

Insomnia in times of COVID-19: guidelines for Cognitive-Behavioral Assessment and Intervention.

(Insomnio en tiempos de COVID-19: pautas para la Evaluación e Intervención Cognitivo-Conductual)

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Abstract

The confinement derived from the health contingency due to COVID 19 has brought with it an increase in psychological disorders such as stress, anxiety and insomnia. Despite the existence of action guidelines for each of the conditions, the presence of constant environmental factors does not allow a convenient evaluation and intervention. That is why the present article aims to provide evaluation elements through relevant psychometric instruments in the research and retaking an ideographic perspective through the functional analysis of behavior. The cognitive-behavioral techniques with more evidence are analyzed and a guide to evaluation instruments adapted to the Mexican context is provided. Finally, the emphasis is placed on the importance of individual analysis in the context of confinement for the adequate choice of intervention techniques.

Key words: Sleep Disorders, Functional Behavior Analysis, COVID-19

Resumen

El confinamiento derivado de la contingencia sanitaria por COVID 19 ha traído consigo un incremento en trastornos psicológicos como estrés, ansiedad e insomnio. A pesar de la existencia de guías de actuación para cada uno de los padecimientos, la presencia de factores ambientales constantes no permite una adecuada evaluación e intervención. Es por ello que el presente artículo tiene por objetivo brindar elementos de evaluación a través de instrumentos psicométricos relevantes en la investigación y retomando una perspectiva ideográfica a través del análisis funcional de la conducta. Es así que se analizan las técnicas cognitivas conductuales con mayor evidencia y se brinda una guía de instrumentos de evaluación adaptados al contexto mexicano. Finalmente, se pone énfasis en la importancia del análisis individual bajo el contexto de confinamiento para la elección adecuada de técnicas de intervención.

Palabras clave: Trastornos de Sueño, Análisis Funcional de la Conducta, COVID 19

Introduction

The arrival of the coronavirus COVID-19 in 2019, marked a change in health systems worldwide. Given that confinement is the main resource to prevent the spread of the SARS-CoV-2 coronavirus that causes COVID-19, Entire populations have

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had to face changes in their lifestyle, which has become a risk factor for presenting mental health problems, which reduces the overall quality of life. (Bao et al., 2020; World Health Organization, 2020).

The main psychosocial effects derived from this pandemic are acute stress, anxiety and depression, conditions that are usually associated with confinement, loss of interaction with family and friends, economic problems (unemployment and loss of income) and of course alterations in the style of life, including changes in sleeping habits (Brooks et al., 2020; Li et al., 2020; Zhang & Ma, 2020). Although there are various ways to manifest alterations in the sleep patterns, insomnia is one of the most frequent alterations, due to the stress generated by living in a pandemic (Zhao et al., 2020).

According to the American Academy of Sleep Medicine (AASM, 2014), insomnia is the persistent difficulty in the initiation of sleep, its duration, consolidation, or quality that occurs despite the existence of adequate circumstances and opportunity for it and that is accompanied by a significant level of discomfort or deterioration in the social, work, educational, academic, and behavioral fields. This alteration in adverse and long-lasting conditions such as a global pandemic is expected. Studies suggest that insomnia is affecting the general population but also individuals in particular situations, for example, medical staff who attend to health emergencies (Morin & Carrier, 2020; Pappa et al., 2020).

Marelli et al. (2020) and Staton et al. (2020) mention that in countries such as Australia and Italy, the average number of adults with sleep-related problems ranges between 41-42%. Although in Latin America there are no figures on the prevalence of sleep disorders derived from the COVID-19 pandemic, in countries such as Chile, Colombia, and El Salvador an increase in psychological problems, consumption of psychoactive substances, and general imbalance is reported in daily routines. These variables were related to the onset of sleep disorders. (Caqueo-Urizar et al., 2020; Ramírez-Ortiz et al., 2020; Orellana & Orellana, 2020).

