

## Prevalence of Insomnia in patients suffering from Stroke

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### ABSTRACT

**Aim:** To establish the Prevalence of insomnia in patients suffering from stroke.

**Methods:** By the consent of patients or their attendants we piloted a cross-sectional study among 90 stroke patients at different hospitals of Lahore. A modified Sleep Centre Interview was conducted from the participants regarding their sleeping pattern, day time effects and its effect on their life.

**Results:** The study included 90 stroke patients of those 56 were males and 34 were females. Out of 90, 27(30%) patients had sleep disturbance of them 16 were male and 11 were female. Therefore the prevalence of insomnia was found to be 30%. There were 33.3% patients reported that they woke up at least 2 times at night while 25.9% woke up 3 times at night and only 18.5% woke up once at night. 48.4% patients reported that they follow the same sleep pattern for 3-4 days per week while 44.4% followed the sleep pattern for 2-3 days a week 74% reported that it takes them 2-3 hours to sleep while 22.2% reported that it takes them 4-5 hours to sleep once awakened.

**Conclusion:** The study concluded that sleep disturbances as insomnia and hyper insomnia are common among stroke patients. Insomnia was associated with increased level of anxiety and disability after stroke. Physical therapy and psychotherapy will improve patient's level of cognition, energy level, and mood and give them better sleep.

**Keywords:** insomnia, sleep disturbances, stroke, sleep initiation and maintenance disorder,

### INTRODUCTION

Insomnia is defined by American psychiatric association as an insistent complaint of trouble in initiating or sustaining sleep<sup>1</sup>. Insomnia is a severe public health issue, with 46% to 69% patients presents with issue of infrequent insomnia with a greater incidence about 27% to 35% among older adults.<sup>(2)</sup> Stroke patients are observed as having irregular sleep in hospitals and there is deficiency of prominent researches describing sleep-awake arrays<sup>3</sup>. Polysomnography (PSG) is a type of sleep study of stroke patients at night which testified that stroke patients suffers from both insomnia and hypersomnia (increased daytime napping and unable to stay conscious<sup>3-5</sup>).

There are number of sleep complaints related with stroke as sleep-disordered breathing, insomnia, parasomnia, circadian rhythm disorder, sleep-related movement disorder, hypersomnia and excessive daytime sleepiness. (6-8) Insomnia is a communal yet more neglected problem by doctors in patients suffering from stroke<sup>9</sup>. Insomnia may have effect on recovery post stroke and it may also affect quality of life (QoL) of stroke patient<sup>10</sup>. Therefore it is necessary to treat insomnia as soon as possible to continue rehabilitation of stroke patient<sup>11</sup>. The incidence of insomnia after stroke has been reportedly noted at numerous assessment times and ranges from 49-68%<sup>12,13</sup> while Dixon in 2012 found that the prevalence of insomnia after stroke was 37.6%<sup>8</sup>. Stroke patient's insomnia may occur as a result of depression and anxiety which accounts for about 14-16% of stroke patients<sup>14-16</sup>.

Insomnia in elderly is an issue that needs to be concerned not only because its prevalent but also because it can cause morning impairments as increased frequency of day time napping and sleeping while performing normal activities, loss of attention and memory and decreased level of activity<sup>17</sup>. Possibly utmost astonishing is fact that insomnia is concomitant with diminutive survival. Death because of communal causes as stroke or heart diseases is two folds greater in individuals with sleep conditions than those who have sound sleep<sup>18</sup>.

Assessment of insomnia is purely based upon the clinical features which include difficulty in getting asleep or sustaining it, early arousals, excessive diurnal fatigue and poor quality of sleep<sup>19</sup>. The differential diagnosis of insomnia is extensive, particularly in elder population with variety of comorbid conditions who are consuming multiple medicines. Therefore it is necessary that a detailed clinical interview should be taken comprising of information about the medicines used in the past or which are currently being used<sup>20</sup>.

