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Frequency and Features of Sleep Paralysis Among Medical Students of Allama Iqbal Medical College, Lahore

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ABSTRACT

Introduction: Sleep paralysis (SP) is a common condition occurring at sleep onset or offset. Hallucinations are commonly experienced during this phenomenon. An association of stress, anxiety and depression has also been found with the occurrence of sleep paralysis. **Aims & Objectives:** To observe the frequency of sleep paralysis in medical students of AIMC, Lahore and its associated features. **Place and duration of study:** This cross-sectional study was conducted at Allama Iqbal Medical College, Lahore from October, 2017 to December, 2017. **Material & Methods:** 250 medical students participated in the study. A structured questionnaire was made using data from Waterloo Unusual Sleep Experiences Questionnaire. Data was analyzed using IBM SPSS 20.0. **Results:** Out of 250 students, 89 (35.6%) experienced sleep paralysis while 161 (64.4%) had never experienced it. The number of males who had sleep paralysis was 33 out of 86 (38.4%), while 56 out of 164 (34.1%) females had experienced SP. Only 11 (12.4%) had one lifetime experience while the rest 78 (87.6%) had multiple episodes. The association with anxiety, stress or depression of SP was found in 29 out of 89 students (32.6%) who had sleep paralysis. **Conclusion:** The frequency of sleep paralysis is about one third in medical students and significant number of students suffered from associated features.

Key words: Sleep paralysis, medical students, AIMC

INTRODUCTION

Sleep paralysis can be defined as a period of inability to perform voluntary movements at onset of sleep or upon awakening and is characterized by intense cortical activation and lack of skeletal muscle tone [1,2,3]. This is usually associated with fear, anxiety and may also embrace hallucinations (visual, auditory or tactile), feelings of chest tightening or difficult breathing[4,6]. Respiratory and ocular movements, can usually be performed[5]. It is terminated spontaneously or by an external stimulus and usually lasts for few seconds to several minutes[7,8].

Sleep paralysis is often linked with other sleep disorders like narcolepsy[9]. When outside the diagnosis of narcolepsy, it is called "Isolated Sleep Paralysis (ISP)"[10]. If isolated sleep paralysis occurs frequently, which is rare, it is called "Recurrent Isolated Sleep Paralysis (RISP)"[11]. Associated factors of sleep paralysis include obstructive sleep apnea, depression, panic disorder, post-traumatic stress disorder, stress and hypertension[12]. According to many reports it occurs mostly in supine sleeping position[13]. The hallucinations experienced during SP are of 3 types; intruder hallucinations (sense of presence of someone), incubus hallucinations (breathing related problems e.g. pain and pressure on chest) and vestibular/motor experiences (out of body experiences e.g. floating); the former two frighten the subject, while the latter is associated with blissful feelings[14].

There is no proven treatment for isolated sleep paralysis. However, drugs like tricyclic antidepressants, serotonin agents and melatonin are used[10]. The condition is not generally dangerous but is associated with panic attacks[25].

Not many efforts had been made previously to study sleep paralysis among medical students. We conducted this study to determine the prevalence of sleep paralysis and associated factors related to sleep paralysis among medical students of Allama Iqbal Medical College, Lahore.

MATERIAL AND METHODS

A cross-sectional study was conducted at Allama Iqbal Medical College, Lahore which is affiliated with Jinnah Hospital Lahore from October 1st, 2017 to December 30th, 2017. Consent for research was taken from Community Medicine Department of Allama Iqbal Medical College, Lahore. 250 medical students participated in the study. A structured questionnaire was made using data from Waterloo Unusual Sleep Experiences Questionnaire. The data was collected using non-probability/purposive sampling.

Statistical analysis

Data was entered and analyzed in IBM SPSS Statistics 20.0. Mean and standard deviation were calculated for numerical variables like age. Frequency and percentages were calculated for nominal variables like symptoms of sleep paralysis. Chi-square test was used with $p < 0.05$ as statistical significance.

RESULTS

Out of 250 participants, 86 (34%) were males and 164 (66%) were females. The age of respondents ranged from 20-24 years. Results showed about 89 (35.6%) students have experienced sleep paralysis at least once in their lives. The number of male students who had experienced sleep paralysis was 33 out of 86 (38.4%), while 56 out of 164 (34.1%) female students had experienced SP.

Of all those who experienced it, 11 (12.4%) had only one episode, 45 (50.6%) had 2-4 episodes, 19 (21.3%) had 5-20 episodes while 14 (15.7%) had more than 20 episodes in their lifetime (Fig-1).