In Mexico, the same problem happens because women and older adults presented a higher rate of psychological distress (50.3%), depression (15.7%), anxiety (22.6%), and levels of stress (19.8%), manifestations that are related in turn to misinformation or mistrust of information, living alone and having a direct or indirect history of contact with COVID-19 (Cortés-Álvarez et al., 2020) Also, symptoms of post-traumatic stress have been detected, mainly those associated with intrusive thoughts (22%), avoidance (22.3%), and physiological hyperarousal (12.2%), variables significantly associated with problems falling asleep (González et al., 2020).

The two main sleep disorders identified in the general population are known to be obstructive sleep apnea syndrome (OSAS) and insomnia (Bouscoulet et al., 2008; Jiménez-Genchi & Caraveo-Anduaga, 2017) However, the

evidence shows an increase in the prevalence of the latter during the pandemic (42%) compared to the months before it (15%), since the time at the time of initiation of the sleep (between 30 and 120 minutes), the latency to fall asleep and the time to wake up (between one and two hours) (Marelli et al., 2020). These data suggest that during the pandemic there is the low quality of sleep, which affects the physical area (gastrointestinal, metabolic disorders, synaptic transmission) (Assefa et al., 2015; Deuschle, 2010; Kavanau, 1997) and psychological (predisposition to anxiety disorders, depression, and alterations in cognitive functions) (Drummond, 2013; Killgore, 2010; Medrano-Martinez & Ramos-Platon, 2016).

Although there are psychological evaluation and intervention guidelines for these disorders from a behavioral approach, as suggested by the European Academy of Cognitive Behavioral Treatments for Insomnia (Altena et al., 2020) and the perspectives of Behavioral Sleep Medicine (Simpson & Manber, 2020), the context of the COVID-19 pandemic is different given the concomitant emotional alterations, as well as the economic and social panorama that it brings as a consequence. (Douglas, Katikireddi, Taulbut, McKee, & McCartney, 2020; Lai et al., 2020). In Mexico, sociodemographic characteristics have been observed that show comorbid health effects, for example; hypertension, respiratory diseases, diabetes mellitus that impact the perception of the disease (Díaz de León-Martínez et al., 2020).

The objective of this article is to describe a series of behavioral assessment and intervention guidelines based on the idiographic analysis of insomnia aimed at mental health specialists who care for patients with insomnia in the context of COVID-19.

Insomnia Behavioral Assessment

Behavioral assessment involves the use of clinical strategies such as the interview, registration or self-registration systems, and inventories or scales to measure insomnia. In the case of insomnia evaluation, it is the responsibility of the clinician to consider the following for each of the items.

Interview

The interview is how the patient reveals important information related to his reason for consultation. An adequate interrogation allows the location of the components that make up a problem, their antecedents, the organismic variables (possible diseases of an organic-neurological nature or adverse effects of the drugs that the user ingests), and of course the consequences derived from the problem, the latter are understood not only as problems or subsequent manifestations of the problem but as factors that maintain it, for example, specific contextual stimulating situations or reinforcing contingencies that make

the problem more likely or maintain. The interview can be structured based on criteria of the International Classification of Sleep Disorders in its third edition (AASM, 2014; Sateia, 2014).

Registration or self-registration systems

The registration or self-registration systems are reports made by the individual himself about his behavior, his emotions, or his physiological responses, in this type of system the individual can even account for some situations and circumstances of the past. Also, it favors the capacity of self-observation in the individual and, therefore, helps to have a greater sense of control of what happens as part of their problem. It is said that a limitation of self-registration systems is that they may not adhere to reality, however, with adequate instructions it can be a precise tool, in addition to offering the clinician an idea of the patient's condition as seen through their own experience (Baldwin, 2000).

A very useful self-record is the so-called Sleep Diary, which describes information related to bedtime, sleeps latency, number of awakenings during the night, total sleep time, and sleep quality. This tool is used to make a comparison with the psychometric instruments and electrophysiological recordings on the basal states of sleep if they are available.

