

Perceived awareness of sleep paralysis phenomenon (old hag syndrome) and its most common risk factors among people from Al-Ahsa, Saudi Arabia

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ABSTRACT

الأهداف: حساب وتقييم نسبة المصابين بشلل النوم ودراسة مدى وعي المجتمع بهذه الظاهرة وعلاقتها بالثقافة المجتمعية ومخاطرها في مدينة الأحساء بالمملكة العربية السعودية.

المنهجية: لقد أجرينا هذه الدراسة المستعرضة القائمة على مسح المصابين بظاهرة شلل النوم في عام 2021/2020م، تشترط الدراسة أن يكون عمر المشترك فوق 18 وأن يكون من سكان مدينة الأحساء.

النتائج: من بين 524 مشارك تتراوح أعمارهم بين 18 إلى 60 عام، 85.7% منهم كانت أعمارهم 55 وأعلى، بينما 65.8% كانت أعمارهم تحت 35 عام. أغلب الذين إستجابوا للدراسة كانوا من جنس النساء بنسبة 379 (72.3%). ونسبة (83.6%) من الذين استجابوا للدراسة كانوا من خريجين الجامعات، بينما احتل الطلاب نسبة (51.7%). أفصح 40.8% من الذين اشتركوا في الاستبانة عن وجود اعتلالات نفسية من قلق (25.2%); إكتئاب (5.7%). التاريخ العائلي لشلل النوم عند المشتركين كان ملحوظا بنسبة (70.4%). شكل الوعي عند المجتمع بظاهرة شلل النوم نسبة عالية حيث وصلت لنسبة 97.5%.

الخلاصة: شلل النوم حالة شائعة في مدينة الأحساء بالمملكة العربية السعودية. نسبة كبيرة من المجتمع كان على وعي بشلل النوم، ولكن يخلط الكثير من المجتمع معتقدات خاطئة بها. لذلك، فإن زيادة الوعي لشلل النوم أمر بالغ الأهمية. نوصي بتطبيق الدراسة في مدن أخرى داخل المملكة العربية السعودية لتحديد عوامل الخطر والتصورات المشتركة بين المجتمع.

Objectives: To assess prevalence and perception of sleep paralysis and its relationship with socioeconomic determinants, and risk factors in a cross-sectional sample of Saudi general population from Al-Ahsa city.

Methods: A cross-sectional sampling survey was conducted during 2020 to 2021. The targets were aged above 18 and belonged to Al-Ahsa. Patients were sent self-reported anonymous questionnaires to complete.

Results: A total of 524 participants, whose ages ranged from 18 to 60 years, were analyzed. Among 85.7% of participants aged 55 years and over, compared to 65.8% of those who were aged under 35, 379

(72.3%) respondents were females. Moreover, 438 (83.6%) participants were university graduates, 271 (51.7%) were students and 40.8% had psychological disorders including anxiety (25.2%) and depression (5.7%). Family history of sleep paralysis was reported by 369 (70.4%) participants. A total of 97.5% study participants were aware of sleep paralysis.

Conclusion: Sleep paralysis is a common occurrence in people residing in Al-Ahsa, Saudi Arabia. A considerable number of the society held wrong beliefs regarding sleep paralysis. Therefore, raising public of identity of sleep paralysis is crucial. We recommend applying the study in other cities within Saudi Arabia to identify common risk factors and perceptions among the society.

Keywords: sleep paralysis, psychological disorders, movement disorder, Saudi Arabia

*Saudi Med J 2021; Vol. 42 (12): 1302-1312
doi: 10.15537/smj.2021.42.12.20210628*

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Received 6th August 2021. Accepted 4th October 2021.

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Sleep paralysis (SP) is a common conflict phenomenon currently under research with unknown causes. Sleep paralysis is characterized as a transient period during which voluntary muscle movement is inhibited, yet respiratory and ocular movement remain intact.¹ These episodes can occur at the onset of sleep or upon awakening in the morning or during the night. Commonly, women suffer from SP, which is more likely to occur when individuals sleep in the supine position.² It is a type of rapid eye movement (REM) parasomnia that causes an increase in the blood pressure, breathing rate and heart rate.³ Only under 8% of the general population are affected by SP during their lifetime, and is known as isolated SP if it occurs in healthy individuals.⁴ A study held in Japan shows that SP was prevalent in more than 2% of the Japanese population.^{5,6} Sleep paralysis is more ubiquitous in people with Chinese background with prevalence of 41% and African American background with prevalence of 37%.^{7,8} With respect to Saudi Arabia, a study by Wali et al⁹ shows that 16% of Saudi healthcare workers suffered from SP symptoms. Even though only 7.6% of the general population are affected by SP, students and patients who have psychiatric manifestations, such as trauma history, posttraumatic stress disorders, anxiety sensitivity, and panic disorders, are the majority suffering from SP at 28.3% and 31.4%, respectively.^{10,11} In addition, sleep-related factors, such as sleep deprivation, shift work, jet lag, and a few medical conditions, such as hypertension, seem to have a connection with SP.¹²⁻¹⁴ The presence of nightmares play a core role factor for more frequent episodes of SP.¹⁰ Nevertheless, people's perceptions of SP as a supernatural power can be a risk factor of SP.¹⁵⁻¹⁷ In Saudi Arabia, SP is described as Al-Jathoum, and a case study in which a Saudi patient, who at first complained of sleep disruption due to driving long distances and nightmares, described it as a type of alien power, likely to be jin that squeezed his chest for a period of time.¹⁸

