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COGNITIVE BEHAVIORAL THERAPY FOR INSOMNIA AND POSSIBILITIES OF ITS USE AMONG THE ELDERLY

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Summary

The aim of this paper is to present Cognitive Behavioural Therapy for insomnia with modifications included in the group of the elderly and to present a review of research on its effectiveness. First, diagnostic criteria for insomnia and the concurrent disorders are presented, followed by a characterisation of insomnia in the elderly, stressing age related differences. Models explaining the etiology and persistence of insomnia are also shown. Further, cognitive and behavioural techniques used in insomnia treatment are described e.g. Sleep Hygiene, Stimulus Control Instructions, Sleep Restriction Therapy. Next, the author describes modifications to the classic therapeutic techniques used in insomnia therapy in the elderly, accounting for general health condition, cognitive potential, lifestyle and living conditions as well as social factors. The final section discusses the results of the studies on the effectiveness of Cognitive Behavioural Therapy for insomnia in the group of seniors and patients with insomnia that is concurrent with other conditions. The presented literature review indicates that although it often requires modifications, the Cognitive Behavioural Therapy for Insomnia provides an effective form of therapy for a range of age groups, including the elderly.

Introduction

Insomnia is one of the most common sleep disorders [1]. In the International Statistical Classification of Diseases and Health Problems ICD–10 [2] non-organic insomnia (F51.0) is referred to as one of non-organic sleep disorders (F51.0–F51.9). In the American classification DSM-IV [3], which used to be obligatory insomnia was divided into primary insomnia (which occurs spontaneously) and secondary insomnia (which coexists with some other disorders). In the current version of DSM (the 5th edition) it is assumed that insomnia should be diagnosed in every patient who meets the diagnostic criteria, regardless of the occurrence of another coexisting disorder [4].

According to the ICD-10 [2], insomnia is defined as an insufficient quantity and/or quality of sleep which results from an inadequate sleep time (difficulties with initiating sleep, difficulties with maintaining sleep, too early awakenings) and the sense of not being rested after sleep. These difficulties lead to decrease in well-being and impairments in daytime functioning. Diagnosing insomnia is possible when the sleep disorders have been occurring for at least one

month and during at least three nights per week. Moreover, the diagnosis of non-organic insomnia demands exclusion of such organic reasons as neurological conditions, somatic diseases, and disorders related to taking psychoactive substances and medicines.

Some authors underline that in the commonly used classifications (e.g. ICD-10) sleep disorders, including insomnia, are treated rather cursorily, are omitted, or defined in an ambiguous way [1]. This results in lack of adequate diagnosis and failure in undertaking proper therapeutic interventions. At the same time, in literature one may find numerous reports on disorders that coexist with insomnia and its negative consequences. It has been empirically proved that insomnia with no treatment favours development of depressive disorders [5] and anxiety disorders [6], it may also lead to development of cardio-vascular diseases [7]. Furthermore, it happens that insomnia precedes the first episode or recurrence of depression [6]. It has been also evidenced that insomnia is related to worse life quality [8], sick leaves and heightened medical care expenses [9].

Insomnia among Older Adults

It is estimated that the problem of insomnia affects 10-20% of general population, whereas among older adults the respective indicators are markedly higher, up to as much as 40% [10]. The risk of insomnia grows with each decade of life and it concerns women more often than men [11]. A form of sleep disorders changes with age as well. Insomnia among older adults often takes the form of secondary insomnia – it coexists with some other mental disorders, chronic diseases, and it may be a result of medications that impact sleep [12]. Moreover, it often results from bad sleep hygiene and insufficient daily activity [10, 13].

Sleep-related difficulties also change with age. In early adulthood there dominate problems with falling asleep, while in late adulthood there are observed speeding sleep phase up, growing difficulties with sleep maintenance, and waking up too early [10]. Furthermore, chronic insomnia occurs among older adults more often than in other groups – they often experience it for years.

