefs and attitudes about sleep. Compared to controls, the video CBT group also had posttreatment improvements in daytime functioning, including mood, pain perception, social functioning, and energy-vitality. Although video CBT was not significantly different from classroom CBT on self-report measures, the attrition rate was higher and the number of participants who achieved clinically significant change was lower. These preliminary findings suggest that delivering CBT in a home-based video format has the potential to serve as a first-line, cost-effective treatment for comorbid insomnia.

Efficacy of two behavioral treatment programs for comorbid geriatric insomnia

Rybarczyk, B., Lopez, M., Benson, R., Alsten, C., & Stepanski, E. (2002). *Psychology and Aging*, 17, 288-298.

In this study, 38 older adults with comorbid insomnia were randomized to 1 of 3 conditions: classroom cognitive-behavioral treatment (CBT), home-based audio relaxation treatment (HART), or delayed-treatment control. Compared to the control group, the CBT group had significant changes in 5 of 7 self-report measures of sleep at the 4-month follow-up. The HART group obtained significant outcomes on 3 of 7 measures. Wrist actigraphy measures and secondary-outcome measures did not yield significant findings for either treatment. Clinically significant changes at follow-up were obtained for 54% of patients in CBT, 35% in HART, and 6% in the control group when treatment dropouts were included. Although not as effective as in-person CBT, home interventions may have utility as a first-line, low-cost treatment.

A classroom mind/body wellness intervention for older adults with chronic illness: Comparing immediate and 1-year benefits

Rybarczyk, B., DeMarco, G., DeLaCruz, M., Lapidos, S., & Fortner, B. (2001). *Behavioral Medicine*, 27, 15-27.

This study tested the efficacy of a mind/body wellness intervention for older adults with chronic illness. Randomly assigned 243 physician-referred patients (aged 50-93 yrs) from an urban HMO to a classroom intervention or a wait-list control group. The intervention provided instruction on mind/body relationships; relaxation training; cognitive restructuring; problem-solving; communication; and behavioral treatment for insomnia, nutrition, and exercise. At post-treatment, the intervention group had significant decreases in self-reported sleep difficulties, pain, anxiety, and depression symptoms compared with controls. The intervention also led to a significant decrease in "chance" and "powerful others" health locus of control beliefs. At 1-yr follow-up, the intervention group maintained benefits in sleep and health locus of control and also reported a significant increase in health behaviors compared with controls. Pain, anxiety, and depression benefits were not maintained. This type of classroom intervention appears to have some lasting effects on health behaviors and beliefs.

Insomnia in primary care patients

Shochat, T., Umphress, J., Israel, A. G., & Ancoli-Israel, S. (1999). *Sleep*, 22 (Suppl. 2), 359-365.

The authors examined the prevalence and characteristics of insomnia in primary care patients and help-seeking behavior and compared the frequency of insomnia in primary care patients to the frequency of insomnia in the general population. The primary care population had a higher prevalence of insomnia than the general population. Patients with chronic insomnia had the most severe sleep complaints, the poorest daytime functioning, and exhibited the most help-seeking behaviors. Many characteristics of sleep complaints are easily detected, however, most patients with insomnia are not treated effectively.

A randomized controlled trial of the effect of exercise on sleep

Singh, N. A., Clements, K. M., Fiatarone, M. A. (1997). *Sleep*, 20, 95-101.

The authors investigated the effect of exercise on subjective sleep quality and activity of older adults with a diagnosis of major depression, minor depression, or dysthymia. Participants were assigned to a supervised weight-training program 3 times a week or to an attention control group. Exercise significantly improved all subjective sleep-quality and depression measures.

Assessment and treatment of sleep disorders in older adults: A review for rehabilitation psychologists

Stepanski, E., Rybarczyk, B., Lopez, M., & Stevens, S. (2003). *Rehabilitation Psychology*, 48, 23-36.