Inventories and scales to measure insomnia

Inventories or scales are standardized situations in which a representative sample of behaviors is obtained in which the characteristic or attribute to be measured is reflected, in this case, insomnia. This type of measurement tool helps to have a comparative point of the parameters of initiation, maintenance, and quality of sleep. The parameters focus on the main symptoms, such as daytime sleepiness, impact on daytime functioning, and difficulty sleeping (Alvarez et al., 2016)

The most widely used instruments are the Athens Insomnia Scale (EAI), the Epworth Sleepiness Scale (ESE) (Jiménez-Correa, et al. 2009), the Pittsburg Sleep Quality Index (PSQ) (Jiménez-Genchi et al., 2008), and the Functional Consequences Questionnaire Sleep (FOSQ) which have had psychometric adaptations in Mexico (Table 1).

So far, the importance of the semi-structured interview and self-registration systems and standardized scales has been realized to identify insomnia in individuals who could be presenting it before or due to the COVID-19 pandemic, however, this exercise the evaluation also involves the use of Functional Behavior Analysis (FBA), the guiding principle for choosing an ad hoc treatment for the patient and which will be discussed below.

Functional Analysis of Behavior (FAB): a key piece for shaping the intervention.

According to Spielman et al. (1987), the model that theoretically supports the psychological treatment of in-

Table 1
Instruments used in the assessment of insomnia with validity in the Mexican population

Instruments	Description
Athens Insomnia Scale (AIS),	Self-applicable scale assesses the impact of insomnia in four dimensions: insomnia symptoms, total sleep time It is made up of eight items and the total score ranges between 0 and 24. A total score between 0 and 6 is in and 12 as mild insomnia, between 13 and 18 moderate insomnia and greater than 18 corresponds to severe validated in the young population, the elderly, and the population with psychiatric disorders. It shows a reliability variance of 59.2%
Epworth Sleepiness Scale (ESE)	Self-applicable scale that evaluates the propensity to sleep. It is made up of 8 questions in Likert format from 0 (never) to 3 (severe). Is interpreted under the following criteria: Less than 10 is considered normal sleepiness, 11-12 marginal sleepiness, 13 – 24 suggestive of excessive sleepiness. The scale has been validated in a clinical population with sleep disorders such as narcolepsy, obstructive sleep apnea syndrome (OSAS), insomnia, and psychiatric disorders. It has a reliability of 0.90 and 58.7% of the total variance (Jiménez-Correa et al., 2009).
Pittsburg Sleep Quality Index (PSQI)	Self-applied questionnaire that evaluates the symptoms of insomnia, other sleep disorders, quality of sleep, as well as daytime symptoms. It is made up of 24 items; the total score has a range from 0 to 21 points; where a total score less than 5 points indicates good quality of sleep and a score greater than 5 points is interpreted as poor quality of sleep. It has been applied in psychiatric population and with some medical condition to determine their quality of sleep, in its Spanish versions its reliability ranges between 0.77 and 0.81 (Jiménez-Genchi et al., 2007).
Functional Sleep Consequences Questionnaire (FOSQ).	Self-applied questionnaire that measures the impact of excessive daytime sleepiness on daily performance. It is composed of 30 items that are evaluated on a Likert scale that ranges from 0 (I do not do this activity for other reasons) to 4 (no). It is divided into five factors: a) Activity level, b) Surveillance, c) Privacy and couple relationships, d) General productivity and e) Level of socialization. The sum of the reactants indicates which of the dimensions is most affected. It has been validated with non-clinical populations and with some sleep disorder, showing a consistency of 0.94 and a 67.2% explained variance.

Note: Own elaboration

somnia is the so-called 3p, configured by predisposing, precipitating factors that perpetuate the problem, as shown in Table 2.