There is an ultimate need to conduct this study due to the significance of the prevalence of SP worldwide, and the importance of identifying SP as a medical condition rather than cultural misconceptions. Despite the progress of studies regarding SP in Saudi Arabia, no study has reported the attitudes of Saudi people with respect to SP. Therefore, this present study is designed

to assess the perception of SP and its relationship with socioeconomic determinants, risk factors associated with SP and its prevalence in a cross-sectional sample of Saudi general population from Al-Ahsa city, the most populated city in the eastern province of Saudi Arabia.

Methods. A cross-sectional-study was conducted in Al-Ahsa, Saudi Arabia during 2020 to 2021. Qualitative analysis was conducted to investigate the various perceptions regarding SP, risk factors related to SP, the phenomenon of SP and the relationship between SP and psychiatric disorders, depending on the participants' answers. The sample size, which was calculated by the Raosoft sample size calculator according to the total number of the population in Al-Ahsa, was around 385 participants. However, the actual sample collected during the distribution of questionnaires was 536 participants due to high responses from people. The sample was randomly selected by distributing an electronic questionnaire through 2 social media platforms, WhatsApp and Twitter. It was the most appropriate way to reach participants from different areas within the Al-Ahsa region. This questionnaire was designed by the research authors and validated by 3 neurological consultants. The target population comprised of adults aged 18 and above and included both male and female subjects. Participants below the age of 18, or those who did not live within the Al-Ahsa region, were excluded from the study. Likewise, questionnaires, which were not fully filled out were eliminated.

Data was collected with the help of a self-administered questionnaire using Google form survey, which comprised of 26 multiple choice questions (**Appendix 1**). An Arabic version of this questionnaire was also produced and distributed amongst the participants (**Appendix 2**). The questionnaire contained 6 sections: personal data, SP phenomenon, perception regarding SP, risk factors, sleep quality, and SP relationship with different psychiatric disorders. Ethical research approval was obtained from the Deanship of Scientific Research from Imam Abdulrahman Bin Faisal University. The questionnaire was used for research purposes, and thus, the information was not used for any other goals. Participant privacy was a top priority in this research, and therefore, any questions that might lead to the discovery of the participants identity were not included. An informed consent was obtained and was an essential condition to participate in study (**Appendix 3**).

Statistical analysis. Data was modified, coded, and entered into the statistical software SPSS version 22 (IBM Corp, Armonk, NY, USA). All statistical analyses were carried out by employing 2 tailed tests.

Disclosure. Authors have no conflict of interests, and the research was not supported or funded by any drug company.

A *p*-value of less than 0.05 was statistically significant. In addition, a descriptive analysis based on frequency and percent distribution was done for all variables. A Pearson Chi-square test was also used to test for relations' significance.

Results. The study included 524 participants, whose ages ranged from 18 to 60 years, with a mean age of 21.6 ± 11.8 years old. There were 379 (72.3%) female respondents, of which 300 (57.3%) were single, 438 (83.6%) were university graduates, 271 (51.7%) were students, and 40.8% had psychological disorders, namely anxiety (25.2%) and depression (5.7%). Family history of SP was reported by 369 (70.4%) participants (Table 1).

Table 2 & Figure 1 demonstrate the prevalence and pattern of SP among the population in Al-Ahsa. A total of 360 (68.7%) participants reported that they had

SP attacks; however, only 8 (2.2%) asked for medical consultation. Attacks repeated for up to 3 times among 181 (50.3%) participants and for more than 6 times among 115 (31.9%) respondents. Majority of the participants experienced their first attacks between the age of 18-35 (95%) years.

Considering the perceived awareness of the general population towards the SP phenomenon and its related risk factors (Table 3), 97.5% of the study participants were aware of SP. 3.8% of the participants reported that during SP attacks, they felt pressure on their chest or body, and 34.4% were told that SP is a medical condition. Furthermore, visiting specialized physicians and being aware of the risk factors to avoid

Table 1 - Sociodemographic data of study participants, Al-Ahsa, Saudi Arabia.

