Understanding Sleep Paralysis, Physiology of Sleep Paralysis, Epidemiology and Treatment

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DOI: https://doi.org/10.51244/IJRSI.2025.120500038

Received: 22 April 2025; Revised: 30 April 2025; Accepted: 02 May 2025; Published: 31 May 2025

ABSTRACT

Sleep paralysis is a strange and sometimes frightening condition that many people experience at least once in their lives. It happens when a person wakes up or falls asleep and finds that they cannot move or speak, even though they are aware of their surroundings. This paper aims to explain sleep paralysis in simple terms, including how the body usually functions during this state, what causes it, and how our body reacts to it.

OBJECTIVES

- Explain what sleep paralysis is.
- Describe how the body behaves during sleep paralysis.
- Identify the types of sleep paralysis.
- Show what causes sleep paralysis.
- Explain what people feel and see during an episode.
- Describe how the brain and body react during sleep paralysis.
- Show who is most likely to experience sleep paralysis.
- Discuss cultural views of sleep paralysis.
- Share ways to prevent or reduce episodes.
- Explore possible treatments, therapies, and medicines.

INTRODUCTION

Sleep is an important part of life. It helps our body rest, grow, and repair itself. During sleep, our brain goes through different stages. One of the most important stages is called REM sleep (Rapid Eye Movement). This is the stage when we dream. Sometimes, something unusual happens during this stage, and a person experiences sleep paralysis. Sleep paralysis is not harmful, but it can be scary. People often feel like they are stuck in their body, unable to move or talk. Some even feel like someone is watching them or sitting on their chest. This paper will explore why this happens, what the body is doing during this time, and how people respond to it physically and mentally.

What Is Sleep Paralysis?

Sleep paralysis is a temporary condition. It usually happens right after waking up or just before falling asleep. When it occurs, a person is awake and aware but cannot move their body or speak. This condition may last for a few seconds to a few minutes. Most people regain full movement and speech on their own without help.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

There are two main types of sleep paralysis:

ISOLATED SLEEP PARALYSIS

Isolated sleep paralysis is a condition where a person experiences sleep paralysis without having any other sleep problems. It usually happens once in a while and not regularly. This means the person is generally healthy, sleeps normally, and doesn't have any serious sleep disorders like narcolepsy. The word "isolated" means that it is not connected to any other condition.

During isolated sleep paralysis, a person may wake up or fall asleep and suddenly find that they cannot move or speak. Even though they are fully awake and aware of their surroundings, their body feels frozen. This can last for a few seconds or minutes. It can be scary, but it is not dangerous. After the episode ends, the person can move normally again.

Some people may feel a heavy weight on their chest, have difficulty breathing, or even see or hear things that aren't really there. These are called hallucinations and happen because the brain is partly dreaming while the person is awake. These experiences can be frightening, but they are not real and don't cause any harm.

Isolated sleep paralysis often happens when a person is very tired, stressed, or has an irregular sleep schedule. It can also happen if someone sleeps on their back. Teenagers and young adults are more likely to experience it, but it can happen to anyone at any age.

Even though it can feel scary, isolated sleep paralysis is not a serious health problem. It usually goes away on its own. Getting enough sleep, following a regular sleep routine, and managing stress can help prevent it. If it happens often or causes a lot of fear, it's a good idea to talk to a doctor.

RECURRENT SLEEP PARALYSIS

Recurrent sleep paralysis is when a person experiences sleep paralysis more than once and over a period of time. The word "recurrent" means that it keeps coming back. While many people might have sleep paralysis once or twice in their life, people with recurrent sleep paralysis go through it frequently, sometimes several times in a month or even in a week.

Just like regular sleep paralysis, recurrent sleep paralysis happens when a person is either falling asleep or waking up. During this time, the person is mentally awake—they are aware of what is going on—but they cannot move their body or speak. This is because the body is still in a sleep stage called REM (Rapid Eye Movement) sleep, where the muscles are naturally turned off or "paralyzed" so we don't act out our dreams. In recurrent sleep paralysis, the brain wakes up before the body does, and the person gets stuck in this frozen state.

People with recurrent sleep paralysis may also experience hallucinations—seeing, hearing, or feeling things that are not real. These can include feeling like someone is in the room, seeing shadows or strange figures, or hearing footsteps or whispers. Many people feel a heavy pressure on their chest or feel like they are being held down. These experiences can be very frightening, especially because they happen over and over again.

There are a few common causes and triggers for recurrent sleep paralysis. These include:

- Irregular sleep schedules (going to bed and waking up at different times)
- Lack of sleep or poor sleep quality
- High levels of stress or anxiety
- Sleeping on the back
- Use of certain medications or substances
- Mental health conditions such as depression or PTSD

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

- Sleep disorders like narcolepsy (though not everyone with recurrent sleep paralysis has narcolepsy)

Recurrent sleep paralysis can affect a person's mental health. Because the episodes are so scary and happen often, some people begin to fear going to sleep. They may avoid sleeping, which leads to tiredness, poor focus, mood swings, and even more sleep problems. It can create a cycle where poor sleep leads to more paralysis, and more paralysis causes fear of sleep.