Table 2
3p model of psychological treatment of insomnia

Factor	Description	Example
Predisposing	Biological variables of the patient that facilitate the onset of insomnia.	Central nervous system sensitive to cortical hyperactivation. Gene expression in the family
Precipitant	Stressful environmental variables that cause a break in the person's sleep cycle, culminating in insomnia.	Loss of employment. Divorce. Economic difficulties. Lockdown
Perpetual	Behavioral variables that promote waking states, increasing symptoms of insomnia at night, and increasing Excessive Daytime Sleepiness.	Watching television in the bedroom. Different bedtimes. Physical activity before sleeping.

Note: Adapted from "A behavioral perspective on insomnia treatment", of A. Spielman, L. Caruso & P. Glovinsky, 1987, *Psychiatric Clinics North America*, (10), 541-553, Elsevier

This model suggests that insomnia is caused by the interaction of predisposing factors, which promote the appearance of excessive wakefulness in the person, which, when found in daily stressful situations, precipitate the onset of the condition, which is perpetuated over time due to improper sleep habits. That said, it is understood that it is essential to identify the causes and consequences of behaviors related to insomnia. From the point of view of Applied Behavioral Analysis (ABA), this seems logical given that, just from the formulation of hypothetical assumptions about how these predisposing, precipitating, and maintaining behavior stimuli are related, an intervention plan can be made.

In that sense, the FAB is the clinical tool that appears as a guide for the rest of the decisions in the context of treatment (Haynes, & O'Brien, 2000) and is compatible with the 3p model when it comes to identifying the topography and function of insomnia in the life of an individual. Now, in the understanding that insomnia is characterized by a series of responses that are configured and occur at a moment in time and under certain circumstances, preparing the FAB will require a study of the influence of the context on this problem. In this case, the role of the stimulus situations that occurred during the COVID-19 pandemic must be identified for this set of responses to occur or exacerbate. As can be seen, it is important to identify specific behaviors that occur at a particular time and to know the events that lead to it, since not only are they configured as stimuli or responses by nature, but they also have a function at a certain time and for a certain reply (Froxán et al., 2020).

Then, the FAB allows the clinician to identify the functional relationships between predisposing (OR), perpetuating (CR), and precipitating (ER) factors, also, it offers the possibility of knowing other moderating organismic variables (O) which are not susceptible to being modified during treatment, for example, medical illnesses. Using an FAB favors making the necessary adjustments to the treatment plan since the characteristics of the insomniac patient are taken into account when applying the intervention techniques (González-Cossío & de la Orta-López, 2016).

This tool becomes important in the context of the pandemic because confinement becomes a precipitating and perpetuating factor of insomnia that cannot be modified (or at least not in the

short term), therefore the intervention strategies should be the objective is to reduce or regulate the number of precipitating factors and the consequences to which the patient is exposed (see figure 1).

Once behavioral indicators have been found, and the support of the psychometric scales for insomnia disorders has been used, it is time to choose the best treatment.

Choice of psychological treatment with a behavioral approach for insomnia

The treatment of insomnia can be carried out through three perspectives: a) non-pharmacological or psychological treatment, b) pharmacological and c) both. Considering the first approach, the first-line forms of intervention correspond to the techniques of the Cognitive Behavioral Therapy in Insomnia (CBT-I) model, which are usually configured by Stimulus Control Therapy (SCT), Sleep Restriction (SR), and Progressive Muscle Relaxation (PMR). These forms of treatment are complemented with psychoeducation in sleep hygiene measures (PSH) and a sleep diary to achieve greater maintenance of benefits (Morin & Espie, 2003). Likewise, we can use complimentary techniques that are more adapted to the characteristics of the patient and based on FBA such as paradoxical intention, diaphragmatic breathing, and cognitive restructuring (Cheng et al., 2019). During the pandemic, it is also essential to identify and evaluate the effects of exposure to information on sleep habits, hence the importance of information fasts and the implementation of behaviors incompatible with excessive exposure to media communication and social networks.