Sociodemographic data	n	%
<i>Age in years</i>		
18-35	427	81.5
36-55	83	15.8
>55	14	2.7
<i>Gender</i>		
Male	145	27.7
Female	379	72.3
<i>Marital status</i>		
Single	300	57.3
Married	224	42.7
<i>Educational level</i>		
Below secondary	9	1.7
Secondary	77	14.7
University / above	438	83.6
<i>Work</i>		
Not working	128	24.4
Student	271	51.7
Working	106	20.2
Retired	19	3.6
<i>Had psychological disorders</i>		
None	303	59.2
Anxiety	129	25.2
Stress disorders	2	0.4
Depression	29	5.7
Others	49	9.6
<i>Family history of sleep paralysis</i>		
Yes	369	70.4
No	155	29.6

Table 2 - Prevalence and pattern of sleep paralysis among population in Al-Ahsa, Saudi Arabia (N=360).

Sleep paralysis prevalence	n	%
<i>Previously had sleep paralysis</i>		
Yes	360	68.7
No	164	31.3
<i>Consulted physician for sleep paralysis</i>		
Yes	8	2.2
No	352	97.8
<i>How many times had sleep paralysis</i>		
1-3	181	50.3
4-6	64	17.8
>6	115	31.9
<i>Age at first sleep paralysis</i>		
18-35	342	95.0
36-55	17	4.7
>55	1	0.3

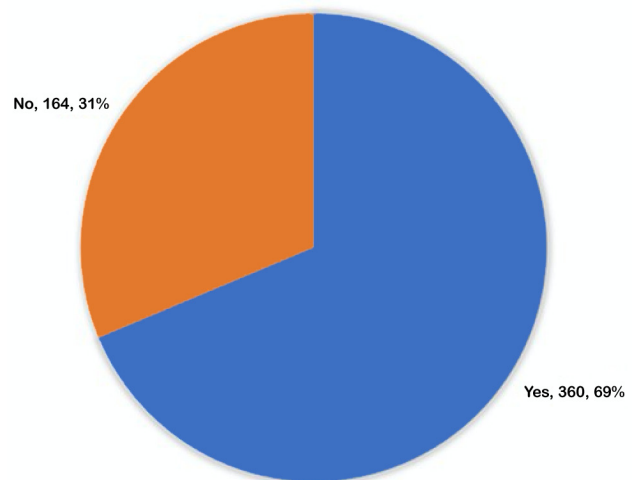


Figure 1 - Prevalence and pattern of sleep paralysis among population in Al-Ahsa, Saudi Arabia.

Table 3 - Perceived awareness of general population towards sleep paralysis (SP) phenomena and its related risk factors, Al-Ahsa, Saudi Arabia.

Perceived awareness on SP and risk factors	n	%
General perceived awareness		
<i>Heard about sleep paralysis</i>		
Yes	511	97.5
No	13	2.5
<i>During SP attack, persons feel pressure on their chest or body</i>		
Never	73	13.9
Sometimes	237	45.2
Frequently	37	7.1
Usually	177	33.8
<i>What do you think about the phenomenon of SP</i>		
Medical condition	180	34.4
A visit to an evil being, witches, or elves at night	109	20.8
Nightmare	215	41.0
Others	20	3.8
<i>How to avoid frequent SP phenomena</i>		
Visiting specialized physician with knowing risk factors	130	24.8
Proper sleep position	21	4.0
Do some relaxation techniques, such as meditation	94	17.9
Doing some religious things to get rid of bad omen and envy	231	44.1
Visit religious man to have some relaxation	14	2.7
Had trusted person in the room to save exposed one	13	2.5
Others	21	4.0
Risk factors perceived awareness		
<i>Sleeping position is related to the occurrence of SP phenomena</i>		
Yes	314	59.9
No	210	40.1
<i>If yes, which position</i>		
On back	234	74.5
On abdomen	57	18.2
On left side	13	4.1
On right side	10	3.2
<i>Medication is related to the occurrence of SP phenomena</i>		
Yes	58	11.1
No	466	88.9
<i>Sleep disorders is related to SP phenomena</i>		
Yes	240	45.8
No	284	54.2
<i>There is a link between watching horror movies and SP phenomena</i>		
Yes	149	28.4
No	375	71.6
<i>Weak faith is related to SP phenomena</i>		
Yes	181	34.5
No	343	65.5
<i>Late sleep time is related to SP phenomena</i>		
Yes	122	23.3
No	402	76.7
<i>Psychological disorders are related to SP phenomena</i>		
Yes	330	63.0
No	194	37.0

frequent SP phenomena was mentioned by 24.8% of the participants. Regarding perceived awareness of SP risk factors, 63% of the participants thought that psychological disorders are related to SP phenomena. Similarly, 59.5% thought that the sleeping position is related to the occurrence of SP phenomena, especially lying on your back (74.5%), and on your abdomen (18.2%). Nearly 88% of the participants did not hold the opinion that medications are risk factors of SP. Furthermore, 45.8% of the participants believed that sleep disorders are associated with SP phenomena, while 34.5% reported that weak faith is related to SP phenomena. Additionally, 28.4% were convinced that there is a link between watching horror movies and SP phenomena.