Treatment of insomnia comprises of removal of environmental factors that may affect patients sleep as keep him in noise-free room with dim light, and engage patient in physical activity throughout day<sup>19</sup>. Treatment may include behavioral modification which has shown to be very operational in patients with all age group<sup>21</sup>. Drugs that can be given to post stroke insomnia patients include muscle relaxants and sedative antidepressants as mianserin. A study conducted shows that post-stroke insomnia patients got benefit from 60mg of mianserin daily than placebo<sup>19</sup>.

### METHODOLOGY

It was a cross-sectional type of study in which convenient sampling technique was used. The duration of study was 6 months from April 2018 to September 2018 after the approval of synopsis by ethical committee. We used a self-administered questionnaire among 90 post stroke patients. By the consent of the patients, a modified Sleep Centre Interview was conducted from them and it included questions about their sleeping pattern, day time effects and its effect on their life. Access to the database of insomnia in Stroke Patients will be obtained from the different hospitals of Lahore. All Stroke Patients will be randomly invited to participate in this study. The exclusion criteria were that excluding those Patients suffering from Insomnia due to other disease.

The screening tool used for assessing insomnia in stroke patients was valid and reliable. Modified questionnaire for University of Glasgow Sleep Centre Interview was used to collect data. The questionnaire included questions about sleep pattern, day time effects of sleep, impact of sleep disturbance on their lives, lifetime history of sleep (during childhood, teenage, adult life, before and after stroke).

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SPSS 21.0 was used for evaluating and tabularizing data. For quantitative statistics we calculated Mean and  $\pm$ S.D and histogram were formed and for qualitative statistics we calculated percentages and frequencies and formed Bar charts.

## RESULTS

The study included 90 stroke patients of those 56 were males and 34 were females. The mean age of participants was 53.68 years  $\pm$ 8.33. The minimum age of the patients who participated in the study was 39 years while maximum age was 72 years. Out of 90, 27 patients had sleep disturbance of them 16 were male and 11 were female. Therefore the prevalence of insomnia was found to be 30%. There was no significant association among genders and occurrence of sleep problems as p value was 0.704. There were 51.9% patients who reported that it takes them less than an hour to fall asleep and 25.9% slept in 3 hours while 22.2% reported that they fall asleep in 2 hours approximately. There were 33.3% patients reported that they woke up at least 2 times at night while 25.9% woke up 3 times at night and only 18.5% woke up once at night. 40.7% reported that they are awake up for more than 4 hours at night and 25.9% said that they remain awake for about 2-3 hours while only 14.8% reported that they remain awake for 1-2 hours. 74% reported that it takes them 2-3 hours to sleep while 22.2% reported that it takes them 4-5 hours to sleep once awakened. 48.4% patients reported that they follow the same sleep pattern for 3-4 days per week while 44.4% followed the sleep pattern for 2-3 days a week. Out of 90, 27 patients had sleep disturbance of them 16 were male and 11 were female. There was no significant association among genders and occurrence of sleep problems as p value was 0.704. 85.2% patients had problems in staying awake during the day. 92.6% patients had problems with concentrating. 88.9% patient's mood was affected by sleep disturbances. 81.5% patients said that their relationship was affected with others due to sleep disturbances.

Out of 90 stroke patients 48.9% were taking physiotherapy treatment while 51.1% didn't perform physiotherapy. In About 29.6% patients sleep disturbances affected their ability to do rehabilitations as language therapy occupational therapy while majority of patients were not affected by this. In about 74.1% patient's physiotherapy services didn't help in improving their sleep while in 25.9% patient's physiotherapy improved their sleep. 51.9% experienced daytime sleepiness since stroke. 51.9% didn't experience fatigue before stroke while 63% patients experienced fatigue since stroke.