The good news is that recurrent sleep paralysis can often be managed with better sleep habits. This includes:

- Going to bed and waking up at the same time every day
- Getting enough sleeps every night (7–9 hours for adults)
- Reducing stress through calming activities like reading, meditation, or light exercise
- Avoiding caffeine or heavy meals before bed
- Sleeping on the side instead of the back
- Keeping the sleep environment quiet, dark, and comfortable

If the episodes continue to happen often or become very disturbing, it's a good idea to talk to a doctor or sleep specialist. They can help check for other sleep disorders and give advice or treatment to improve sleep.

PHYSIOLOGY OF SLEEP PARALYSIS

Sleep paralysis happens because of a mismatch between the brain and the body during sleep, especially in a stage called REM sleep (Rapid Eye Movement). During REM sleep, our brain is very active, and this is the time when we dream. To protect us from acting out our dreams and hurting ourselves, the body has a natural function that temporarily "turns off" most of our muscles. This is called REM atonia. It's like a safety switch—our brain sends signals to our muscles to stop moving, so even if we dream about running or fighting, our body stays still in bed. This muscle paralysis is normal and happens to everyone every night.

Sleep paralysis begins when there is a problem in the switch between REM sleep and waking up. Normally, when we wake up, our brain and body "turn on" together. The brain becomes alert, and the body's muscles are no longer paralyzed. But in sleep paralysis, the brain wakes up too early or too fast, while the body is still stuck in REM atonia as shown in [Fig.1.1]. This means the person is mentally awake—they know they are in their room, they can think clearly—but their body is still frozen, unable to move, speak, or react. This can be very scary because the person wants to move but cannot. It feels like being trapped inside your own body.

Fig 1.1

When sleep paralysis starts, the brain is active, and the senses are turned on. This includes the eyes. The muscles that control the eyelids are not fully paralyzed like other muscles during REM sleep. That's why a person may open their eyes or partially open them during sleep paralysis. The person may see their room, the ceiling, or even objects around them, but they cannot turn their head or sit up. Some people keep their eyes

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

shut out of fear or because it's hard to open them fully, but others can open them and even blink a little. This adds to the confusion, as the brain is trying to understand why the body is not responding.

Sometimes, during sleep paralysis, the brain is still slightly dreaming. This creates a mix of real and unreal sensations. A person might see shadows, hear strange sounds, feel pressure on their chest, or even feel like something is in the room. These are called hallucinations. They are not real, but they feel very real because the brain is still in a dreaming state while the person is awake. These experiences can be very disturbing and lead to fear or panic.

As time passes, the brain keeps trying to send signals to the body to move. Slowly, the body begins to "wake up" from REM sleep. The muscle paralysis fades away. The person may be able to move their fingers or toes first, then their arms or legs. Finally, they may be able to move their whole body and sit up. Breathing becomes easier, and the feeling of pressure or fear goes away. This may take a few seconds or minutes, but it always ends naturally.

EPIDEMIOLOGY

Sleep paralysis is a condition that many people all over the world experience at some point in their lives. It can happen to anyone, no matter where they are from, how old they are, or whether they are a man or a woman. Studies and reports from different countries show that around 8 out of every 100 people (or 8%) may have at least one episode of sleep paralysis in their lifetime. Some people may only experience it once, while others may go through it many times. When it happens many times over a period of months or years, it is called recurrent sleep paralysis.

Sleep paralysis is more common in teenagers and young adults, especially between the ages of 14 and 30. During this time of life, people often go through stress, changes in their sleep schedule, or mental pressure from school, work, or relationships. All of these things can disturb sleep and make episodes more likely. College and university students, in particular, seem to experience it more because of irregular sleep patterns, late-night study sessions, and stress.

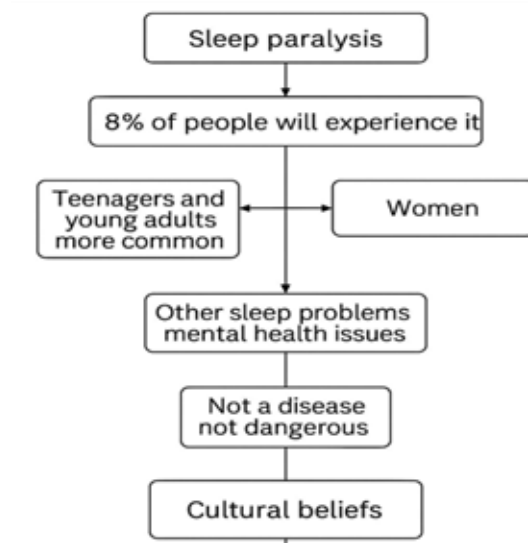

Fig 1.2.

