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CLINICAL ASSESSMENT OF PATIENT WITH EXESSIVE DAYTIME SLEEPINESS (EDS)

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ABSTRACT

Excessive daytime sleepiness (EDS) is the primary concern for many patients presenting with sleep disorder and a significant public health problem. The International Classification of Sleep Disorders (ICSD-2) includes EDS as an essential feature for three diagnostic categories: narcolepsy, hypersomnia and behaviourally induced insufficient sleep syndrome. Most frequently, insufficient sleep duration is responsible for this symptom. This review will give an overview of some of the most common causes of EDS encountered in clinical practice and identify important risk factors for excessive sleepiness.

Daytime sleepiness is common but often unrecognized. As with most medical conditions, diagnosis of EDS begins with a precise history. The patient may present complaints of `tiredness' or `fatigue' rather than more specific symptoms of `sleepiness' or `drowsiness'.

Therefore in this literature research paper we have summarized the various tools that have been developed along the years to assess sleepiness more objectively and with their help to explore the different aspects and causes of the excessive sleepiness. Always having in consideration that investigators must recognize the limitations of the available methods and select them according to the clinical problem being addressed.

The purpose of this research paper, just like any kind of scientific writing, is to get the researchers, psychology students, readers, etc., up to date about the clinical assessment of patient with excessive daytime sleepiness. Especially this paper will be in much use for those who tend to assess or evaluate a patient suffering from EDS.

Having in consideration the difficulties researchers face whenever they tru to approach to patients complaining about excessive daytime sleepiness, especially in our country, North Macedonia, where this sleep disorder hasn't yet been studied much due to the lack of cases complaining with the symptoms regarding the problem, we thought that a definition paper which describes facts, provides information and objective approaches how to determine whether the person is suffering from EDS, will be in much use of clinical practitioners.

In this research paper is completed a literature review where we have given an outline of the empirical activities by high-ranked psychology researchers around the world, who have contributed in better understanding and broadening our knowledge for the topic discussed in this paper.

Key words: *excessive daytime sleepiness, sleep disorders, psychiatric conditions, clinical assessment, treatment.*

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INTRODUCTION

–**Excessive daytime sleepiness** (**EDS**) is characterized by persistent sleepiness and often a general lack of energy, even during the day after apparently adequate or even prolonged nighttime sleep. EDS can be considered as a broad condition encompassing several sleep disorders where increased sleep is a symptom, or as a symptom of another underlying disorder like narcolepsy, hypersomnia, sleep apnea or circadian rhythm sleep disorder.

Excessive sleepiness is the leading complaint of patients who visit sleep clinics. People who have excessive sleepiness feel drowsy and sluggish most days, and these symptoms often interfere with work, school, activities, or relationships. Although patients with this condition often complain of "fatigue," excessive sleepiness is different from fatigue, which is characterized by low energy and the need to rest (not necessarily sleep).

It is not a disorder in itself—it is a serious symptom that can have many different causes.

Patients with excessive daytime sleepiness (EDS) have impaired function due to difficulty maintaining wakefulness or alertness at appropriate times during the day. Complaints of EDS, or related terms such as tiredness, fatigue, and lack of energy, constitute some of the most common issues presented to clinicians. EDS is important to recognize because it can signal an undiagnosed sleep disorder or other treatable conditions. In addition, EDS can have a negative impact on a broad range of activities and raise safety risks while driving or operating other machinery.

Underdiagnosis and undertreatment of sleep disorders are common in community psychiatric practices because clinicians may not be aware of the different causes and consequences of excessive sleepiness. It is essential to recognize and treat the underlying cause of this disorder. In cases where sleep disorders are suspected, a comprehensive treatment program might include nonpharmacologic approaches, pharmacologic approaches, or both may need to be initiated to encompass the complexity of sleep disorder treatments.

Careful monitoring and follow-up of patients with excessive daytime sleepiness, including counseling and long-term support, are essential to ensure treatment compliance and to maintain improvements over time.

The evaluation of excessive sleepiness should begin with a detailed history, including assessment of nighttime complaints and daytime problems with maintaining wakefulness and concentration. Direct questioning of the patient and a bed partner (if available) about sleep habits may differentiate nonspecific complaints, such as fatigue, inattentiveness, and stress, which are not related directly to somnolence, from true excessive sleepiness. It is important to remember that individuals have a moderate ability to predict performance impairment resulting from sleepiness. In addition, many people may be reluctant to admit having cognitive or functional difficulties at work or while driving. Any relevant comorbid medical conditions and medication use, as well as the use of legal substances (e.g., alcohol, caffeine, tobacco products), are important factors that should be identified.