Among factors that heighten the risk of insomnia in the elderly there are enumerated numerous diseases which are characteristic for seniors and also depressive disorders that happen in this period of life [12]. However, it is worth noting that among older adults insomnia may be both a result and a consequence of depressive disorders [14]. Fiorentino and Martin [12] focus on natural changes in sleep that appear with age. Although they may not be perceived as nagging, they still heighten the risk of development of the disorder. The quantity of deep sleep (stages 3 & 4) decreases with age and light sleep becomes more frequent, which results in much easier awakenings due to for example some noise around [12]. Moreover, frequency

of some other sleep disorders, like sleep apnea, grows with age, and some somatic diseases linked with experiencing pain, which are common for this age, may hinder calm sleep [12]. Heightened frequency and longer periods of awakening lead to decrease in sleep efficiency and to a subjective perception of one's sleep as a light and interrupted one. There also appear speeding sleep phase up (going to bed earlier) and waking up too early , sometimes around 2 or 3 a.m. It may become impossible both to maintain sleep and to maintain staying awake – as a result of these, night sleep lasts for 4-5 hours and numerous naps occur during a day. This leads to a vicious circle in which naps contribute to growth of insomnia at night. Yet, it is worth underlining that the total time of sleep usually remains unchanged.

Although the age-related changes are rather common, it ought to be noticed that old age is the longest and the most individualized period in human life [15]. A level of perceived losses or the so called costs of aging depend on biological and mental characteristics of an individual and on the person's biography as well. Thus, intensity and speed of aging processes may be different for every individual and the old age may have varied faces.

Models of Insomnia

The three-factor model suggested by Spielman and co-workers [16] presents one of the most commonly used models that explain starting and maintenance of insomnia. It includes three groups of factors: predisposing , precipitating, and perpetuating factors. The predisposing factors define an individual sensitivity to insomnia and they comprise both biological and psychological characteristics. These factors include among others: age, gender (female), disturbed daily rhythm, anankastic personality traits, dysfunctional strategies of coping with stress, impulsiveness, and family predisposition to insomnia, which suggests its possible genetic background. These factors heighten the risk of insomnia development when an individual faces some precipitating factors. These include first of all stress that is related to varied life events (e.g. anxiety about work loss, disease or death of a close person). An important role is also played by somatic and mental diseases, overuse of psychoactive substances, shift-work system, incorrect sleep hygiene etc. Whereas some changes in patients' behaviours and thoughts, which most often appear as a result of insomnia, become the perpetuating factors. They include dysfunctional behavioural strategies of coping with insomnia (e.g. staying in bed too long, irregular bed time, daily naps), dysfunctional beliefs about sleep and insomnia, worrying about lack of sleep and negative consequences of insomnia (e.g. feeling worse, being tired during a day), which lead to overuse of sleeping pills.

Among cognitive models of insomnia, a significant place is taken by the model suggested by Harvey [17]. The author assumes that the basic factor which maintains insomnia

consists in an excessive and negative cognitive activity before sleep. It usually takes the form of intrusive thoughts and worrying about lack of sleep and predicted consequences of getting not enough sleep during the oncoming day. This results in growth of arousal, tension, and unpleasant emotional state. Then, further worrying about difficulties with falling asleep leads to selective focusing one's attention on symptoms of lack of sleep and to monitoring one's own organism and the surrounding. As a result, a person undertakes some protective behaviours (e.g. avoiding difficult activities during a day, naps, turning to drink alcohol before going to sleep in order to make falling asleep easier), which intensify worrying and maintain the symptoms of insomnia. Harvey [17] stresses also that dysfunctional cognitive processes may occur both before sleep and during a day when cognitive activity is directed towards looking for some symptoms of fatigue and negative mood and to interpreting them as consequences of lack of sleep at night.

Contents of sleep-related thoughts is a subject of numerous studies. In one of them [18] participants were asked to record their thoughts that appeared before sleep and it was evidenced that thinking about sleep and predicting consequences of getting not enough sleep were the two strongest predicators of difficulties with falling asleep. In another study, Harvey [19] proved that persons suffering from insomnia declared an excessive cognitive activity which influenced their sleep more often than persons who had no problems with sleep did. This activity concerns solving problems, general worrying, general problems, an overview of events from the last day, and also problems related to one's own insomnia, and sounds from around.

Cognitive Behavioural Therapy for Insomnia

Cognitive Behavioural Therapy for Insomnia (CBTI) is referred to as the first-line treatment of this disorder [20]. It is a combination of cognitive and behavioural techniques. The latter include sleep hygiene, stimulus control instructions, and sleep restriction therapy. Whereas cognitive therapy is aimed at identifying and modifying dysfunctional beliefs regarding sleep and insomnia. It is also supplemented by psychoeducation on sleep and its hygiene.