Table 4 illustrates the relation between public sleep patterns and SP phenomena. 18.3% of the participants with SP sleep for less than 5 hours a day, in comparison to 10.4% of those without the condition, with a recorded statistical significance ($p=0.038$). Moreover, 33.3% of the participants with SP reported waking up early in the morning and had difficulty in going back to sleep, compared to 23.8% of those with no SP history ($p=0.048$). 23.6% of the participants with SP felt excessive sleepiness during the daytime in comparison to 23.8% of those without SP, with a borderline statistical significance ($p=0.060$). Sleep-related hygiene was insignificantly associated with SP phenomena.

Table 5 shows determinants of SP phenomena among the general population. Sleep paralysis was detected among 85.7% of participants aged 55 years and over, compared to 65.8% of those who were aged under 35, with a recorded statistical significance ($p=0.010$). Likewise, 76.3% of the married participants had experienced SP, compared to 63% of the single participants ($p=0.001$). Sleep paralysis was detected among 94.7% of retired respondents in comparison to 63.1% of students ($p=0.007$). Furthermore, 73.2% of the respondents, who had psychological disorders also experienced SP, relative to 65.3% of those whose health status were normal ($p=0.029$). In similar fashion, SP was detected among 77.5% of those with family history of SP, compared to 47.7% of others without a family history of SP ($p=0.001$).

Discussion. The aim of this study was to investigate the SP phenomenon among people in Al-Ahsa. The results obtained from this study revealed that the prevalence of SP in Al-Ahsais 68.7%. On the other hand, a study published in Japan shows that prevalence of SP reached 40% of the whole sample.¹⁹ Similarly, a cross sectional study held in Bremen, Germany,

Table 4 - Relation between public sleep pattern and sleep paralysis phenomena, Al-Ahsa, Saudi Arabia.

Sleep pattern	Previously had sleep paralysis						P-value
	Total		Yes		No		
	n	%	n	%	n	%	
<i>Sleep hours daily</i>							
<5	83	15.8	66	18.3	17	10.4	0.038*
5-6	178	34.0	124	34.4	54	32.9	
7-8	191	36.5	128	35.6	63	38.4	
>8	72	13.7	42	11.7	30	18.3	
<i>Sleep quality</i>							
Very poor	7	1.3	6	1.7	1	0.6	0.421
Poor	72	13.7	52	14.4	20	12.2	
Good	263	50.2	184	51.1	79	48.2	
Very good	182	34.7	118	32.8	64	39.0	
<i>Have difficulty sleeping at night?</i>							
Never	35	6.7	22	6.1	13	7.9	0.768
Rarely	85	16.2	60	16.7	25	15.2	
Sometimes	275	52.5	187	51.9	88	53.7	
Always	66	12.6	49	13.6	17	10.4	
Usually	63	12.0	42	11.7	21	12.8	
<i>Wake up during the night after falling asleep</i>							
Never	27	5.2	19	5.3	8	4.9	0.625
Rarely	117	22.3	85	23.6	32	19.5	
Sometimes	259	49.4	171	47.5	88	53.7	
Always	44	8.4	33	9.2	11	6.7	
Usually	77	14.7	52	14.4	25	15.2	
<i>Wake up early in the morning and have difficulty getting back to sleep</i>							
Never	37	7.1	25	6.9	12	7.3	0.048*
Rarely	85	16.2	56	15.6	29	17.7	
Sometimes	243	46.4	159	44.2	84	51.2	
Always	54	10.3	44	12.2	10	6.1	
Usually	105	20.0	76	21.1	29	17.7	
<i>Feel excessive sleepiness during the daytime</i>							
Never	44	8.4	24	6.7	20	12.2	0.060
Rarely	88	16.8	65	18.1	23	14.0	
Sometimes	268	51.1	186	51.7	82	50.0	
Always	55	10.5	35	9.7	20	12.2	
Usually	69	13.2	50	13.9	19	11.6	

demonstrates an increase in SP cases by 35%.²⁰ However, variable measures of SP have been reported in adults in several countries, but the difference in prevalence between adolescents and adults is still unknown and thus, additional studies are required to further explore the subject. As stated in this study, females have a higher prevalence of sleep disorder than males. Likewise, a study by Shengli et al²¹ displays predominance of females on SP by 7.4%, whereas other studies observe higher rates in men.^{22,23} However, most of the studies

Table 5 - Determinants of sleep paralysis phenomena among general population, Al-Hasa, Saudi Arabia.

