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Sleep and Quality of Life in Insomnia

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Summary Purpose: Insomnia is highly prevalent in the general population, and most of the insomniacs complain of daily consequences the day following a poor night. However, it is very difficult to assess objectively this daytime impact. Quality of life (QOL) may be the most accurate way to understand the consequences of insomnia on the daily lives of patients. Subjects and Methods: Based on two keywords, insomnia and quality of life in Medline Pubmed, we reviewed articles on the subject from 1989 to 2006 and we retained those specifically focussed on QOL of insomniacs and some devoted to the impact of poor sleep on the QOL of subjects with other chronic illness. Results: We found very few studies focussed on the QOL of insomniacs. Many surveys were oriented on the QOL and sleep of patients with cancer or other chronic diseases. Conclusion: Insomnia is commonly linked to a worse quality of life status. QOL instruments may be powerful in showing the impact of poor sleep on the daily lives of patients by itself or during other associated chronic diseases. Specific QOL focussed on insomnia has to be developed to better assess the impact of insomnia on daytime functioning and to appreciate the efficacy of sleep treatments.

Keywords Insomnia · quality of life

Learning objectives:

- Quality of life is constantly impaired in chronic insomnia.
- The more severe the insomnia, the worse the quality of life.
- Sleep quality is a major issue in the quality of life of patients with chronic diseases.

Introduction

Insomnia is a complaint characterized by difficulty initiating or maintaining sleep, or non-restorative sleep, for at least 1 month with consequences on daytime functioning. These consequences are, however, difficult to define. The International Classification of Sleep disorders (ICSD) classification (1) only evoke “decrease functioning during wakefulness”. The DSM-IV (2) is more precise, “insomnia is serious enough to induce severe fatigue or signs attributable to insomnia and marked by symptoms such as irritability or disability in daytime functioning” or “is frequently accompanied by non-specific symptoms such as mood disorders, memory trou-

bles, or lack of concentration”. When clinicians or psychologists interview severe insomniacs, they often received very large witnesses about the impact of insomnia on domestic life, professional behavior, leisure and holidays, driving, social and familial relationship (3). However, there is no objective instruments to assess this impact. Quality of life (QOL) may be the way to better reflect the feeling of patients and to help sleep professionals in the objective evaluation of the impact of insomnia. QOL is a complex and multidimensional term that has been defined as “a concept encompassing a broad range of physical and psychological characteristics and limitations which describe an individual’s ability to function and to derive satisfaction from doing so” (4). QOL has been widely studied in the last decades in evaluating the impact of chronic diseases. There are now confident instruments like the Sf36 (5) performed in many pathologies, and it is more easy than before to compare one group of patients to another one.

Recognition and Diagnosis of Insomnia

In terms of clinical practice and of epidemiology, chronic insomnia is usually defined based on the criteria of the DSM-IV (2) or of the ICSD (1) which are as follows:

- A difficulty of falling asleep (sleep initiating insomnia), the occurrence of nocturnal awakenings with difficulties getting back to sleep (sleep maintenance insomnia), an early morning awakening (sleep offset insomnia), or a non-refreshing or non-restorative sleep, and often some of a combination thereof.
- At least three times a week for at least 1 month.
- Insomnia produces clinically, significant distress or impairment in social, occupational, or other important areas of daytime functioning.

Insomnia may be primary or secondary to a variety of disorders, environmental factors and/or co-morbidities. Identifying and treating potential underlying conditions are priorities in the management of insomnia. Otherwise, insomnia will remain unresolved.

Primary Insomnia

Primary insomnia is an intrinsic sleep disorder that is characterized by the presence of insomnia:

- Does not occur exclusively during the course of another sleep disorder: sleep disordered breathing, periodic limb movements, restless leg syndrome, or circadian rhythm disorder.
- Does not occur exclusively in the course of another mental disorder.
- Is not due to the direct physiological effect of a general medical condition, a substance or treatment, or a physical environmental factor.

A common mechanism of persistency of insomnia is conditioned (learned or psychophysiological) insomnia. It begins usually by an episode of acute situational insomnia, secondary to a stress, jet-lag, pain, illness, medication, . . . (insomnia precipitating factors). Then, the patient associates bed and non-sleeping and becomes hyperaroused at night and develops strategy of coping that perpetuates insomnia (insomnia perpetuating factors) (6). Individual differences in the vulnerability to sleep disturbances may constitute a continuum from vulnerability to transient or episodic insomnia through overt chronic primary insomnia (7). Ruminating about not being able to sleep plays a major role.

