

THE TREATMENT OF GERONTOLOGIC INSOMNIA

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Abstract

This paper reviews the distinctive features of a sleep in the elderly and related clinical issues. A consolidated nocturnal sleep pattern typifies middle-aged individuals in contrast to fragmented, lighter sleep in old age. Insomniac states in the elderly appear to occur at a relatively high frequency. Some of this may be due to mislabelling normal gerontologic sleep as insomnia by erroneously applying middle-aged sleep norms. Treatment for gerontologic insomnia has exclusively relied on pharmacotherapy, though this often poses additional problems. Psychological interventions might prove worthwhile, but heretofore, have not been attempted with the elderly. It was suggested that an educational approach attempting to teach age-appropriate sleep expectancies could prove fruitful with this population. It was concluded that gerontologic insomnia is a neglected area of research, particularly within the psychological domain.

Résumé

Cette étude a pour démarche de réexaminer les différentes caractéristiques du sommeil d'après les observations cliniques faites chez les personnes du 3ème âge. Un type de sommeil profond caractérise les individus entre les deux âges, contrastant avec un sommeil léger et interrompu des personnes âgées. Leurs états d'insomnie sont relativement fréquents. Ceci est peut-être dû en partie à une mauvaise interprétation de leur sommeil normal comme étant insomnie par opposition aux normes de sommeil des personnes entre les deux âges.

Le traitement pour l'insomnie des personnes du 3ème âge est exclusivement du domaine de la pharmacothérapie quoique cela pose souvent des problèmes supplémentaires. Une démarche psychologique qui n'a pas encore été essayée par le passé pourrait être envisagée. Il a été suggéré qu'une approche éducative ayant pour but de les préparer à cette étape serait fructueuse. Il a été conclu que l'insomnie des personnes âgées est un secteur dans la recherche laissé pour compte, particulièrement dans le domaine psychologique.

Various forms of major sleep disturbance affect over 13% of the adult population (Balter & Bauer, 1975; Karacan, Williams, Salis & Hirsch, 1973). The elderly are particularly affected as the incidence of sleep disturbance is not evenly distributed across ages, but is age-correlated. This is, in part, evidenced by the fact that a very high proportion, approximately 67%, of the users of medically prescribed hypnotics are between the ages of 45 and 74 (Balter & Bauer, 1975) with the greatest users of the hypnotic drugs in the over 65 year old population (The Drugging of America: 1971-1976, 1978).

A considerable amount of research has been devoted to the polycyclic sleep pattern present in infancy (Gesell & Amatruda, 1945) and to the more consolidated pattern evident in later childhood and adult years (Kleitman, 1963). However, the sleep pattern of the elderly is a phenomenon whose very familiarity seems to have delayed its recognition as a major problem.

The present paper reviews the changing patterns of sleep associated with aging and the clinical implications of such. The primary focus of treatment issues will concern psychological interventions for insomnia. Other forms of sleep disturbance are more closely related to the medical domain and will receive only cursory attention.

CHARACTERISTICS OF GERONTOLOGIC SLEEP

Normal Processes

In young and middle aged adults, the first sleep for the night is non-rapid eye-movement (REM) sleep, which progresses through four stages. After about 70 minutes, the first rapid eye movement (REM) period occurs and lasts for about 10 minutes. The NREM-REM cycle continues throughout the night and averages approximately

ninety minutes. In the early portion of the night, the NREM state predominates, particularly Stages 3 and 4, and as sleep progresses, the REM periods become longer.

In the normal elderly population, the first sleep of the night is also NREM sleep, with increases in Stages 0, 1, and 2. However, Stages 3 and 4 are markedly reduced, with an earlier and longer first REM sleep period. The REM periods following are frequently interrupted by stretches of Stage 2 sleep (Agnew & Webb, 1971; Feinberg & Carlson, 1968; Feinberg, Koresko & Heller, 1967; Kahn & Fisher, 1968). In general, age exerts considerable effects in decreasing the duration of sleep cycle components with lighter sleep stages predominating and interrupting deeper sleep stages, as well as an increase in latency to sleep. These changes cause the sleep of the elderly to be more restless than that of younger people (Karacan, Williams, Salis & Hirsch, 1971).