Factors	Previously had sleep paralysis				P-value
	Yes		No		
	n	%	n	%	
<i>Age in years</i>					
18-35	281	65.8	146	34.2	0.010*
36-55	67	80.7	16	19.3	
> 55	12	85.7	2	14.3	
<i>Gender</i>					
Male	104	71.7	41	28.3	0.356
Female	256	67.5	123	32.5	
<i>Marital status</i>					
Single	189	63.0	111	37.0	0.001*
Married	171	76.3	53	23.7	
<i>Educational level</i>					
Below secondary	5	55.6	4	44.4	0.511
Secondary	56	72.7	21	27.3	
University / above	299	68.3	139	31.7	
<i>Work</i>					
Not working	92	71.9	36	28.1	0.007*
Student	171	63.1	100	36.9	
Working	79	74.5	27	25.5	
Retired	18	94.7	1	5.3	
<i>Had psychological disorders</i>					
None	198	65.3	105	34.7	0.029*
Yes	153	73.2	56	26.8	
<i>FH of sleep paralysis</i>					
Yes	286	77.5	83	22.5	0.001*
No	74	47.7	81	52.3	

FH: family history, *p<0.05 (significant)

do not show any significant differences with respect to gender.^{24,25}

Based on outcomes, age is an important factor regarding the occurrence of SP.²⁶ According to our study, 2 adult groups experience SP, ranging in age from 18 to 35 and 36 to 55 years old, with prevalence percentages of 65.8% and 80.7%, sequentially. This increase may be due to mental and physical pressures, such as educational expectations, irregular life rhythms, delayed sleep, or interpersonal stressors.²⁷

Moreover, 77.5% have a family history of sleep paralysis. Identically, in a study of a single-family, it was noticed that within the 64 members studied, 33 of them reported at least one episode of SP experience.⁷ Moreover, a study held in UK revealed that 19 out of the 22 individuals in the same family had at least one attack of SP in their lives.¹⁷ This indicates that family studies can illustrate such characteristics within families, but they are not able to differentiate if the similarity within

family members emerges from genetic or environmental factors.²⁸

The present study indicates that SP was correlated with psychological disorders. Similarly, patients with a diagnosis of post-traumatic disorder (PTSD) in Cambodian, Chinese, and American samples showed higher prevalence of SP (65-100%) compared to healthy controls (20-25%).¹ Furthermore, in a study focusing on fearful isolated SP in outpatients with panic attacks disorder, participants who confirmed diagnosis with panic attacks only were significantly less likely to experience frequent fearful isolated SP compared to patients diagnosed with both PTSD and panic attacks.²⁹ Nevertheless, there is less evidence for an association between SP and depression, and in patients with anxiety disorder, a comorbid depression diagnosis was not linked to an increased prevalence in SP, compared to patients without comorbid depression.¹⁴

This study has shown that the supine position was the most common sleeping position for participants when SP occurred. Among the few studies on the association between SP and sleeping position, a study by Cheyne et al¹² found that a greater number of individuals reported SP in the supine position than all other positions combined.

This study indicates a few differences in the factors associated with SP. The first factor is association with medication. Our study suggests that there is no association between SP and medication. Specifically, a study by Otto et al¹⁴ found that the study results did not support an independent association between antidepressant/anxiolytic use and SP. In contrast, a study by Ohayon et al²⁸ reported that SP was frequently observed in the users of anxiolytic medication. The second factor includes the association with anxiety. The present study found that there is a significant association between anxiety disorder and SP. However, most studies have not assessed a link of direct association between anxiety disorders as a significant predictor of SP.³⁰ The third aspect is the association with sleep disorder. In our study, only 45.8% of the participants thought that sleep disorders are related to SP phenomena. Likewise, a large population-study held in Pennsylvania showed that insomnia was not associated with an increase in the prevalence of SP.²⁸ However, nonrestorative sleep, one of the common symptoms of insomnia, was linked with increased SP rates.¹ In a further study published in USA, disrupted sleep (waking up repeatedly during the night) was a significant predictor of SP. Five nights of sleep disruptions per month is 3 times more likely to result in SP phenomena compared to those reporting less than 5 nights per month.²⁹

Study limitations. This study includes collection of data with the help of social media, which may not show accurate result as a hand-to-hand survey. Moreover, people were asked if they had psychiatric disorders; however, not many patients with psychiatric disorders are aware of their condition. A considerable number of patients who believed that there is a relationship between medications and SP did not name the medications that can be related to SP. As a result, this study was not able to specify the medications used for SP.

In conclusion, the SP phenomenon is a common condition in Al-Ahsa, Saudi Arabia. However, it is still under-researched. A higher percentage of the society holds wrong beliefs regarding SP, deeming of it as merely a nightmare rather than a medical condition. Moreover, many thought that the right way to prevent such events from happening is to do religious rituals. Therefore, it is important to raise public awareness on SP and how it should be approached. This condition is significantly associated with people who are married, retired, more than 55 years old, have a psychological disorder or a family history of SP. Most of the participants believed that psychiatric disorders and sleeping positions, especially being on the back, are the common risk factors of SP.

Furthermore, we recommend applying the study in other cities within Saudi Arabia to identify common risk factors and perceptions among the society and to correct the wrong beliefs held as well as limit risk factors.

Acknowledgment. The completion of this research could not have been possible without the participation and assistance of Dr. Danah Aljaafari, Dr. Anas Aldehailan, Dr. Abdulla Alsuilman, Dr. Mohammed Almuaiyel, and Ms. Fatimah Alhumud. Their contributions are sincerely appreciated and gratefully acknowledged.