Secondary Insomnia

Insomnia is frequently associated to numerous other conditions: sleep disorders, mental or physical disorders, toxicological or environmental factors, and this is the role of the practitioner to carefully check all these conditions before considering insomnia as a primary disorder.

Almost all other sleep disorders are disturbing sleep seriously enough to induce a complaint of insomnia or poor sleep. Sleep apnea affects 5–10% of the general population. It increases with age and with the body mass index (BMI).

It causes arousals and awakenings during all stages of sleep. Patients usually complain of non-restorative sleep rather than of real insomnia. Restless leg syndrome may affect sleep initiating and sleep maintaining, it concerns between 5–10% of the general population and may be associated to apnea. Circadian rhythms disorders are linked to a dysfunction of the biological clock due to an internal condition (delayed or advanced phase syndromes) or secondary to the under-exposure of the retina to light (blind people) or misalignment between external and endogenous rhythms (shift workers and jet-lag). They may induce sleep onset insomnia, early morning awakening, frequent arousals, and daytime sleepiness.

Mental disorders or comorbidities are commonly associated with insomnia. In a survey made in the general population, it was found that prior consultations for anxiety symptoms were reported by 30.1% of the insomniacs and prior consultations for depression by 23% (8). Similarly in primary care patients with severe insomnia, a high prevalence of psychiatric diagnoses was found: 21.7% of severe insomniacs had depression, 7.2% neurosis/personality disorders, 10.2% acute psychological distress, 4.6% alcohol or drug abuse, 5.6% psychosomatic disorders, and 1% psychosis (9).

A variety of medical disorders may impact on sleep and awaken patients: central nervous system disorders, cardiorespiratory troubles, musculoskeletal disorders, and pain. Studies of specific populations reveal strong correlation between pain and complaints of sleep disturbances (10). Several endocrine and gastrointestinal disorders are also associated with sleep disruption, for example, nocturnal gastrointestinal reflux episodes may arise during sleep and induce abrupt arousals (11). A large number of medications and toxics (alcohol and drugs) have also an impact of sleep continuity.

Environmental factors may also induce sleep disruption and fragmentation even in good sleepers. Noise is one of the most common. Recently, the WHO office of environment and health has considered insomnia as one of the major health effect of noise exposure (12). Low or high temperature, altitude, and light have also an influence on sleep continuity.

Transient or Chronic

The duration of a patient's complaint has important implications. The ICSD defines acute or transient insomnia as persisting for no greater than 1 week and sub-acute or short term insomnia as lasting from 1 week to 3 months (1). Both are considered as adjustment sleep disorders, which are associated with a reaction to an identifiable stressor. Transient insomnia usually disappears with the reduction or the adaptation to the stressor. However, it may also be the foundation of a long-term condition. The individual's emotional and behavioral response to the first episodes of transient insomnia seems to play an important role in the course of the disease (6, 7, 13). Therefore, early identification and management of

insomnia may play a role in the prevention of long-term insomnia. Insomnia is considered as chronic, if it lasts for more than 1–3 months (1, 2). In our experience, we believe that 1 month is a reasonable period to begin to talk of “chronic insomnia”. Retrospective studies indicate that about 80% of severe insomniacs have had the problem for greater than 1 year with approximately 40% reporting greater than 5-year duration (8, 14). Longitudinal studies suggest that 30–80% of moderate to severe insomniacs show no significant remission over time (14, 15).

Severity

There is no clear consensus on the definition of severe insomnia. It seems insufficient to find it on the witnesses of patients. Many studies have observed that a large number of the so-called severe insomniacs did not consult any practitioner for years about their sleep problem. Chronic duration or nightly frequency may be criteria of severity. The magnitude of the impaired daytime functioning is also a good argument to assess severe insomnia. In several studies focussed on the daytime consequences of insomnia, we have considered severe insomniacs as subjects reporting at least two symptoms of poor sleep according to the DSM-IV definition of insomnia (3, 15).

Epidemiology

Many studies, in the past decade, have used the clinical criteria of insomnia to assess the prevalence of insomnia in the general population and in some subgroups of adults (8, 16, 17). They found a median prevalence for all insomnia of about 15% with a range of 10–25%. Prevalence increases with age, and insomnia is usually more common in women than in men. These studies, with few exceptions, do not attempt to identify etiologies of insomnia.

