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## **Is there an association between anxiety and sleep paralysis?**

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**Abstract:**

In this report, two articles are discussed focusing on sleep paralysis and its symptoms. In the first article, a case report highlighted a case of isolated sleep paralysis, a transient, generalized inability to move or speak that usually seen during the patient's transitions between sleeping and wakefulness. Whereas, in the second article, among Egyptian college students in Cairo ( $n = 100$ ), the study examined the relationship between sleep paralysis (SP) and anxiety symptoms, viz., posttraumatic stress disorder (PTSD), trait anxiety, and pathological worry. Both articles concluded that it is important for psychiatrists to be aware of the presentation of a patient with isolated sleep paralysis and simultaneously understand the cultural undertones in such cases.

**Key words:** sleep paralysis, PTSD, anxiety, worry, hypnopompic/hypnogogic hallucinations, Narcolepsy, Generalized Anxiety Disorder.

**Introduction:** sleep paralysis is a characterized sleep parasomnia which is known by inability to move or speak that has been usually seen during the patients transitions between sleeping and wakefulness(1). Sleep paralysis is often accompanied by terrifying hallucination that is not harmful but very frightening and it only lasts a few minutes so it is fully reversible(1). Most people have sleep paralysis once or twice in their life, while others experience it a few times a month or more regularly(1).

It is believed to be more common among students and those with psychiatric problems(1). The symptoms of sleep paralysis include difficulty in breathing as if someone or something is crushing the chest(1). Also, inability to move the eyes and seeing or sensing an evil presence in the room(1). The treatment for this disorder remains unknown. However, after many studies, researchers have found out that an improved sleeping environment and healthier sleeping habits can help lessen the symptoms of this disorder(3).

Sleep paralysis is mostly closely linked to rapid eye movement (REM) sleep, which is associated with vivid dreaming(3). Throughout periods of REM sleep there is total muscle atonia (save the eyes and respiratory system) to save us from acting out these dreams(2). This is a result of the suppression of skeletal muscle tone by the pons and the ventromedial medulla, affected by the neurotransmitters  $\gamma$ -aminobutyric acid (GABA) and glycine, which inhibit the motor neurons in the spinal cord(2).

The parietal lobe functions in sensations, perception and integrating sensory inputs to the visual system and plays a role in the hallucinations(2).

During sleep paralysis, the sense of stranger in the room or fear is due to the brainstem activation of the amygdala(2).

Nevertheless, a couple of studies have reported that sleep paralysis is associated with anxiety, which is a feeling of worriness or nervousness and this occurs when the person does not know what is going to happen. Anxiety is an expected part of every person's life and its symptoms can interfere with the individual's daily activity such as job performance, schoolwork and even social relationships. When a person is experiencing anxiety they feel restless, fatigued, difficult to concentrate, irritable, having muscle tension and even sleep problems.

The aim of this report is to discuss two articles about whether anxiety leads to sleep paralysis or not.

## **Materials:**

In the first article, materials were stated as the following.

**Assessment of sleep paralysis** The presence of Sleep paralysis, rates of Sleep paralysis, and hallucinations during Sleep paralysis were assessed using the Sleep Paralysis Questionnaire (SPQ) which has previously been utilized in Nigerian, Chinese, American, Egyptian and Danish populations. The SPQ is a questionnaire comprised of 13 open- and closed- ended items and is rendered in simple English. The questionnaire includes questions on the frequency of Sleep paralysis (e.g., lifetime, past year and past month), usual duration of Sleep paralysis, and emotional reactions to the experience (including fear of the experience). The questionnaire also includes items on the nature of the hallucinatory experiences during Sleep paralysis, causal explanations of Sleep paralysis, and measures taken to prevent further Sleep paralysis episodes.

The first item of the SPQ is formulated as follows, “Upon going to sleep or awakening, have you ever had the experience of wishing to move or speak but being unable to do so?” If participants answered affirmatively to this question, they were asked to describe their episode, thereby enabling confirmation that the experience was, indeed, Sleep paralysis.

**State-Trait Anxiety Inventory (STAI-T).** The STAI-T is a 20-item self-report instrument that assesses trait anxiety. Participants rate each item on a 4-point Likert scale ranging from 1 (not at all) to 4 (very much so). Responses to all items sum to produce a total STAI score. This measure has shown strong psychometric properties. The Cronbach’s alpha coefficient for this study was .88.

**Method:** Egyptian undergraduate students ( $n = 100$ ) were recruited at the American University in Cairo, located in Cairo, Egypt. For demographic characteristics.

## **Materials:**

In the second article, materials were stated as the following.

The patient was diagnosed Using International Criteria of Sleep Disorders which was done in the psychiatry outpatient department, by a couple of doctors who kept asking the patient questions about the recurrent attacks of sleep paralysis to help in the diagnosis. They examined the patient’s mental, systemic and general state and they also investigated the patient’s blood and thyroid function test was done.

**Method:** a case of a 44- year-old man with long standing recurrent isolated sleep paralysis and generalized anxiety disorder who sought help almost 20 years after the first onset of symptoms was reported.