In spite of the marked fragmentation of their sleep, the aged spend more time in bed than do young adults, adapting to a more polycyclic sleep pattern characterized by episodic nocturnal sleep and daytime napping. Tune (1968) has confirmed this elderly polycyclic sleep pattern is reflected in clinical sleep changes of older individuals. Thus the assumption that older people require or take less sleep (Best & Taylor, 1952) is disputed by Tune's (1968) survey reporting the high incidence of nocturnal awakenings. The older subjects reported getting as much total sleep as most younger groups, if not more, by retiring earlier, awakening later, and taking midday naps. The issue of whether or not the elderly require less sleep is not clear at present; however, evidence does indicate that the consolidated sleep-wakefulness pattern breaks down with advancing age, and catching sleep whenever possible becomes a necessity. This can be done after retirement, when social and occupational pressures are reduced. Another point of view (Tune, 1968) is that the diminution of these external pressures may permit a more natural polycyclic sleep-wakefulness pattern to reappear. However, whether this is a result of biological need or social pressures of life which are nonexistent in childhood and decreased in old age, is not presently known.

Hormonal changes contribute to these changes in sleep patterns, particularly among women. McGhie and Russell (1962) reported greater latency to sleep and frequent awakenings in women two to five years menopausal, but in men there was no significant change until after age of 65. Sleep disturbance reaches a maximum in the post-menopausal woman, whereas psychiatric morbidity was highest in the pre-menopausal woman. Therefore, the change in sleep pattern in women at this time of life may not just reflect

changes in psychiatric morbidity, but hormonal changes due to menopausal status.

In sum, similarities can be observed in sleep patterns across the spectrum of age. This is best reflected in the circadian cycle of sleep with the preferred sleep time being in the night. However, the sleep which characterizes the elderly population shows important changes which must be considered in judging the adequacy in this age group. For example, as a result of alterations in sleep stages and sleep continuity in the elderly, their normal sleep pattern is often less consolidated and not as deep as normal sleep in the middle-aged individual. As a consequence, it becomes the task of aging individuals to adjust their expectations for quality and duration of sleep to align with their altered sleep needs.

Disturbed Processes

Failure to readjust living patterns, sleep expectations, and personality factors may exacerbate an already fragmented sleep pattern for the elderly age group. Their general dissatisfaction with sleep was confirmed by post-sleep inventory (Webb, Bonnet & Blume, 1976). The elderly group uniquely rated as high feelings of not being tired at bedtime, physical complaints during the night, unpleasant dreams during the night, and feeling physically poor upon awakening. Although some investigators (Feinberg et al., 1967) believe that the elderly are able to compensate for this poor nighttime sleep through afternoon napping, a subsequent investigation by Lewis (1969) suggested that these naps are also disturbed by long periods of wakefulness. Webb and Swinborne (1971) made the interesting observation that these naps often gave the impression of sheer boredom rather than an overwhelming eruption of sleep and appeared to be somewhat random events unrelated to the quality of the previous night's sleep. If, in fact, these naps are due to situational factors such as boredom, rather than a real need for additional sleep, the elderly may be contributing to their already broken nighttime sleep by unnecessary napping during the day. Increased idleness and time to focus on sleep dissatisfaction could further exacerbate an already fragmented sleep pattern.

These disturbed processes may also be a reflection of the elderly insomniac's tendency to take problems to bed with them (Karacan, Thornby, Holzer, Warheit, Schwab, & Williams, 1976). Kales, Caldwell, Preston, Healy, and Kales (1976) report that the Minnesota Multiphasic Personality Inventory (MMPI) demonstrated that for insomniacs in the 50 years and older age group, the most frequently elevated scales were Depression, Hysteria, and Hypochondriasis, the personality styles in which stresses are handled

internally rather than by external projection. Other investigators have replicated these findings (Gilberstadt & Duker, 1965; Roth, Kramer & Lutz, 1976; Swenson, Pearson & Osborne, 1973). These elderly persons, who turn their worries inward and are overly-concerned with bodily aches and pains, may be more sensitive to changes in sleep patterns, and thus to insomnia. However, the cause and effect relationship between insomnia and psychopathology has not yet been demonstrated due to the correlational nature of the data. Kales et al. (1976) have hypothesized that the mechanism underlying insomnia is a function of the internalization of psychological disturbances and these unresolved psychological conflicts lead to emotional arousal and, in turn, physiological activation during sleep.

SLEEP TREATMENT FOR THE ELDERLY

Assessment

The assessment of pathological sleep poses a challenge with the elderly as it does with other age groups. However, medical problems as well as personality and situational factors may be greater within the elderly population, making the proper assessment of sleep a more salient concern with this group.