In general, the objective of these interventions is to improve sleep quality, decrease sleep-onset latency, reduce waking hyperarousal, and increase total sleep time. Although there are protocols that provide an estimate of the sessions to be used, for example, 12 sessions or reduced versions that propose a training of eight sessions such as the so-called Brief Cognitive-Behavioral Treatment for Insomnia (BCBT-I) (Germain & Buysse, 2011); and the scheme of four sessions that propose the Brief Behavioral Treatment in Insomnia (BBTI) (Cheng et al., 2019); It will be the responsibility of the clinician, working together with the user, to determine the number of sessions, choosing the techniques based on the emotional problems associated with insomnia, the characteristics of the patient and their treatment progress. Table 3 shows a proposal of techniques that the clinician can use for the management of insomniac patients who are in confinement.

Discussion

The arrival of the COVID-19 pandemic brings a change in daily life, including sleeping habits. Insomnia is the main sleep disorder in this pandemic as suggested by recent sleep research (Brooks et al., 2020; Li et al., 2020; Zhang & Ma, 2020). The aim of this article was to describe behavioral assessment and intervention guidelines based on the idiographic analysis of insomnia.

Although insomnia should be treated from a comprehensive perspective and even when there are psychological treatments that have shown sufficient evidence of their effectiveness; in the scenario of a pandemic and considering the limited access to health services, evaluation and treatment strategies are required that favor the feeling of control in the patient in the short term and at low cost. Although it is desirable to complement in some cases with medical-pharmacological follow-up and use electrophysiological records that support nosological diagnosis, the particular ways in which insomnia operates in patients should not be neglected,

Figure 1
Example of the development of descriptive and functional analysis of behavior