Sleep Hygiene

Sleep Hygiene is a set of behaviours that promote sleep which are presented to patients in the form of instructions before starting the proper therapy. They are aimed at changing patients' life style and their behaviours that favour starting and maintaining insomnia. Sleep Hygiene includes the following rules: limiting caffeine intake, avoiding alcohol before going to sleep, performing physical activity during a day, and providing comfortable conditions in one's bedroom (silence, darkness, and a proper temperature) [13, 20-22]. Moreover, it is

recommended to reduce heavy and spicy food consumption (especially before sleep), to avoid emotional situations (including films) before going to bed, to limit watching TV right before sleep, and also to start rituals, like listening to calm music before sleep [21]. Patients are also encouraged to have stable hours of sleep, to refrain from attempts of falling asleep at a push, to get rid of clocks from bedroom, and to reduce use of sleeping pills.

Stimulus Control Instructions

Stimulus Control Instructions are applied both in order to improve falling asleep and to maintain sleep. This technique is also referred to as the first-line treatment of chronic insomnia [22]. It is based on the assumption that when one spends many sleepless nights in the same surrounding (a bed, a bedroom), this surrounding starts to be associated with sleep problems and unpleasant feelings, such as uneasiness and worrying. After some time this surrounding starts to cause negative arousal and it maintains insomnia [21]. Thus, stimulus control is aimed at transforming these negative associations with one's bed, sleep time, and bedroom into positive associations of bed and bedroom with sleep and/or sexual activity.

The basic instructions related to stimulus control include: using one's bed as a place for sleep and sexual activity only; eliminating from one's bedroom all other activities that are not related to sleep, like for example reading in bed or watching TV; getting up of bed if one cannot fall asleep within about 15-30 minutes, going to another room and starting an activity that may lead to drowsiness, for example listening to relaxing music [13, 20, 21]. Furthermore, it is recommended to go to bed only when feeling sleepy, to get up at the same time every day, and to avoid naps during a day [21, 22].

Sleep Restriction Therapy

Sleep Restriction Therapy, which was suggested as a therapeutic intervention by Spielman and co-workers [16], is aimed at balancing time that is spent in bed with time that is really necessary for a given person for sleep. At the beginning, a patient keeps a sleep diary for two weeks, the reason of which is to define time that is really used for sleep (bed time, time of falling asleep, wake time) [21, 22]. Next, the time spent in bed is reduced to the time that is really used by the patient for sleep (time used for sleep plus 30 minutes, but not less than 4 and a half hours). After a week of using sleep restriction, an indicator of its efficiency is calculated (quotient of sleep time to time spent in bed) and if sleep improves, the time is gradually prolonged to 15 minutes more [13, 20]. In the initial period of using the technique, it may lead to excessive drowsiness and tiredness during a day, but after a week or so these symptoms subside and patients feel improvement in the quality of their sleep.

Relaxation

Relaxation techniques are behavioural methods for treatment of insomnia that have been used for the longest time. They are applied mainly for patients who complain about difficulties with initiating sleep, and they are aimed at reducing tension and anxiety which accompany going to sleep. Progressive relaxation is one of the most commonly used tension reduction techniques. However, due to its possible links with cognitive arousal [21], also numerous alternative methods are introduced, for example: diaphragmatic breathing, visualisations, yoga, biofeedback, and mindfulness. They are used in order to lower mental and somatic uneasiness that is related to sleep and to reduce ruminations [13, 20, 22, 23]. Although they do not have a definite time limit, it is usually recommended to use them for around 15 minutes before falling asleep [21].

Cognitive Therapy

Cognitive Therapy for Insomnia is focused mainly around two components: psychoeducation and modification of dysfunctional beliefs about sleep and insomnia. The objective of psychoeducation is to convey reliable data on sleep and insomnia, which should favour correcting one's non-adaptive beliefs about sleep [21]. Subjects for presentation include: sleep phases, an average sleep time, which is often highly individual, sleep as an automatic process beyond one's conscious control, factors that favour sleep disorders, and also short- and long-term consequences of sleep deprivation [13, 21].

Cognitive therapy is aimed at modifying dysfunctional beliefs about sleep and insomnia. In order to identify them, there are used some classic cognitive techniques such as automatic thought record, Socratic dialogue, downward arrow technique, scaling, clarification, and also some specially designed scales. Whereas modification of dysfunctional beliefs is carried out with the use of cognitive restructuring, paradox intervention, modification of selective attention, and mindfulness training.