Method of Research

The selection of data began with a Medline PubMed search for articles published from 1990 to the present. Using keywords “Insomnia” and “Quality of life”, we obtained 185 articles. Based on abstract content, we selected the 117 more relevant and up-to-date studies. We eliminated articles relating therapeutic trials in non-insomniacs patients. We also non-retained non-original studies on insomnia (review articles).

There were very few articles specifically designed to assess the impact of insomnia on QOL. Most of the articles were devoted to the impact of sleep disorders on the quality of life of patients suffering from cancer. Some were exploring QOL in relation to sleep in diabetes, depression, Parkinson, chronic renal diseases with hemodialysis, patients with HIV, or chronic psychiatric diseases. QOL is also sometimes used to evaluate pharmacological and non-pharmacological treatments of insomnia.

Results

Using quality of life in the assessment of the daytime consequences of insomnia

The World Health Consensus report on sleep and health heavily recommends more studies on the QOL of insomniacs (4). Surprisingly, we found relatively few works specifically devoted to the subject (18–22). Four of them used the Short Form-36 (SF-36) (18, 19, 21, 22), a very widely used scale in QOL (23).

- The SF-36 was first used in insomnia in a survey designed to document the prevalence of insomnia and its impact on QOL (17). They showed that individuals with insomnia reported lower QOL scores. This association remained significant after controlling for demographic variables and comorbid conditions.
- Zamitt et al. (22) used several instruments to evaluate the impact of insomnia on QOL in a sample of 261 insomniacs compared to a control group of 101 good sleepers. Insomniacs were recruited by advertisements and fulfilled the DSM criteria for insomnia. Individuals with criteria of irregular sleep patterns, sleep apnea, restless leg syndrome, periodic limb movement disorders, history of psychiatric illness, alcohol or substance abuse, epilepsy, and HIV positive were excluded from the study. They used the SF-36 and the QOL inventory, a 31 items questionnaire, specifically designed for the study and including aspects related to sleep, cognitive function, daytime performance, social and family relationships, and health. The authors showed a significant difference between the two groups ($p < 0.0001$, MANOVA) on all eight SF-36 subscales. Insomniacs reported more health concerns than limit physical activity, greater interference of physical or emotional problems with normal social activities, more bodily pain, poorer general health, less vitality, more emotional difficulties, and more mental health problems than the good sleepers' group. Using the QOL inventory, they also found a significant impact on the QOL of insomniacs. The authors suggested that the SF-36 can be used to assess differences between subject with insomnia and healthy controls and that the SF-36 may have clinical utility as a measure of impairment associated with insomnia.
- Leger et al. (3) so used the SF-36 to evaluate the quality of life of three matched groups of 240 severe insomniacs, 422 mild insomniacs and 391 good sleepers selected from the general population. They eliminated from the original group those with DSM-IV criteria for anxiety and depression. They found that severe insomniacs had lower scores in eight dimensions of the SF-36 than mild insomniacs and good sleepers. Mild insomniacs had also lower scores in the same eight dimensions than good sleepers. No dimension was more altered than the other. However, the mental health status and the emotional state were worse in severe and mild insomniacs than in good sleepers. This result demonstrates a clear interrelation between insomnia

and emotional state despite the fact that we had eliminated the subjects with DSM-IV criteria of anxiety. The authors concluded that SF-36 was sensitive to the severity of insomnia and seemed to be a reliable instrument to assess the impact of insomnia on QOL.

- Shubert et al. (5) have found the same kind of relationship between the severity of insomnia and the decreased quality of life in a group of 2800 elderly (aged from 53 to 97 years). It was a telephone interview, part of a 5-year follow-up examination of the Epidemiology of Hearing Loss Study. Participants were asked about symptoms of poor sleep. A response of “often” or “almost always” was coded as positive for an insomnia trait. The SF-36 was administered to assess QOL of these subjects. Twenty six percent of the population reported one insomnia trait, 13% reported two, and 10% reported three. The eight domains of the SF-36 were significantly decreased as the number of insomnia traits increased. The authors concluded that insomnia is common among older adults and is associated with a decreased QOL.
- Idzikowski (18) discussed the concept of QOL applied to sleep and introduced the fact that short sleep is not necessarily deleterious but that abnormally shortened or fragmented sleep can reduce an individual’s QOL. Smith and Shneerson (19) have used the SF-36 in a sample of 223 subjects explored for snoring or daytime somnolence. They showed that the SF-36 score is sensitive to sleep disruption.
- Katz and McHorney (24) finally demonstrated that insomnia acts by itself on the quality of life of patients suffering from chronic illness. Insomnia was severe in 16% and mild in 34% of these patients. Differences between patients with mild insomnia versus no insomnia showed small to medium decrements across SF-36 subscales ranging from 4.1 to 9.3 points (on a scale of 100) and for severe insomnia from 12.0 to 23.9 points. Insomnia appeared in this study as an independent factor of a worsened QOL to almost the same extent as chronic conditions such as congestive heart failure and clinical depression.