Out of 250 students, 133 (53%) were boarders (living in hostels) and 117 (47%) lived at home or with a relative. No significant association was found between the residence of respondents and the occurrence of sleep paralysis (x^2=0.13, df=1, p>0.05).

The age when they first experienced this phenomenon ranged from 9-22 years with a mean age of 16 years. Position of sleeping when they experienced sleep paralysis is given in (Fig-2). Half of those who experienced sleep paralysis also felt the presence of someone. Almost 53 (60%) felt pressure on their chest or bodies and the same percentage had a feeling of being suffocated, smothered or strangled, 40 (45%) experienced tactile hallucinations, 27 (30.34%) experienced auditory hallucinations and 58 (34.83%) had vestibular/motor sensations. (Table-1)

The association with anxiety, stress or depression of sleep paralysis was 29 (32.6%) while the rest said these factors had no association with the experience. When asked about the cause of this event, 24 (27%) said it was psychosocial, 26 (29%) thought it was physiological, 8 (9%) believed there was a supernatural cause and 31 (35%) had no idea about the cause. Only 43% had experiences that lasted for 1-2 minutes; while for 57%, it lasted for a few seconds.

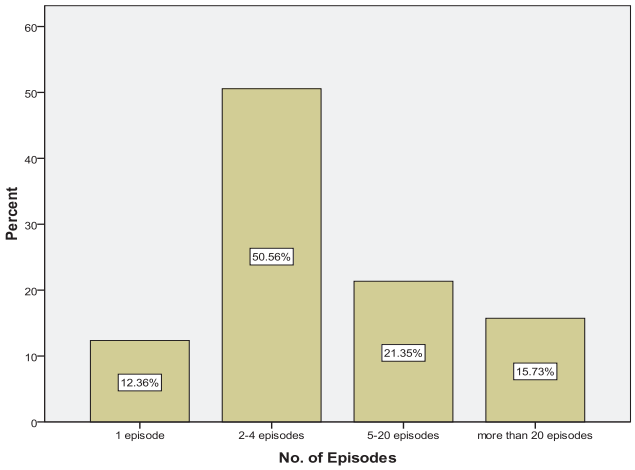

Fig-1: Number of Episodes of Sleep Paralysis Experienced by Students in Lifetime

QUESTIONNAIRE
Frequency & Features of Sleep Paralysis among Medical Students of AIMC, Lahore.

Name (optional):_____
Gender: _____Age: _____ Boarder/Day Scholar: _____

Please tick/mark the single correct option.

1. Some people experience a brief period while falling asleep or on waking up when they are unable to move their arms/ legs or speak, even though they want to do so (are awake) and are conscious of their surroundings. Have you ever had this experience?
☐Yes ☐No
If "No" please stop here and return the questionnaire to investigator.

2. If "yes" then how often did you experience it in your lifetime?
☐1 episode ☐2-4 episodes ☐5-20 episodes ☐more than 20 episodes

3. During the experience, did you have the feeling of a presence in the room? (What is meant here is an awareness of something present, independently of actually seeing or hearing anything.)
☐Never ☐Occasionally ☐Frequently ☐Always

4. During the experience(s) did you have a sensation of floating or falling?
☐Never ☐Occasionally ☐Frequently ☐Always

5. Did you feel pressure on your chest or other parts of your body?
☐Never ☐Occasionally ☐Frequently ☐Always

6. Did you feel as if you were being suffocated, smothered or strangled during this experience(s)?
☐Never ☐Occasionally ☐Frequently ☐Always

7. Did you feel any numbness, vibrating, tingling sensations or sensation of being physically touched?
☐Never ☐Occasionally ☐Frequently ☐Always

8. Did you hear any unusual sounds?
☐Never ☐Occasionally ☐Frequently ☐Always

9. In what position were you sleeping during the episode(s)?
☐On your back ☐face down ☐on left/ right side ☐don't remember

10. Approximately how long ago did you "last" have an episode of sleep paralysis?
☐Last week ☐Last month ☐Last year ☐more than a year ago

11. At what times have you had this experience(s)?
☐When falling asleep ☐when waking up ☐In the middle of a sleep period

12. At approximately what age (in years) did you have your first experience?_____

13. Please indicate, if you were suffering from anxiety disorder, depression or stress around the time you had this experience?
☐Yes ☐No

14. According to you; what might be the cause of this event?
☐Psychological (e.g. emotional distress, financial problem) ☐Supernatural phenomena
☐ Physiological (suffering from any acute or chronic illness) ☐ doesn't have any idea/ can't say