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APPENDIX 1 - Sleep paralysis questionnaires (English version).

This questionnaire is a part of research project to assess the Perception and Most Common Risk Factors of Sleep Paralysis Phenomena (Old Hag Syndrome) among People from Saudi Arabia, Alhasa .Your accurate input will be a great value to contribute in further research studies and the importance of identifying SP as a medical condition in Saudi Arabia. Your responses will be anonymous and confidential and never associated with any information that could identify you personally. Only aggregated data from this survey will be reported. Thank you for your precious time.

* Completion of this survey indicates your consent to participate. *

Do you agree to participate in the research?

Yes

No

• Biographical data:

1. Do you live in Alhasa?

Yes

No

(if no stop here)

2. Are you Saudi?

Yes

No

3. Gender:

4. Marital status:

Married

Single

5.your age:

18-35

36-55

Older than 55

6. Education level:

Uneducated

Primary school

Intermediate school

High school

University

More (write down):

7. current job:

Students

Employee

Unemployed

Retired

• SP phenomena:

1. have you heard of an experience in which hands, feet, and body cannot move when waking up or filing a sleep?

Yes

No

2. have you ever had sleep paralysis experience during your live?

Yes

No

- **If yes, Did you consult a physician to make sense of this experience?**

Yes

No

3. How many times in your life have you experienced sleep paralysis?

1-3

4-6

More than 6

4. At what age did you first have this experience?

18-35

36-55

Older than 55

5. while experiencing the sleep paralysis event, how often individuals feel pressure on their chests or other parts of their bodies?

Never

Occasionally

Frequently

Always

- **if you choose either occasionally, frequently, or always, answer the following question:**

how does the pressure may feel like?

A weight pressing down.

A person or creature sitting on my chest.

Other. Explain (writing).

6. Do you think that people with sleep paralysis may hear unusual sound\odds during this phenomenon?

Never

Occasionally

Frequently

Always

7. Do you think that people with sleep paralysis phenomenon are trying to speak or call out but are unable to?

Never

Occasionally

Frequently

Always

• Perception:

1. Do you think sleep paralysis is:

- o It is a nightmare.
- o It is a visit of an evil being or witches at night that threatens to press the very life
- o out of its terrified victim.
- o It is a neurological medical Condition that can be triggered by some risk factors or not.
- o It is some alien forces like "jinn" attack and can result in death.
- o It is attack by dead body of someone.
- o Others (write it).

2. What is the proper approach to manage sleep paralysis phenomenon and prevent further episodes?

- o Doing some local rituals to free of bad omen and envy.
- o Visiting religious leader "sheikh" or traditional healer to get an explanation of sleep
- o paralysis and its causes and for some curing rituals, such as recitation of Quran and
- o sprinkling of holy water.
- o Performing some relaxation methods, such as mediation or drinking water.
- o Having a person in the room whom a person trust that can rescue her/him.
- o Visiting a doctor to learn about sleep paralysis event, its possible risk factors, and to be
- o educated on proper sleep hygiene.
 - o Visiting the Interpreter of dreams.
 - o Others (write it).

• Risk factors:

1. Do any member from your family experience sleep paralysis?

- o Yes
- o No

2. Do you think the sleep position have a relationship with sleep paralysis?

- o Yes
- o No
- If yes ..

- It happened mostly when you sleep:

- o *On back
- o *On stomach
- o *On right side
- o *On left side

3. Do you think some medications are considered as a risk factor of sleep paralysis?

- o Yes
- o No
- If yes ...

Could you name some of these medications?

.....

4. Do you think other sleep problems like narcolepsy or night -me leg cramps, and

obstructive sleep apnea are risk factors of sleep paralysis?

- o Yes
- o No

5. Do you think watching a lot of horror movies is risk factor of sleep paralysis?

- o Yes
- o No

6. Do you think being away from god religiously is risk factor of sleep paralysis?

- o Yes
- o No

7. Do you think sleeping at late night rather than early night is risk factor of sleep paralysis?

- o Yes
- o No

• Sleep quality related questions:

National Health and Nutrition Survey (NHNS) Link : [hPps://link.springer.com/article/ 10.1007/s41105-017-0138-2](https://link.springer.com/article/10.1007/s41105-017-0138-2)

The six Questions for sleep-related factors over the previous month were phrased as follows:

1. How many hours did you sleep at night on average?

- less than 5h
- 5-6h
- 7-8h
- more than 8h

2. How would you rate your amount of sleep?

With response choices of "very good", "good", "bad", and "very bad".

Responses of "bad" and "very bad" were considered to signify Subjective insufficient sleep(SIS).

3. Did you have difficulty falling asleep at night?

With response choices of "never", "seldom", "Sometimes", "often", and "always".

Responses of "often" and "always" were considered to signify DIS .

4. Did you wake up during the night after you went to sleep?

With response choices of "never", "seldom", "sometimes", "often", and "always".

Responses of "often" and "always" were considered to signify DMS.