While both men and women can get sleep paralysis, it is reported a little more often by women as shown in (Fig 1.2). People who have other sleep problems like insomnia, nightmares, or narcolepsy are also more likely to experience sleep paralysis. In addition, people with mental health conditions such as anxiety, panic attacks, depression, or post-traumatic stress disorder (PTSD) may have a higher chance of experiencing it.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

Even though it feels scary and strange, sleep paralysis itself is not a disease, and it is not dangerous. It is a temporary condition related to the way our brain and body work during sleep.

Sleep paralysis has also been found to occur in many different cultures and countries, and interestingly, people describe it in very different ways based on their beliefs. In some cultures, people think it is caused by a ghost or spirit sitting on their chest. In others, it is seen as a bad dream or a sign from another world. These cultural beliefs often add to the fear, even though the condition is actually a normal, harmless part of sleep in medical terms. Despite these differences in beliefs, the actual symptoms are the same everywhere—being awake, unable to move or speak, and sometimes seeing or feeling things that are not real.

In simple terms, sleep paralysis is a common experience around the world. It is more likely to happen to young people, those under stress, those who don't get enough sleep, or those who already have other sleep or mental health issues

TREATMENT

Sleep paralysis can be a frightening experience, often leaving individuals feeling ashamed or afraid to talk about it. One of the first steps in treatment is offering culturally sensitive reassurance and education. When people understand that sleep paralysis is a common and generally harmless condition, it can significantly reduce their fear and emotional distress. This basic approach of support and education, while simple, has been shown to help individuals cope better with the condition.

Several forms of therapy have been developed to manage sleep paralysis, though more scientific research is still needed to fully confirm their effectiveness. One common approach is cognitive-behavioural therapy, which focuses on changing the thoughts and behaviours that might contribute to episodes of sleep paralysis. Another method is meditation-relaxation therapy, which teaches individuals how to relax their minds and bodies to reduce the likelihood of episodes occurring. While these approaches show promise, the evidence supporting them is still limited, and more studies are necessary to determine how well they truly work.

In addition to therapy, maintaining good sleep hygiene is very important. Sleep deprivation often makes sleep paralysis worse, so ensuring a regular sleep schedule, avoiding caffeine before bedtime, and creating a calm sleeping environment can help reduce the frequency of episodes. These basic steps are a helpful part of managing the condition and are usually recommended even if other treatments are being tried.

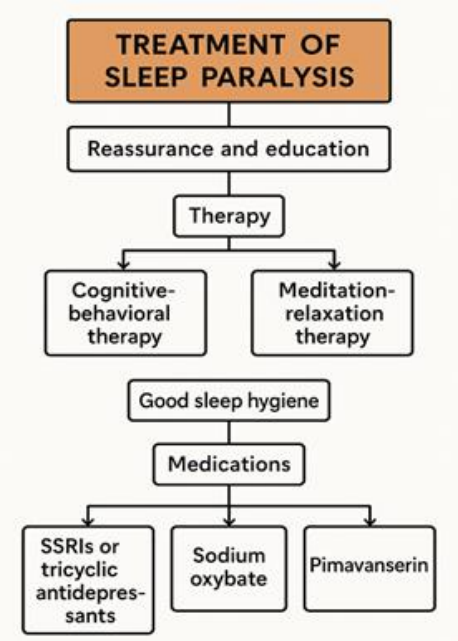

Fig 1.3.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

When it comes to medications, there is no universally accepted drug specifically approved for sleep paralysis. However, some medications have been used based on their effects on REM sleep. Selective serotonin reuptake inhibitors (SSRIs) and tricyclic antidepressants are two common types. These medications are believed to reduce the amount of REM sleep, during which sleep paralysis usually happens, and may therefore help lessen the symptoms. Another medication called sodium oxybate has been found to reduce sleep paralysis in people with narcolepsy, a sleep disorder often linked to these episodes. However, sodium oxybate can have serious side effects and carries a risk of misuse, which limits its use in general treatment.

Recently, scientists have proposed a new idea involving the serotonin-2A receptor, which might play a role in sleep paralysis. Based on this theory, a medication called pimavanserin, which acts on this receptor, has been suggested as a possible treatment for the hallucinations that sometimes occur during sleep paralysis. This idea is still theoretical, and more research is needed to understand if it can be a safe and effective treatment. Overall, while there are some treatment options available, more scientific studies are needed to develop safe and effective ways to help people who suffer from sleep paralysis.

CONCLUSION

Sleep paralysis is a common and harmless condition that can feel very frightening. It happens when the brain wakes up but the body is still in a sleep state, making it hard to move or speak. While it can cause scary experiences like seeing or hearing things that aren't real, it usually goes away on its own. Good sleep habits, managing stress, and understanding the condition can help prevent episodes. In some cases, therapy or medication may be used, but more research is needed. With the right knowledge and care, most people can manage sleep paralysis effectively.

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