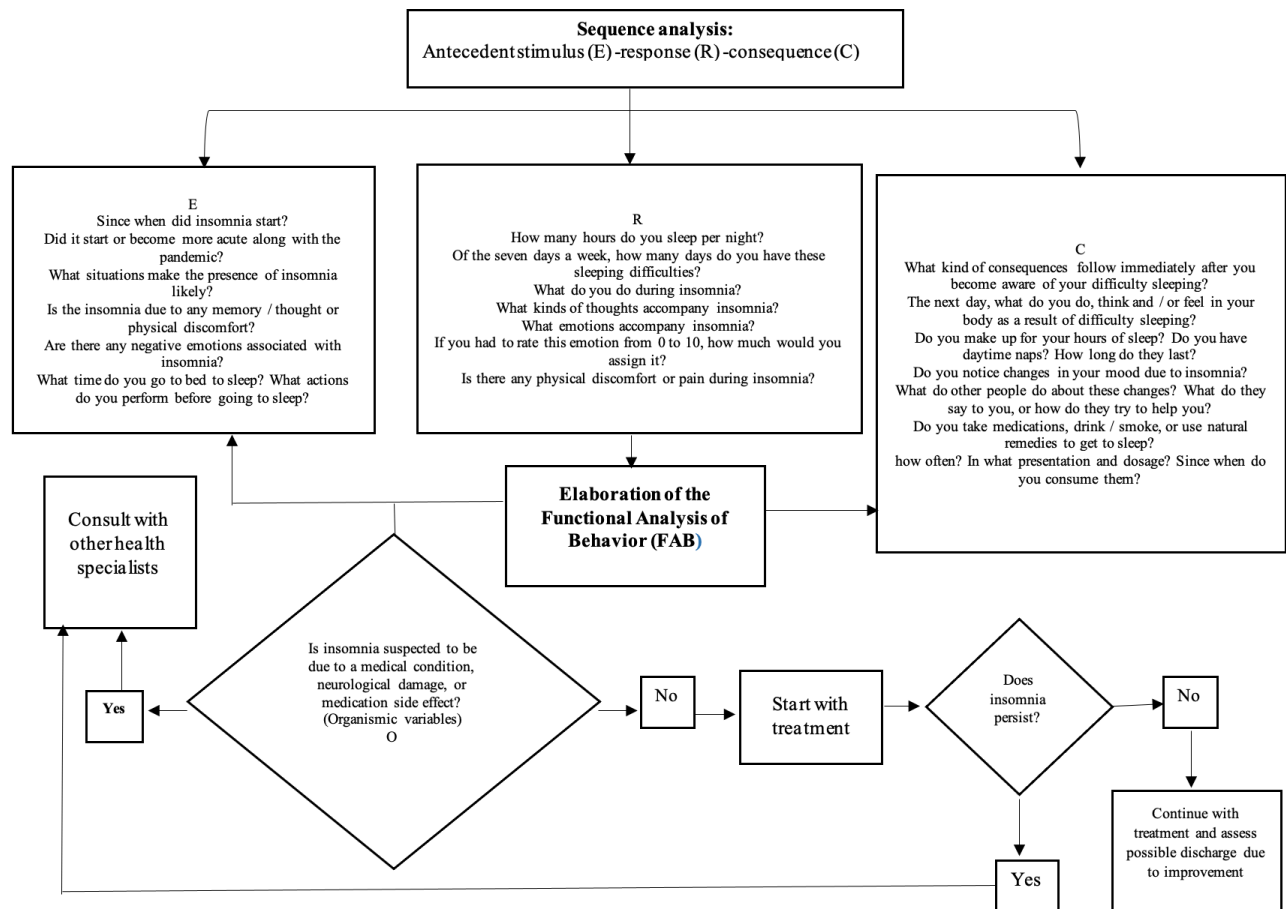


Table 3
Components of psychological treatment for insomnia

Technique	Description	Implementation
Stimulus Control Therapy	Identification of stimuli that keeps the patient awake. Once the stimuli are registered, all those that promote wakefulness are suppressed and the stimuli that promote sleep are manipulated.	The behaviors that keep the patient awake are self-recorded. Once identified, they are all withdrawn through the indication to use the bedroom only to sleep and have sexual activity.
Sleep Restriction	The time the patient remains in bed is restricted, falling asleep, shortening the latency of time before sleeping.	Based on self-registration, time in bed is calculated by counting the minutes between bedtime and the time of sleep onset. Based on this calculation, the time is shortened by 10-minute spaces between bedtime and bedtime.
Progressive Muscle Relaxation	Indications that are given to the patient through which he must tense and relax different parts of the body, making the sensation of relaxation noticeable.	Instructions: 1. Focus your attention on one muscle group. 2. Tense that muscle group and hold the tension for 20-30 seconds. 3. Relax the muscle group, paying attention to the sensation that occurs. 4. Now, follow my voice to tense the following muscle groups: a) Right hand, then we will continue with the other, b) Forearm and right arm, c) Back, d) Neck, e) Face and eyes, f) abdomen, g) Right foot, h) Right calf, and i) Right thigh etc.
Psychoeducation Sleep Hygiene	Health education and standards that help to have optimal environmental conditions for optimal sleep.	1. Set a bedtime and wake-up time. 2. Avoid consuming energy drinks two hours before sleeping. 3. Wear comfortable clothes to sleep. 4. Avoid eating high calorie foods. 5.-Avoid taking long naps during the afternoon, and 6. Perform a routine that prepares the person to sleep.

Note: Own elaboration based on, “Insomnia. A Clinical Guide to Assessment and Treatment.” of Morin, C., & Espie, C. (2003). Kluwer Academic/Plenum Publishers. For an extensive review of the techniques shown: Miller et al. (2014), Riemann (2014) y Riemann et al. (2017).

for this reason; it is proposed to make FBA the strategy that allows understanding functional relationships (Morin & Espie, 2003).

The need to address problems associated with sleep disorders is indisputable where information is provided about the problem and healthy behaviors are reinforced to prevent and treat insomnia, guaranteeing a functional environment to carry them out, thus modulating the perpetuating factors of insomnia. Under this premise, the use of FBA allows the selection and application of strategies that favor a change in habits in the context of the pandemic, and that will result in an improvement in the quality and quantity of sleep.

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