5. Did you wake up too early in the morning and had difficulty going back to sleep?

With response choices o "never", "seldom", "sometimes", "often", and "always".

Responses of "often" and "always" were considered to signify EMA.

6. Did you feel excessively sleepy during the daytime?

With response choices of "never", "seldom", "sometimes", "often", and "always".

Responses of "often" and "always" were considered to signify EDS.

• **Sleep paralysis relationship with different psychiatric disorders:**

1. Do you think the psychiatrist disorders have a relationship with sleep paralysis?

Yes

No

2. Do you diagnose with any of these disorders?

Depression

Anxiety

Stress disorders

Bipolar disorders

Other psychiatrists disorders (please write it ...)

- If yes, do you experience SP during the period of diagnosis?

Yes

No

APPENDIX 2 - Sleep paralysis questionnaires (Arabic version).

هذا الاستبيان هو جزء من مشروع بحثي لتقييم المعرفة وعوامل الخطر الأكثر شيوعاً لظواهر شلل النوم (متلازمة الحاج القديم) بين الناس من المملكة العربية السعودية ، الحساء. ستكون مدخلتك الدقيقة ذات قيمة كبيرة للمساهمة في مزيد من الدراسات البحثية وأهمية تحديد متلازمة شلل النوم (الجاثوم) كحالة طبية في المملكة العربية السعودية. ستكون ردودك مجهولة المصدر وسرية وإن ترتبط أبداً بأي معلومات يمكن أن تحدد هويتك. سيتم الإبلاغ عن البيانات المجمعة فقط من هذا الاستطلاع. شكراً لك على وقتك الثمين

**يشير إكمال هذا الاستطلاع إلى موافقتك على المشاركة **

هل توافق على المشاركة في هذا البحث؟

نعم
 لا

البيانات الشخصية:

1- هل تعيش في الأحساء ؟

نعم
 لا

(إذا إجابتك ب لا ، توقف هنا)

2- هل أنت سعودي الجنسية؟

نعم
 لا

3- الجنس:

ذكر
 أنثى

4- الحالة الاجتماعية:

متزوجة
 عزباء

5- العمر:

18-35
 36-55
 أكبر من 55 سنة

6- المستوى التعليمي:

غير متعلم
 مدرسة إبتدائية
 مدرسة متوسطة
 مدرسة ثانوية
 جامعي
 أعلى (يرجى كتابتها.....)

7- الوظيفة الحالية:

طالب/ة
 موظف/ة
 غير موظف/ة
 متقاعد/ة

ظاهرت شلل النوم (الجاثوم):

١- هل سمعت عن عدم القدرة على تحريك اليدين، الرجلين أو الجسم عند الإستيقاظ من النوم أو أثناء النوم؟

نعم
 لا

٢- هل سبق لك ان تعرضت لشلل النوم (الجاثوم) خلال حياتك؟

نعم
 لا

٣- إذا كانت الإجابة بنعم ، فهل استشرت طبيباً لفهم هذه التجربة؟

نعم
 لا

٤- كم مره في حياتك عانيت من شلل النوم (الجاثوم)؟

1-3
 4-6
 أكثر من 6

٥- في أي سن تعرضت لهذه التجربة؟

18-35
 36-55
 أكبر من 55 سنة

٦- أثناء تجربة شلل النوم (الجاثوم)، كم مرة يشعر الأفراد بالضغط على صدورهم أو على أجزاء أخرى من أجسادهم؟

أبداً
 من حين لآخر
 بشكل متكرر
 دائماً

٧- إذا اخترت إما من حين لآخر ، أو بشكل متكرر ، أو دائماً ، أجب عن السؤال التالي: كيف سيكون الشعور بالضغط؟

وزن يضغط لأسفل
 شخص أو مخلوق جالس على صدرك
 آخر، أشرح (اكتبه)

.....
.....

٨- هل تعتقد أن الأشخاص المصابين بشلل النوم (الجاثوم) قد يسمعون أصواتاً غير عادية/مخالفة أثناء هذه الظاهر؟

أبداً
 من حين لآخر
 بشكل متكرر
 دائماً

- ٩- هل تعتقد أن الأشخاص المصابين بشلل النوم يحاولون التحدث أو المناداة لكنهم غير قادرين على ذلك؟
- أبدأ
 - من حين لآخر
 - بشكل متكرر
 - دائماً

المعرفة:

- ١- هل تعتقد أن شلل النوم (الجاثوم) هو:
- هو كابوس.
 - إنها زيارة لكانن شرير أو ساحرات في الليل والتي تهدد بانتزاع الحياة من صحتها المرعبة.
 - إنها حالة طبية عصبية يمكن أن تسببها بعض عوامل الخطر أو لا.
 - بعض القوى الغريبة مثل هجوم "الجن" ويمكن أن يؤدي إلى الموت.
 - هو هجوم بواسطة جثة شخص ما
 - آخر، (اكتبه)
- ٢- ما هو النهج المناسب لإدارة ظاهرة شلل النوم (الجاثوم) ومنع المزيد من النوبات؟
- القيام ببعض الطقوس المحلية للتخلص من الفأل السيئ والحسد
 - زيارة القائد الديني "الشيخ" أو المعالج التقليدي للحصول على شرح لشلل النوم وأسبابه وبعض الطقوس العلاجية مثل تلاوة القرآن ورش الماء المقدس
 - القيام ببعض طرق الاسترخاء مثل التأمل أو شرب الماء
 - وجود شخص في الغرفة يقي به الشخص المتعرض للنوبة ويمكنه إنقاذه
 - زيارة الطبيب للتعرف على حدث شلل النوم (الجاثوم) وعوامل الخطر المحتملة، والتعريف حول عادات النوم السليمة.
 - زيارة مفسر الأحلام.
 - آخر، (اكتبه)

عوامل الخطر:

- ١- هل سبق أن تعرض أحد أفراد عائلتك لشلل النوم (الجاثوم)؟
- نعم
 - لا
- ٢- هل تعتقد أن وضعية النوم لها علاقة بشلل النوم (الجاثوم)؟
- نعم
 - لا
- إذا كانت إجابتك نعم
- *حدث في الغالب عندما تنام:
- على ظهرك
 - على بطنك
 - على الجانب الأيمن
 - على الجانب الأيسر

- ٣- هل تعتقد أن الأدوية تعتبر عامل خطر للإصابة بشلل النوم؟
- نعم
 - لا
- إذا كانت إجابتك نعم....
- هل يمكنك تسمية بعض هذه الأدوية؟
-

- ٤- هل تعتقد أن مشاكل النوم الأخرى مثل التنفيس (اضطراب عصبي يفقد المصابون فيه القدرة على التحكم بالنوم واليقظة) أو تقلصات المساق الليلية وتوقف التنفس أثناء النوم هي عوامل خطر للإصابة بشلل النوم؟
- نعم
 - لا

- ٥- هل تعتقد أن الإكثار من مشاهدة أفلام الرعب هو عامل خطر للإصابة بشلل النوم؟
- نعم
 - لا

- ٦- هل تعتقد أن الابتعاد دينياً عن الرب هو عامل خطر للإصابة بشلل النوم؟
- نعم
 - لا

- ٧- هل تعتقد أن النوم في وقت متأخر من الليل عوضاً عن النوم مبكراً هو عامل خطر للإصابة بشلل النوم؟

أسئلة متعلقة بجودة النوم:

رابط المسح الاستقصائي الوطني للصحة والتغذية (NHNS):
<https://link.springer.com/article/10.1007/s41105-017-0138-2> تمت صياغة الأسئلة الستة للعوام المتعلقة بالنوم خلال الشهر السابق على النحو التالي:

- ١- كم عدد متوسط ساعات نومك في الليل؟
- أقل من 5 ساعات
 - 6-5 ساعات
 - 8-7 ساعات
 - أكثر من 8 ساعات
- ٢- كيف تقويم مقدار نومك؟ -
- مع خيارات الاستجابة "جيد جداً" و "جيد" و "سيئ" و "سيئ جداً". تم اعتبار الردود بـ "سيء" و "سيئ للغاية" للدلالة على عدم كفاية النوم الذاتي (SIS).
- ٣- هل واجهت صعوبة في النوم ليلاً؟

مع خيارات الاستجابة "أبداً" و "نادراً" و "أحياناً" و "غالباً" و "دائماً". تم اعتبار ردود "غالباً" و "دائماً" تدل على DIS.

- ٤- هل تستطيع أثناء الليل بعد النوم؟
- مع خيارات الاستجابة "أبداً" و "نادراً" و "أحياناً" و "غالباً" و "دائماً". تم اعتبار ردود "غالباً" و "دائماً" تعني DMS.

- ٥- هل تستطيع مبكراً في الصباح وتجد صعوبة في العودة إلى النوم؟
- مع خيارات الاستجابة "أبداً" و "نادراً" و "أحياناً" و "غالباً" و "دائماً". تم اعتبار ردود "غالباً" و "نادراً" تعني EMA

- ٦- هل تشعر بالنعاس المفرط أثناء النهار؟
- مع خيارات الاستجابة "أبداً" و "نادراً" و "أحياناً" و "غالباً" و "دائماً". تم اعتبار ردود "غالباً" و "دائماً" للدلالة على EDS.

علاقة شلل النوم الاضطرابات النفسية المختلفة:

- ١- هل تعتقد أن الاضطرابات النفسية لها علاقة بشلل النوم؟
- نعم
 - لا

- ٢- هل تُشخص بأي من هذه الاضطرابات؟

- الاكتئاب
- القلق
- اضطرابات الإجهاد
- الاضطرابات ثنائية القطب
- اضطرابات الأطباء النفسيين
- آخر، (يرجى كتابتها ...)

إذا كنت الإجابة بنعم ، هل تعاني من شلل النوم أثناء فترة التشخيص؟

- نعم
- لا