Table I: Cross-Tabulation of gender and occurrence of sleep disturbance

Gender	Yes	No	Total
Do you have sleep disturbance?			
Male	16	40	56
Female	11	23	34
Total	27	63	90

P value 0.704

Table II: Daytime effects

Q.No.	Question	Yes	No
2	Do you sleep during day?	15(55.6%)	12(44.4%)
3	Does it affect your energy/ feeling tired?	23(85.2%)	4(14.8%)
4	Does it affect problems staying awake?	23(85.2%)	4(14.8%)
5	Does it affect problems with concentrating?	25(92.6%)	2(7.4%)
6	Does it affect your mood?	24(88.9%)	2(7.4%)
7	Does it affect your relationship with others?	22(81.5%)	5(18.5%)
8	Does it affect getting thing done?	23(85.2%)	4(14.8%)

Table III: Impact of Insomnia on their Life

Q.No.	Question	Yes	No
9	Are you doing physiotherapy?	44(48.9%)	46(51.1%)
10	Does your sleep pattern affect your ability to do your rehabilitation?	8(29.6%)	19(70.4%)
11	Does physiotherapy helps you in your sleep?	7(25.9%)	20(74.1%)

Table IV: History of daytime sleepiness and fatigue

Q.No.	Question	Yes	No
9	Are you doing physiotherapy?	44(48.9%)	46(51.1%)
12	Did you experience daytime sleepiness before the stroke?	14(51.9%)	13(48.1%)
13	Have you experienced daytime sleepiness since the stroke?	14(51.9%)	13(48.1%)
14	Did you experience fatigue before the stroke?	13(48.1%)	14(51.9%)
15	Have you experienced fatigue since the stroke?	17(63%)	10(37%)

## DISCUSSION

A significant proportion of the patients 27 reported insomnia symptoms. The prevalence rate of patients with disturbed sleeps remained high (25.3%), even when a more rigorous definition of insomnia. The limitations of this study deserve a comment. Firstly, the patients participating in this study ischemic stroke patients aged 39–72 years. The excluded patients were more often dependent in daily life and had more severe physical handicap (correlates of insomnia, see later) than the patients subjected to the psychiatric examination. This finding indicates rather an underestimation of prevalence rates of insomnia in stroke patients. In other studies with non stroke samples, the reported prevalence of insomnia has varied depending on the populations studied and the criteria of insomnia used. In the adult general populations, the prevalence of sleep disturbances has ranged between 1.5 and 60%, the lower rates representing healthy populations. In studies with elderly populations, the prevalence for insomnia has ranged between 23 and 40%. It has also been reported that the frequency of sleep-promoting drug use is high, especially in the elderly. In accordance with our study, Hohagen et al<sup>12</sup>, who applied DSM-III-R diagnostic criteria, reported that 23% of all general practice attendees older than 65 years complained about a sleep problem severe enough to cause.

Linda N. Bakken describes the pattern of day and night sleep and explores relationships between these patterns and socio demographic and clinical factors as well as sleep environmental context and the patient's subjective sleep quality. They gathered data from stroke survivors via organized interviews, patient's medicinal history and wrist actigraphy was used to assess sleep statistics. The variability in estimated sleep is large. Half the patients slept either <6 hours or >8 hours per night, and 78% had more than nine awakenings per night. Women slept more than men, and patients sleeping at hospitals had more night arousals than those at home. The study showed that almost all patients except 4 had more frequent morning naps. Longer stay in hospital was related to more daytime sleep, and the subjective sleep quality correlated with estimated sleep time, wake time, and wake percentage. The prevalence rate of patients in current study with disturbed sleeps remained high (25.3%), and mostly patients are elderly and old age people.

## CONCLUSION

The study concluded that sleep disturbances as insomnia and hyper insomnia are common among stroke fighters. Insomnia was associated with increased level of anxiety and disability after stroke. Sleep disturbances are more common in men irrespective of

their age and doctors should give special courtesy to poor sleep patterns of men during acute phase in hospital. Insomnia could be made better by early screening, psychological intervention and physiotherapy. It will improve patient's level of cognition, energy level, and mood and give them better sleep.

**Authors' Contributions:** Sania Maqbool developed the study design. Hafiz Muhammad Uzair Asghar participated in data collection, analysis and literature search. Hira Iftikhar drafted the manuscript. Qurratulain Mushtaq provided the final approval of article. Maida Mushtaq and Hafiz Iftikhar Ahmed provided feedback and revised the manuscript. All the authors read and agreed with the information provided in the final version of the manuscript for publication.

**Competing interests:** The authors declare that they have no competing interest. The results of the study are presented clearly, honestly, and without fabrication, falsification, or inappropriate data manipulation.

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