Sleep laboratory assessment is expensive, inconvenient, and limited in availability. However, when it is suspected that medical problems are involved in the sleep disturbance, this form of assessment is highly indicated. Following are examples of nocturnal problems seen in the elderly which may require a sleep laboratory assessment to establish the proper diagnosis. Some brain impairments occurring in old age are associated with changes in sleep patterns (Feinberg, 1968). Chest pains due to cardiac disease were associated with encephalographic (EEG) changes in the sleep laboratory (Nowlin, 1965). Kales and Tan (1969) noted significant decreases in States 3 and 4 in hypothyroid patients and, following treatment, sleep returned to normal. Guilleminault, Tilkian and Dement (1976) reported sleep-induced respiratory illness with the primary complaint of sleep problems, such as morning fatigue and frequent nighttime awakening. Lugaresi (1975) investigated elderly subjects who were identified as heavy snorers but were constantly tired during the daytime hours. This would initially seem to be paradoxical since one assumes a heavy snorer to be a heavy sleeper. However, snoring or excessive daytime sleepiness may be symptomatic of the syndrome of sleep apnea. Heavy snorers may suffer respiratory difficulty which awaken them, thus, accounting for the daytime somnolence.

Due to the shortcomings associated with sleep laboratory assessment noted above, subjective reports of sleep are the most common source of in-

formation from elderly insomniacs. Although the accuracy of the self-report sleep data of the older patient has not been studied, their younger counterparts have been shown to produce highly unreliable sleep estimates (Lichstein & Kelley, in press). Measures such as latency to sleep and awakenings during the night are often grossly exaggerated. Therefore, it is reasonable to assume that gerontologic sleep complaints may sometimes follow this same pattern. A sleep laboratory evaluation is sometimes required to verify the self-report, but this is also problematic. A sleep laboratory setting could provide relief for the subject from the disruptive stimulus influence of the normal sleeping setting. This may serve as a therapeutic change resulting in improved sleep (Karacan, 1972). At present there is no convenient and empirically reliable method of assessing sleep in the natural environment (Lichstein & Kelley, in press).

Pharmacological Treatment

To date, pharmacotherapy has virtually been the sole therapeutic approach to gerontologic insomnia. However, as people grow older, there are a number of changes that occur in their bodies which may lead to prolonged biologic activity and decreased drug elimination causing altered clinical and toxic effects of drugs. These changes may make older persons more sensitive to the hypotensive effect of psychotropic drugs and predispose them to episodes of cerebrovascular insufficiency, tachycardia and arrhythmia (Freeman, 1965; Salzman, Shader, & Van Der Kolk, 1976). Although such side effects are not limited to the elderly, this group shows increased vulnerability. Kales and Kales (1973) reported a greater incidence of neurologic side-effects as well as other clinical effects of psychotropic drugs, and therefore the drug of choice often becomes the drug which results in the least troublesome side-effect for the aged person.

Although most hypnotic drugs operate to hasten sleep onset, they also cause other undesirable alterations in sleep. The most severe effect involves suppression of REM sleep. On discontinuance of the sleep medication, a rebound or increased per cent of REM sleep will occur to compensate (Kales & Cary, 1971; Oswald & Priest, 1965). Reeves (1977) observed that in long term use of hypnotics in the elderly, the REM suppression is somewhat diminished, but there is still a rebound in REM sleep discontinuance of the medication. These REM rebound effects are associated with clinical disturbances such as unpleasant dreams, nightmares, and insomnia. Oftentimes the patient again relies on sleep medication in increasing dosage, possibly resulting in drug dependency.

Along with the serious problem of addiction to hypnotic drugs, sleep and dream patterns may play a role in accidental overdose and attempted suicide. For example, the person could assume that the unpleasant dreams and nightmares are due to intrinsic psychological factors, take a handful of sleeping pills to induce sleep and accidentally overdose. Other more disturbed individuals may view their nightmares as an indication of psychological deterioration and use the pills to attempt suicide.

Psychological Treatments

A wide variety of psychological interventions for insomnia have emerged in the past 15 years (see reviews by Knapp, Downs & Alpers, 1976; Montgomery, Perkin & Wise, 1975; Ribordy & Denny, 1977). In general, these have shared the assumption that anxiety reduction will result in improved sleep. Some techniques have targeted physiological arousal such as progressive relaxation (Borkovec & Fowles, 1973) and EEG biofeedback (Freedman & Papsdorf, 1976). Other approaches have attempted to calm cognitive arousal. Examples here are stimulus control procedures (Haynes, Price & Simons, 1975; Bootzin, Note 1), autogenic training (Kahn, Baker & Weiss, 1968; Nicassio & Bottzin, 1974), and ocular relaxation (Lichstein, Note 2). All of the above techniques have been successfully employed with adult insomniacs but have not been specifically evaluated in their usefulness for the elderly.

It is probably invalid to assume comparable effectiveness of these techniques across all age groups because of circumstances unique to the elderly age group. Increased physical impairment and complaints of less consolidated sleep, rather than the latency problems which typify younger-aged insomniacs exemplify some of the differences.