## Results:

In the first article *Sleep paralysis and trait anxiety symptoms* as anticipated, research participants who had experienced at least one lifetime episode of Sleep paralysis had significantly higher symptoms of trait anxiety compared to non-experiencers,  $M = 49.9$ ,  $SD = 9.2$  vs.  $M = 44.5$ ,  $SD = 10.9$ ,  $t(97) = 2.6$ ,  $p < .01$ . A follow-up analysis showed that having experienced SP was associated with symptoms of trait anxiety after controlling for negative affect ( $r_b = .26$ ,  $p < .05$ ).

In the second article, isolated sleep paralysis was reported to occur with co-morbid anxiety disorders especially panic disorder. Its presentation may confuse the psychiatrist with other psychiatric disorders.

**Discussion:** Rates and characteristics of Sleep Paralysis found in the samples of college students were very similar to those found in the general population of Egypt. For example, 43% of participants in this study reported at least one lifetime episode of Sleep Paralysis as compared to 44% of Egyptians from the general population. Twenty-four percent of participants in the study have had four or more episodes per year, which meets criteria of recurring isolated sleep paralysis (RISP), with similarly high rates of recurrent isolated sleep paralysis having been found in the general population of Egypt. In terms of hypnagogic and hypnopompic hallucinations, 37% of Sleep paralysis experiencers reported such symptoms, a rate almost identical to that of the general population. Fourteen percent of participants in the current study reported visual hallucination during Sleep Paralysis. By way of contrast, Hinton and colleagues (2005) found that 90% of Sleep Paralysis experiencers in a clinical sample of highly traumatized Cambodian refugees experienced visual hallucinations during Sleep Paralysis. The finding that participants who have experienced at least one lifetime episode of Sleep Paralysis also report higher symptoms of posttraumatic stress disorder and trait anxiety is consistent with previous literature. Indeed as noted, Sleep Paralysis has been associated with trauma and anxiety. This association has predominantly been found in individuals who have undergone some type of trauma-like event (e.g., physical abuse) or patients with a clinical diagnosis. Trauma and anxiety may predispose to having Sleep Paralysis, and the causal arrow may point in the opposite direction; that is, it is possible that Sleep Paralysis may constitute a traumatic experience and drive anxiety symptomatology. Trauma and anxiety symptoms may further worsen due to features of Sleep Paralysis. Research suggests that Sleep Paralysis is prolonged among Egyptians for instance compared to Danish Sleep Paralysis experiencers. Such prolonged immobility may make the episode more terrifying. Moreover, the high rates of Sleep Paralysis among Egyptians also mean more frequent exposure to a fearful and potentially traumatizing event. It has been suggested that fearful Sleep Paralysis episodes may function like “fear conditioning trials”. While fear conditioning is greater in participants with prior trauma such repeated exposure might still trigger conditionability in individuals with no trauma or sub-clinical Posttraumatic stress disorder levels. For example, research suggests sensitization with repeated trauma exposure. They found that both having experienced any type of hypnagogic or hypnopompic hallucinations during Sleep Paralysis (i.e., visual, auditory, and tactile) and specifically visual hallucinations during Sleep Paralysis, after controlling for negative affect, were positively correlated with symptoms of posttraumatic sleep disorder and trait anxiety. Unsurprisingly, experiencing such hallucinations during Sleep Paralysis is associated with endorsing supernatural causal beliefs of Sleep Paralysis in Egypt the same study also found that

endorsing supernatural interpretations of Sleep Paralysis was associated with fear of the experience.

However, Sleep paralysis is not present in all patients of narcolepsy and tends to be more transitory as compared to other symptoms. The episodes in Isolated Sleep Paralysis are more likely to occur during awakening from sleep (hypnopompic) while episodes of narcolepsy associated sleep- paralysis tend to occur commonly during sleep onset (hypnagogic). An explanation given for sleep paralysis which seen especially in narcolepsy is the spillover of REM sleep atonia into wakefulness. Majority of the cases reported point towards the episodes occurring more commonly in supine sleeping position, although the mechanism for this is not clear. Most patients report reported that they are aware of other people present in the room and can hear their voices and other noises around, but usually complain of complete inability to move any part of their bodies including an inability to speak out or scream. Patients may commonly complain of breathlessness and classically describe it as a choking sensation or as if someone is sitting on their chest, which frightens them in darkness of the night. Appropriately diagnosing a case of Isolated Sleep Paralysis is important for psychiatrists as the frightening features and associated anxiety reported by patients may mislead the clinician into diagnosing such patients with a psychotic spectrum or anxiety spectrum disorder, especially in the absence of a history of snoring. Different patients cope differently with this disorder; some may resort to prayers or a faith healer for their complaints while others may do nothing to prevent their paralytic attacks. Demystification of parasomnias and reassurance is an important aspect of clinical intervention as it is avoiding sleep deprivation and use of serotonergic antidepressants that help reduce the frequency of Isolated Sleep Paralysis episodes.

**Conclusion and future outlook:** Recurrent isolated sleep paralysis is a rare disorder that may present either to sleep specialists or to psychiatrists and can be easily misdiagnosed as some other sleep or psychiatric disorder. Both articles concluded that it is important for psychiatrists to be aware of ISP as a diagnostic entity. Recurrent Isolated Sleep Paralysis (RISP) is precipitated by sleep deprivation and stress which makes addressing these two issues all the more important in the management of Recurrent RISP. Nevertheless, further experiments could be done to confirm the relationship between sleep paralysis and anxiety. Also, more candidates could be used and experiment repeating could be valuable for accurate results.

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