Dysfunctional beliefs most often refer to treating insomnia as a chronic problem that cannot be managed, overestimating consequences of insomnia, unrealistic expectations regarding sleep, incorrect perception of reasons for insomnia and efficiency of applied interventions [21]. These beliefs often contain numerous cognitive distortions, like catastrophizing, exaggerating, overgeneralization. Moreover, they may influence sleep both indirectly by means of increasing arousal in bed before sleep and also directly by means of disturbing stimulation control and sleep restriction [13, 20].

Insomnia treatment among older adults

Cognitive Behavioural Therapy for Insomnia is used with success in varied age groups, including persons in their old age [24]. In some cases, however, it may be required to introduce some modifications considering seniors' health, life style and conditions, social factors, and their own preferences [13, 25, 26]. A decrease in cognitive abilities [15, 25] in some of them may be a cause for basing the therapy mainly on behavioural techniques and promoting sleep hygiene [13, 27]. The treatment may be focused on an increase in daily activity, reducing time spent in bed, minimalizing a number and length of naps, changing some negative habits, like watching TV all days or overuse of sleeping pills. Some modifications are used in order to make it easier to read written materials from the therapy (e.g. a larger font) and also to remember such instructions regarding sleep as a defined time of going to sleep or waking (e.g. writing them directly in sleep diaries) [13].

Yet, it should be stressed that the need of introducing the modifications applies mainly to seniors in their later stages of old age and to persons with serious somatic or dementia diseases. Considering individualized aging processes [15], differentiating between favourable normal aging and pathological aging present a basis for selection of the most optimum therapeutic techniques.

Sleep hygiene

Introducing the sleep hygiene rules for the elderly must be consistent with individual instructions that result from a patient's diseases, regarding both physical activity and a diet [13]. For instance, it is necessary for some sick persons to consume liquids with medications (also in the evening, right before sleep time), in such a situation it is important to remind the patient of using the toilet before going to bed. Moreover, it is recommended to make a patient's daily rhythm similar to the rhythm from the period of his/her professional activity. Another important issue is to use bright light in rooms during a day and to care about going out, to natural light. Using light therapy is also recommended [28]. Introducing physical activity among seniors may meet some difficulties which result from negative stereotypes about old age that function in societies [29]. They contain beliefs about limited possibilities and even harmfulness of undertaking any physical activities in old age [29, 30]. However, it is indicated in research results that physical activity in seniors prevents overweight and other somatic diseases which exert a negative influence upon sleep, and favours health and better well-being [14, 30]. As a result it may favour higher quantity of deep sleep (stages 3 & 4) and sleep continuity [21].

Stimulus control instructions

Some elderly persons (e.g. in later stages of their old age, but also seniors who are somatically ill or infirm) may have troubles with leaving bed without help from other persons or – because of some medical reasons – they have to stay in bed frequently. Thus, it is necessary to assess fall risk while getting up independently at night and – depending on motor capabilities – to modify the typical instructions and/or to introduce some changes in the patient's bedroom [13]. It may consist in organising a seat near the bed so that the senior with limited motor possibilities could get up safely at night and sit there. In case of persons who cannot leave their beds independently it may be necessary to abandon this component of the technique during night hours. In such cases it is recommended to leave bed during a day and to encourage to change one's position and perform some other activities, for example reading, at night.

Sleep Restriction Therapy

It happens that older adults have to stay in bed due to some medical reasons, which imposes a significant limitation on possibilities of using this technique. However, staying in bed too long is also a problem of fit seniors who treat lying in bed and having naps as a way of spending time, an attempt at coping with boredom and lack of activities. That is why it is necessary to consider reasons for which an old person spends too much time in bed [13]. It is also important to discuss activities that a senior could start in the time gained after having abandoned excessive staying in bed. Lying in bed may be also used by old-aged persons in order to have rest, to relax, or to diminish intensity of physical pain. In such cases it is important to find some other places in which the patient could rest without sleeping. Eliminating naps during a day is recommended if it is possible, and in case they are necessary one may set an alarm-clock for 30 minutes so as to prevent extension of one's nap [13].

Relaxation

While choosing relaxation techniques for the elderly, one should consider individual preferences of a patient [13]. It is recommended to use activities that are normally performed by seniors in order to relax (e.g. sitting in the garden and admiring flowers) to form the techniques (e.g. visualisation).