The cognitive treatment modalities referred to above, merit exploration with the elderly because they are less physically stressful than some of the other induction procedures. Autogenic training requires the subject to dwell on suggestions of heaviness and warmth throughout the body. Not only do these soothing thoughts replace disturbing cognitions, but physiological relaxation may also be achieved (Schultz & Luthe, 1959). The technique of ocular relaxation involves tensing and relaxing the eyes in six different positions to effect reductions in ocular motility and accompanying decreases in cognitive activity. This approach might be suitable for the elderly individual whose physical debilities might preclude tensing larger muscle groups, as would be the case with progressive relaxation. Stimulus control procedures rely on the notion that if non-sleep activities

are practiced in the sleep setting, sleep-incompatible cognitions will likely be evoked at bedtime. Since researchers (Lewis, 1969; Strauch & Wollschlager, 1973) have pointed out that the elderly remain in bed when naps are disturbed by long periods of wakefulness and also spend significantly more time awake in bed trying to achieve nighttime sleep, it seems reasonable to assume that the elderly are engaging in sleep-incompatible behaviours. To maximize associations between the behaviour of falling asleep and the stimuli of the bed and bedroom, the insomniac is instructed to refrain from such activities as eating, watching TV, worrying, etc. in the bedroom.

Normal changes in sleep patterns bring with them the need to readjust perceptions concerning sleep needs. Failure to make this adjustment, along with boredom as a result of retirement and altered family situations may result in more time to focus on minor sleep problems, creating an anxiety-sleeplessness-anxiety cycle. An educational approach has never been used to help the elderly adjust to changing sleep requirements and would appear to be a promising intervention. The results of experimental studies of attribution (Nisbett & Valins, 1972) may be relevant to sleep problems which arise as a result of unrealistic sleep expectancies. Attribution is a process whereby the individual "explains" the world. In doing so, an individual often used social consensus as a criterion for validating personal explanations. However, when objective evidence is not available, it is the opinion of relevant others that largely determines the individual's perceptions. Senior citizen organizations could provide an ideal forum for group discussion of changing sleep requirements and the encouragement to modify their lifestyles accordingly. A realistic interpretation of changing sleep patterns could result in symptom improvement.

The preceding techniques share several attributes. They all allow the elderly individual to feel more in control of the environment by doing something positive to enhance the quality of sleep. At the very least, the elderly individual may become aware of changing sleep needs and adjusting living and sleep schedules accordingly. One of the advantages of the psychological approaches would be to convince the gerontologic insomniac that a pill is not the answer and many complications associated with hypnotics in the elderly would be avoided.

CONCLUSION

Important changes in sleep pattern and content accompany advancing age. The episodic, lighter sleep which typifies sleep in the elderly would be considered abnormal in a younger population.

However, the presence of disturbing influences such as environmental factors, personality traits, anxiety, etc., may operate to induce a true state of insomnia in the elderly. Based upon hypnotic drug usage, it may be concluded that either insomnia is rampant amongst the elderly or the diagnosis is discriminately applied to these individuals.

The assessment of sleep disturbance in the elderly is somewhat more difficult than this same task with middle-aged insomniacs. This is due to the increasing involvement of medical problems which may either mask or precipitate sleep disorders. As a consequence, sleep laboratory assessment may be required more often to confirm the elderly patient's self-report.

Pharmacological treatment has been exclusively employed in the treatment of insomnia in the elderly. This is unfortunate since the complications of pharmacotherapy occur more often in the elderly than in the general population. The apparent disinterest in gerontologic sleep problems by psychological researchers has inadvertently contributed to this state. Numerous psychological treatments have been employed within the general population but none has been tested with the elderly. We have hypothesized which psychological techniques would be the most useful for the elderly, but at the present time this is pure speculation. The needs and problems of the aged are distinctive. It cannot be assumed that interventions for insomnia which are successful with a younger sample would be comparably effective with an older population. Such an assertion must await empirical demonstration. One possible area meriting investigation was termed an educational approach. This was devised to assist aging individuals to reevaluate their sleep expectations. The approach primarily involves instructing the elderly insomniac as to age-appropriate sleep norms for the purpose of diminishing anxiety created by unrealistic sleep goals.

There are many unanswered questions remaining in regard to insomnia in the elderly. For instance, it is not known whether there is a primary disease entity of insomnia which results from a specific biochemical abnormality. Alternatively, gerontologic insomnia could be subtly linked to a variety of medical disorders in addition to those already known, such as some hypothyroid and cardiac abnormalities. Issues such as the relationship of insomnia to longevity and the question of whether insomnia lowers an elderly person's resistance to other diseases need to be investigated. Obviously insomnia in the elderly is a serious problem and warrants serious consideration in the future.

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