PURPOSE OF RESEARCH - Having in consideration the difficulties researchers face whenever they tru to approach to patients complaining about excessive daytime sleepiness, especially in our country, North Macedonia, where this sleep disorder hasn't yet been studied much due to the lack of cases complaining with the symptoms regarding the problem, we thought that a definition paper which describes facts, provides information and objective approaches how to determine whether the person is suffering from EDS, will be in much use of clinical practitioners.

In this research we have gathered the mostly used diagnostic instruments in the world, including surveys or questionnaires or clinical approaches, to confirm rather the person is suffering from excessive daytime sleepiness.

CLINICAL ASSESSMENT OF PATIENTS WITH EXCESSIVE DAYTIME SLEEPINESS

SELF REPORT - See Figure 1. for the general approach to clinical ma. The first step is identifying EDS. The individual identifies EDS when it is creating a problem in their life such as falling asleep in inappropriate settings such as driving. The situation is even more concerning when

colleagues, friends, or family have identified concerns, as subjective reporting may lead some individuals to deny the problem. Sleepiness can be hard to quantify as the subjective experience varies between individuals. In general, observable behaviors and objective measures are better used wherever possible. A physician may first identify sleepiness by seeing patients asleep in the waiting room.

Patients and clinicians often use these terms interchangeably, but despite some overlap, excessive sleepiness and fatigue have different features. A patient with excessive sleepiness may be unable to remain awake while reading, resting, or watching television, whereas an individual with fatigue may express feelings of apathy or listlessness rather than sleepiness.

The International Classification of Sleep Disorders-2, which classifies more than 80 sleep disorders under eight categories based on symptomatic, pathophysiologic, and body system criteria, describes excessive sleepiness as a state, subjectively reported by the patient, in which he or she experiences difficulty maintaining alertness and wakefulness, followed by rapid entrance into sleep when sedentary. The severity of the abnormal somnolence is based on the frequency and level of daytime impairment and dysfunction.

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On the other hand as second approach we may use the diagnostic testing. Validated self-administered questionnaires have been used in

research studies and in the clinical setting to determine sleep habits and assess the effects of sleep-inducing and wake-promoting medications. Such questionnaires may be incorporated into clinical practice settings to supplement the clinical interview.

Diagnostic tests are used to determine sleep disorders in which excessive daytime sleepiness is the primary complaint.

THE EPWORTH SCALE - The most commonly used questionnaire to assess excessive sleepiness is the Epworth Sleepiness Scale (ESS). The ESS is a self-administered questionnaire with 8 questions. Respondents are asked to rate, on a 4-point scale (0-3), their usual chances of dozing off or falling asleep while engaged in eight different activities. Most people engage in those activities at least occasionally, although not necessarily every day. The ESS score (the sum of 8 item scores, 0-3) can range from 0 to 24. The higher the ESS score, the higher that person's average sleep propensity in daily life (ASP), or their 'daytime sleepiness'. The questionnaire takes no more than 2 or 3 minutes to answer. It is available in many different languages.

The disadvantages of ESS is that it does not ask about the person's subjective feelings of alertness/drowsiness at some particular time, as measured by the Karolinska Sleepiness Scale. Nor does it measure how often, or for how long, the respondent sleeps during the day. The ESS is not a check-list for identifying those situations in which the respondent most frequently dozes during the day. Nor can it measure a person's level of alertness/drowsiness continuously, as Optalert technology does.

The ESS specifically distinguishes reports of dozing behavior (and estimates of SSPs) from feelings of fatigue and drowsiness/sleepiness, in the sense of 'weariness from exertion'. Fatigue and drowsiness/sleepiness are related concepts that are often confused.

THE MULTIPKLE SLEEP LATENCY TEST (MSLT) - Shortly after having a PSG, patients come in during the daytime for their sleep test during which they are given 5 scheduled naps each 20 minutes long and separated by 2 hours apart. The purpose of the tests are to determine how likely and quickly a patient falls asleep during the day in a relaxed and quiet environment. During these nap periods, patients are in a dark, quiet,

comfortable atmosphere devoid of any distractions, stimulations, or environmental factors that may prevent them from sleeping.