Recent research has led to significant progress in the assessment and treatment of sleep disturbance in older adults. Similar advances have been made with sleep disorders secondary to age-related chronic illness. The assessment and treatment of sleep disorders encompasses numerous behavioral aspects. Thus, rehabilitation psychologists are ideally positioned to help apply these new advances to the growing number of older adult patients in the rehabilitation setting. The authors provide an overview of age and disease-related sleep disorders. They provide details for implementation of behavioral treatments for geriatric insomnia that is comorbid with chronic illness.

Prevalence and risk factors of insomnia in community-dwelling Chinese elderly: A Taiwanese urban area survey

Su, T., Huang, S., & Chou, P. (2004). *Australian and New Zealand Journal of Psychiatry*, 38, 706-713.

This study determined the prevalence of and risk factors for self-reported sleep complaints in older adults. A cross-sectional interview study was conducted in a total of 2045 non-institutionalized older individuals aged 65 years or above of an urban community of Taiwan. The prevalence of one-month insomnia was 6% overall with a higher rate in elderly women than men. Frequent use of hypnotics over the past month was 8.4%. Among specific sleep complaints, poor sleep quality was the most commonly reported symptom, followed by difficulty falling asleep and difficulty maintaining sleep or early morning awakenings. Increasing age did not correlate with an increased rate of insomnia and female gender was not an independent risk factor. There was a low insomnia prevalence rate in the urban elderly community. Identified insomniacs required treatment of physical and mental problems, particularly in gender-specific risk factors. Future longitudinal studies to investigate causes of insomnia, as well as its detrimental effects on mood and health, are warranted.

Effects of chronic insomnia and use of benzodiazepines on daytime performance in older adults

Vignola, A., Lamoreux, C., Bastien, C. H., & Morin, C. M. (2000). *Journal of Gerontology (Series B Psychological Sciences and Social Sciences)*, 55, 54-62.

The authors examined the impact of insomnia and the chronic use of benzodiazepines on the cognitive and psychomotor performance of 60 older adults. Three groups matched on age gender and education were compared: 20 prolonged users of benzodiazepines for insomnia, 20 unmedicated insomniacs, and 20 good sleepers. Participants with insomnia, both medicated and nonmedicated performed worse than good sleepers on attention/concentration tasks. There was no other evidence of performance impairments.

Prevalence of insomnia and its associated factors in elderly long-term care residents

Voyer, P., Verreault, R., Mengue, P. N., & Morin, C. M. (2006). *Archives of Gerontology and Geriatrics*, 42, 1-20.

The goal of this study was to determine the prevalence of insomnia and its associated factors in nursing home residents. A cross-sectional study was conducted among seniors living in long-term care facilities. The findings indicate that 144 participants had an insomnia disorder according to DSM-1V criteria, 17% displayed at least one symptom of insomnia, and more than half of the subjects were benzodiazepine users. According to multivariate analysis, psychological distress and disruptive behaviors were the only factors associated with an insomnia disorder among this population. In conclusion, insomnia is a fairly important problem, as a symptom or a syndrome, among elderly people and deserves attention from caregivers. Alternative interventions to benzodiazepine drugs, which are suited to long-term care residents while tailored to these specific care settings, should be developed.

Health Information for Consumers

Age Page: A Good Nights Sleep

National Institute on Aging Information Center

P.O. Box 8057
Gaithersburg, MD 20898-8057
1-800-222-2225
1-800-222-4225 (TTY)

Brain Basics: Understanding Sleep

National Institute of Neurological Disorders and Stroke

Office of Communication
301-496-5751

Facts about Sleep Apnea

National Heart, Lung and Blood Institute Information Center
301-592-8573

Organizations

American Sleep Apnea Association

1424 K Street, NW
Suite 302
Washington, DC 20005
202-293-3650

Better Sleep Council

501 Wythe Street
Alexandria, VA 22314
703-683-8371

National Center on Sleep Disorders Research

Two Rockledge Center, Suite 10038
6701 Rockledge Drive, MSC 7920
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