15. How long did episode(s) last?
☐Few seconds ☐ 1-2 minutes ☐ more than 2 minutes

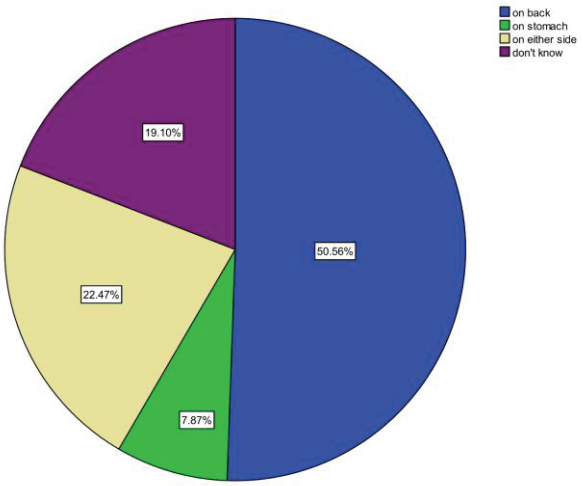

Fig-2: Position of Sleeping while the Subjects Experienced Sleep Paralysis

Type of Experience	Experienced		Not Experienced	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Feeling of a presence	44	49.4	45	50.6
Feeling of pressure on chest/ other body parts	53	59.6	36	40.4
Felling of floating or falling	58	65.2	31	34.8
Heard unusual sounds	27	30.3	62	69.7
Feeling of suffocation	53	59.6	36	40.4
Feeling of being touched	40	44.9	49	55.1

Table-1: Frequency of selected phenomenological experiences during Sleep Paralysis

DISCUSSION

Our investigation revealed, 35.6% of the medical students had at least one lifetime episode of sleep paralysis which is higher than the 28% a previous study found in students (non-medical)[24].A study in Nigerian nursing students indicated that SP was slightly more prevalent among the male population as compared to females[18]. This is in accordance with our results with male students having predominance over female students. Spanos and colleagues found that ISP is more common than RISP in undergraduate college students[23]. This was not consistent with our findings, according to which only 12.5% had one lifetime experience while the rest 87.5% had multiple episodes.

In a previous study, the average duration of ISP episodes was found to be 3.59 minutes[10]. In our study, more than half had experiences that lasted for a few seconds and about 43% said that episode lasted for 1-2 minutes. Although the study on medical students in Nigeria also reported 41.86% of students had experience that lasted about one minute, 39.53% subjects claimed it lasted two to five minutes. Generally, the subjects first experience this phenomenon in adolescence[22] while our study revealed that the mean age of onset was 18 years.

Our results indicated that majority of participants experience SP in the middle of sleep while Cheyne in 2002 found out that Sleep paralysis frequencies were higher in the beginning and middle of sleep, as opposed to the end of sleep. The study also stated that 58% of sleep paralysis attacks were reported to occur in the supine position (lying on back), much higher than any other position. This was found in our study too where more than half of the respondents had this experience while lying in supine position[19].

While studying different types of hallucinations associated with SP, vestibular/ motor hallucinations were most commonly reported, followed by intruder hallucinations, while auditory hallucinations were the least common. However, in another survey, intruder hallucinations were most common while visual hallucinations were least[16]. A study among Chinese adolescents reported that sense of weight on chest/difficulty breathing was felt by 43% while in our study, 59% experienced the same[17].

The feeling of suffocation or being strangled during SP was relatively common in our subjects (60%) contrary to another study in which only 20% had these feelings[20].

The relation of depression, anxiety and stress was also observed in subjects experiencing sleep paralysis. Our study revealed that 29% of the students were suffering from these states while they had an episode of SP. According to a previous survey 13.6% of the respondents had depressive symptoms[12]. Moreover, a great degree of association was found between anxiety and SP in a past research[13].

When questioned about the cause of the phenomenon, majority of the subjects (35%) had no knowledge about it. Contrary to a previous research in Nigeria that has reported that around 65.11 % of medical students with SP believed the episode was caused by supernatural phenomena, only a few (9%) believed so in our study.[21]

Limitations:

This study was conducted on medical students, they are exposed to different stressors comparative to non-medical students and general population that may have led to different frequency and features of sleep paralysis. Due to vast terminology being used to describe SP, the students may have difficulty understanding the questions. The study findings may have been affected by recall bias.

CONCLUSION

Sleep paralysis is a common phenomenon in medical student with male students having greater preponderance. Vestibular/ motor hallucinations were most prevalent. Association with depression, anxiety and stress was found in about one third of medical students who suffered from SP.

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