Patients are hooked up to the same monitoring equipment during their nap times as they are during an overnight PSG. The equipment is composed of electrodes and monitors that collect a variety of data.

The idea behind the multiple sleep latency test is that sleepy people are more likely fall asleep faster than others, especially when a sleep disorder is the root cause of the problem.

The main function of the test is to determine sleep latency (the time it takes to transition from wakefulness to sleep) and sleep onset REM periods (how quickly the patient enters REM sleep).

Based on the findings of the sleep test, a sleep specialist or the patient's primary care provider can determine the best course of treatment for the sleep disorder.

POLYSOMNOGRAM TEST - PSG is both a research tool used for studying sleep, and a diagnostic tool used to determine sleep disorders. Polysomnograms are used to monitor a patient's sleep stages and cycles to determine the presence of disturbances that can be attributed to sleep disorders. PSGs use a variety of equipment that monitors brain activity, muscle activity, breathing activity, and more to get a comprehensive interpretation of what disorder (if any) the patient is suffering from.

STANFORD SLEEPINESS SCALE (SS) - The Stanford Sleepiness Scale (SSS), developed by Dement and colleagues in 1972, is a one-item self-report questionnaire measuring levels of sleepiness throughout the day. The scale, which can be administered in 1–2 minutes, is generally used to track overall alertness at each hour of the day. The scale has been validated for adult populations aged 18 and older.

The SSS is a momentary assessment scale and can detect sleepiness as it waxes and wanes over the course of a day. Advantages include its brevity, its ease of administration, and its ability to be administered repeatedly. Experimentally induced sleep deprivation increases SSS scores; however, normative data do not exist, making it difficult to use for clinical decision making or comparisons between persons.

MAINTAINANCE OF WAKEFULNESS TEST (MWT) - A maintenance of wakefulness test is administered over the course of a day at a sleep laboratory and is used to measure how alert a patient is during the day and if they are capable of staying awake for a period of time in a quiet, relaxing, stimulation free environment.

It assesses an individual's ability to remain awake while resisting the pressure to fall asleep during soporific circumstances, a process to which we will refer to as 'wake tendency'. It is used clinically in disorders associated with excessive sleepiness or somnolence such as narcolepsy and sleep apnea syndrome.

During the test, patients are given 4-5 trials of 40 minutes of relaxing in a quiet, dimly lit bedroom during which time they are asked to simply sit still while looking forward, and not do anything stimulating that could intentionally keep them awake (no talking aloud, singing, reading, pinching themselves, etc.).

The rooms are meant to isolates external factors such as noise, temperature, light, and activity. Basically anything that can keep a person awake through some sort of stimulation or discomfort is removed.

Patients that are not experiencing excessive daytime sleepiness (EDT) should not have any trouble staying awake during each 40 minute trial. The trials end either after 40 minutes have passed and patients have remained awake the entire time, or when patients fall asleep and enter at least stage 1 of non-REM sleep (although any stage of sleep reached ends the trial) for 90 seconds. If patients fall asleep at any time in the 40 minute trial, the trial is ended early.

After the 4 or five trials a sleep technologist will look over the results and send them to a sleep specialist to be reviewed. Results of the test will help determine your level of sleepiness during the day.

SLEEP –WAKE SLEEPINESS INVENTORY (SWAI) - Consisting of 59 items, the SWAI was designed to screen for excessive daytime sleepiness in a clinical setting. Specifically, the scale evaluates six domains: **excessive daytime sleepiness, distress, social desirability, energy level, ability to relax, and nighttime sleep.** In contrast with laboratory measures like the Multiple Sleep Latency Test (MSLT), the SWAI offers a quick, inexpensive method for assessing excessive daytime sleepiness.

KAROLINSKA SLEEPINESS SCALE (KSS) - This scale measures the subjective level of sleepiness at a particular time during the day. On this scale subjects indicate which level best reflects the psycho-physical sate experienced in the last 10 min. The KSS is a measure of situational sleepiness. It is sensitive to fluctuations.