Cognitive Therapy

Improving sleep quality among older adults may be a result of introducing some components of cognitive therapy [30]. In this age group the therapy is focused on breaking seniors' unwillingness to undertake activities and also on changing the attitude to sleep as a receipt for boredom and lack of activities. Moreover, it is aimed at lowering excessive expectations regarding sleep and increasing acceptance for some unfavourable consequences

of coexisting diseases and medications for sleep quality [13, 25]. Psychoeducation ought to be supplemented with information regarding natural changes in sleep which are a result of aging and some coexisting diseases that influence sleep. Understanding that older persons usually sleep for a shorter time than young people helps modifying one's unrealistic expectations regarding sleep time [25]. Cognitive therapy may be difficult for seniors with deficits in cognitive functions, thus it needs to be adapted to their individual abilities [25]. It is worth being aware of the difference between excessive worry and a tendency to introspection and summing up one's own life, the latter being typical of this age. It is also recommended to use content of worry time (e.g. the sense of loneliness) to make plans of activities (e.g. broadening social contacts).

Efficacy of Cognitive Behavioural Therapy for insomnia among older adults

Efficacy of CBTI has been verified in numerous studies the results of which are presented in meta-analyses [32, 33]. Results obtained in a number of studies have been also shown in large reviews edited together with instructions by the American Academy of Sleep Medicine. The first review was published in 1999 and it was based upon results of 48 studies [34], the second one was published in 2006 and it contained data from 37 studies that were conducted after the first edition [35]. Both the reviews indicated a significant influence of the therapy upon diminishing difficulties within iniating and maintaining sleep, and also upon keeping the positive effects in the period of 6-24 months after completing the treatment. An improvement of sleep parameters was evidenced in 70-80% of persons with insomnia and night-time insomnia symptoms were reduced by 50% on average [35]. Furthermore, the effects obtained by means of CBTI are usually more stable than those in case of pharmacological treatment [36].

In a majority of studies on efficacy of CBTI a combination of cognitive and behavioural techniques is used. Literature contains also a confirmation of efficiency of stimulus control instructions and sleep restriction treated as monotherapies [34], while a separate use of sleep hygiene or relaxation usually brings weak effects, and using cognitive techniques exclusively is very rare [37].

Despite numerous limitations that result from patients' age, it has been confirmed empirically that CBTI is efficient in insomnia treatment in the elderly [27, 38], including seniors with other diseases [39]. Results obtained in many researches on efficacy of behavioural and cognitive techniques in insomnia treatment among older adults have been presented in numerous meta-analyses and reviews [11, 15, 24, 34].

In a meta-analysis aimed at comparing efficacy of the therapy in varied age groups, strong effects were found both among persons in early and middle adulthood and among older adults, though for young people the results were slightly stronger [24]. CBTI resulted in better indicators of sleep latency, its quality and efficiency, and lower indicators of awakenings. The only significant differences in the treatment efficacy (to the advantage of younger persons) were observed for the total sleep time [26].

In the last decade researchers' attention was also focused on the possibilities of using CBTI among persons who suffer from insomnia as a disorder that coexists with some other somatic and mental diseases [20, 40]. This is truly important for insomnia treatment among seniors as about 70% of older adults with insomnia suffer from secondary insomnia [13]. Efficacy of CBTI was evidenced in groups of patients with such problems as cancer diseases [41], chronic pain [42], and osteoarthritis [43], though in treatment among these patients some modifications related to their diseases are often introduced.

As for mental disorders, most attention has been directed to insomnia that coexists with depression and posttraumatic stress disorder. For persons with depression, beyond improvement in sleep indicators, there were also evidenced such benefits as decrease in depression symptoms, and growth in energy level, the sense of self-esteem, and other aspects of psychological well-being [44, 45]. The study also proved efficacy of CBTI in treatment for insomnia coexisting with posttraumatic stress disorder, though results of some of the studies are not fully unambiguous and they point to the necessity of introducing some other techniques of therapy [37].

Conclusions

Insomnia is referred to as a long-term pathological state which rarely subsides spontaneously, especially in the elderly. It is treated as an inherent result of the process of aging and thus, in many cases, it is neither diagnosed nor treated. Yet, it should be stressed that although changes in sleep that occur with advanced age are natural, they usually do not lead – contrary to insomnia – to lowering well-being and they do not disturb functioning during a day. The presented literature review indicates that cognitive behavioural treatment for insomnia is a well-documented and effective form of therapy for varied age groups, including older adults. CBTI used among seniors may be often linked to the necessity of making some adaptations, and its effects may be weaker as compared with those among young people. Despite these limitations, the therapy may be effectively used among older adults, including those who suffer from insomnia as a disorder that coexists with some other diseases.

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