Poor Sleep Affect Quality of Life in Other Co-Morbid Patients

As it has been demonstrated in the previous study (24), there is a close relationship between insomnia and chronic illness, and it is therefore difficult to understand which is acting first on the QOL of patients. Leger et al. (20) found that the general health status was worse in severe and mild insomniacs than in good sleepers. However, they could conclude only that insomnia was related to a worse health status and not whether it was a cause or a consequence of the worse health status. One interesting finding of the study was illustrated by the relationship between insomnia and bodily pain. Bodily pain, caused by various illnesses, may also result in insomnia and poorer QOL; however, it is also possible that poor sleep increases the sensitivity of subjects to pain.

In patients suffering from cancer, the quality of sleep has been recognized as a powerful factor acting on the QOL (10). In a sample of 263 cancer patients undergoing chemotherapy, it was found that insomnia was negatively correlated to the QOL, probably by the way of depression. Insomnia explained only 4% of the variance of QOL and depression 47%. Stark et al. (25) also reported in 178 cancer subjects that insomnia was significantly and independently associated with a deficit of QOL. They recommended to interview the subjects with cancer about sleep to better discriminate subjects with anxiety. Lindley et al. (26) considered insomnia as a good reflect of QOL in the following adjuvant therapy for early-stage breast cancer.

In other chronic illness, several studies have shown that insomnia influences the QOL of patients, in Parkinson (27), in Hemodialysis patients (19) or in patients with anxiety and depression (28). In HIV disease, Nokes and Kendrew (29) also found that there was a correlation between sleep quality (assessed by the Pittsburgh Sleep Quality Index) and positive general well-being.

QOL in the Treatment of Insomnia

We found four studies evaluating the impact of treatments of insomnia on QOL. Goldenberg et al. (30) and Leger et al. (20) have shown the effect of Zopiclone in improving the quality of life of insomniacs explored by questionnaires (on professional, relational, sentimental, domestic, leisure, and safety aspects) that appear to be not significantly different from the good sleepers’ one. Baca et al. (31) also showed that zolpidem improved patients QOL assessed by a questionnaire including four factors: social support, general satisfaction, physical and psychological well-being, and absence of work overload/free time. However, there is in our knowledge no extensive survey comparing the effects of several hypnotics with well-validated QOL instruments regarding non-pharmacologic. Quesnel et al. (32) have shown the efficacy of cognitive-behavioral therapy in insomnia in 10 women treated for non-metastatic breast cancer. They found an improvement of sleep assessed by polysomnography and at the global and cognitive subscales of the QLQ-C30.

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Conclusion

Insomnia affects the daily lives of patients. However, it is often difficult to evaluate this impact and the efficacy of treatments on it. QOL seems to be a good means to better understand the complaints of insomniacs regarding their day to day functioning. Several studies have shown the sensitivity of the SF-326 in evaluating the impact of insomnia by itself or in relation with other associated chronic diseases. We also recommend the development of more accurate QOL tools specifically designed for insomnia.

Issues that need to be addressed by future research:

- Quality of life in sleep maintenance insomnia.
- Specific instruments are needed to assess impaired quality of life due to insomnia.
- There is a need for data regarding the effects of hypnotics on the quality of life of insomniacs.

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01 Chapter 6

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03 Query No. Page No. Line No. Query

04 AQ1 44 51 Please provide the full form of 'DSM-IV'.

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06 AQ2 47 38 The sentences "However, there is in our knowledge no extensive survey comparing the effects of several
07 hypnotics with well-validated QOL instruments. Regarding non-pharmacologic" has been changed to
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09 well-validated QOL instruments regarding non-pharmacologic." Please clarify whether the change is OK.

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