This is self-report measure. It takes 5 min to complete. Reliability and Validity In a study conducted by Kaida et al , the authors investigated the validity of the KSS and found that it was highly correlated to EEG and behavioral variables. The results show that KSS has a high validity. However, because the scores of the KSS vary according to earlier sleep, time of day, and other parameters, it is difficult to deduce its test–retest reliability.

CONCLUSION

Daytime sleepiness is common, but, in some individuals, it can be excessive and lead to distress and impairment. For many of these individuals, excessive daytime sleepiness is simply caused by poor sleep habits or self-imposed sleep times that are not sufficient to maintain alertness throughout the day. For others, daytime sleepiness may be related to a more serious disorder or condition such as narcolepsy, idiopathic hypersomnia, or obstructive sleep apnea. Clinicians must be familiar with the disorders associated with excessive daytime sleepiness and the assessment methods used to diagnose these disorders in order to identify patients who need treatment.

The causes of EDS are numerous and include broad categories: insufficient sleep, sleep disorders, medical, psychiatric conditions and medications.

An accurate diagnosis starts with a detailed interview with the patient about possible factors that may contribute to the abnormal sleepiness. The evaluation process may require a sleep study.

The most important tool in the evaluation of a patient with EDS is the history, including a detailed sleep history, looking for clues to an underlying sleep disorder or explanation for insufficient sleep. The Epworth Sleepiness Scale (ESS) is a standardized measure of subjective

sleepiness that is not diagnostic but can be useful in clinical practice. Additional objective testing in the sleep laboratory can also be helpful.

The disadvantages of ESS is that it does not ask about the person's subjective feelings of alertness/drowsiness at some particular time, as measured by the Karolinska Sleepiness Scale. Nor does it measure how often, or for how long, the respondent sleeps during the day. The ESS is not a check-list for identifying those situations in which the respondent most frequently dozes during the day. Nor can it measure a person's level of alertness/drowsiness continuously, as Optalert technology does.

The Stanford Sleepiness Scale on the other hand, is a momentary assessment scale and can detect sleepiness as it waxes and wanes over the course of a day. Advantages include its brevity, its ease of administration, and its ability to be administered repeatedly. Experimentally induced sleep deprivation increases SSS scores; however, normative data do not exist, making it difficult to use for clinical decision making or comparisons between persons.

The Sleep Wake Sleepiness Inventory has been compared to the multiple sleep latency test (MSLT), which is an objective measure that is considered the gold standard of sleepiness assessment; it measures sleep onset latency during several daytime opportunities. The SWAI-EDS has been found to correlate moderately to highly with average MSLT scores. Other sleepiness scales, including the Stanford sleepiness scale and the Epworth sleepiness scale (ESS), exist. However, the ESS does not correlate as highly with the MSLT as the SWAI. The ESS is currently the most prevalent measure of excessive sleepiness.

As for Karolinska Sleepness scale it is frequently used to study sleepiness in various contexts. However, it exists in two versions, one with labels on every other step (version A), and one with labels on every step (version B) on the 9-point scale. The two versions have been compared in a 24hr wakefulness study of 12 adults. Results indicated that the two versions are highly correlated, do not have different response distributions on labeled and unlabeled steps, and that the distributions across all steps have a high level of correspondence (KappaÂ =Â 0.73). It was concluded that the two versions are quite similar.

Multiple Sleep Latency Test (MSLT) is a facility based study that is used to measure levels of daytime sleepiness. The results of the study are primarily used to confirm the suspected diagnosis. On the other hand in comparison to MSLT, Maintenance of Wakefulness Test (MWT) is a facility based study that is used to measure the ability to stay awake and alert. The procedure protocol is similar to that of the MSLT, with the exception that an individual is given four nap trials, each trial consisting of a forty minute session in which the an individual attempts to fall asleep. The test is routinely performed the day after a nocturnal PSG and evaluates the ability to stay awake for a defined period of time. Results may be used to determine the efficacy of therapy for sleep disturbance disorders (such as narcolepsy) or to determine if the inability to stay awake is a public or personal safety concern.

Regardless of which treatments are used, physicians should monitor their patients regularly and provide counseling and long-term support to help patients adjust to the chronic nature of their condition and ensure treatment adherence over time.

Excessive daytime sleepiness and impaired alertness are often difficult to identify and assess. However, because of the heavy social and economic burden on society, clinicians should evaluate and treat excessive sleepiness as part of a comprehensive treatment regimen.

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