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Disparities in Sportspersons' Sleep Behaviour due to COVID-19 Pandemic Lockdown in India

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ABSTRACT

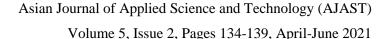
Many types of research over several decades prove that sleep is a significant factor for human performance. The sleep behaviour of sportspersons in particular is very different from the normal folks or members of other occupational groups such as police and the military, office-going folks. Henceforth, this study is projected to investigate the changes in sports persons' sleep behaviour due to the COVID-19 lockdown in India. For which, the survey was conducted among 514 sportspersons representing various Universities (296 male/218 female) across various states of India using a simple random sampling technique. The composed data were analyzed using a paired samples t-test. The results of this study indicated that the sleep behaviour of sportspersons was affected during the COVID-19 lockdown in India.

Keywords: Sports persons' sleep behaviour, COVID-19 pandemic lockdown, India.

1. Introduction

Researches over several decades prove that sleep is one of the important factors for human performance in sports (Dijk et al., 1992; Van Dongen & Dinges, 2003; Cohen et al., 2010). The duration of the wake period, as well as the biological time of day, decided the structure of sleep and the amount of sleepiness (Vila & Samuels, 2010). Duration of sleep, quality, and the circadian rhythm are considered important factors in terms of the overall convalescent result of sleep (Belenky et al., 2003). Furthermore, the waste products of neuronal activity accumulate during sleeplessness is processed and clearance of toxic waste and impedes regular neuronal performance. Various researches about sleep have been done in different areas such as law enforcement (Vila, 2000; Vila et al., 2005; Vila, 2006; Vila & Samuels, 2010), the military (Haslam, 1982; Miller & Nguyen, 2003; Doheney, 2004; Arendt et al., 2006) or aviation (Neri & Shappell, 1992; Brown, 2000; Dijk et al., 2001; Caldwell, 2005). But, the sportspersons in specific are very compared to the average individual or members of occupational groups such as law enforcement and the military, on whom prior research is based.

Because, the physical and mental demands of sportspersons are unique, (Arun Mozhi and Vinu 2019) aggressive in nature aggressive behavior is the intention underlying the actor's behavior. In this connection, Halson (2008) and Leeder et al. (2012) observed sleep because of the excellent psycho-physiological method to be had for the recuperation of elite sports activities people. Thus, quantifying and measuring sleep among sports activities people in the game placing has to grow to be not unusual place prevalence (Caia et al., 2017). Preliminary findings concerning traditional sleep periods of sports activities people indicated that seven hours of sleep in step with night time in normal conditions as every day (Lastella et al., 2015 and Leeder et al., 2012). Sports people's loss of sleep resulted from many severe consequences. Similarly, a couple of nights time of decreased sleep ended in bad effects. Following a nightly ration of 3h of sleep for 3 successive nights, the overall performance of sports activities people's obligations considerably reduced on the second one day and the said deteriorations had been pronounced





in sports activities people' temper states (Reilly & Piercy, 1994). Axelsson et.al. (2008) investigated the accumulation of sleepiness during five consecutive restricted nights with 4hrs of sleeping and found that median reaction times and sleepiness returned to baseline during seven recovery days, while lapses were still increased. Belenky et.al. (2003) made another sleep-dose-response study and found that seven days with 5hours and 7hours of sleep restriction initially resulted in a declined performance in the psychomotor vigilance task which appeared to stabilize at a lower-than-baseline level after a few days aggression level increased.

In that same study, it's far observed that 3hours of excessive sleep limit declined overall performance constantly and 3 days of 8hours recuperation sleep did now no longer repair overall performance to baseline levels. Consequently, cumulative sleep loss reasons an oxidant imbalance (Miller & Nguyen, 2003). However, these findings should be treated with caution because of differences in study design used in various studies and small sample sizes, these findings underline the importance of sufficient sleep. There are several reasons which affect the sleep behaviour of sportspersons. As a matter of course, sleep/wake patterns do not emerge identically every night. Therefore, it is foremost important to investigate the changes in sports persons' sleep in different contexts. In this context, this study is proposed to examine whether there exists any difference in the average intensity of sports persons' sleep behaviour before and during the COVID-19 lockdown in India.

2. Methods

2.1. Participants

This survey was completed by a sample of 514 participants of (296 male/218 female) across selected universities in India. All participants for both groups were aged between 18-28 yrs at the time of taking part in the study. The individuals on special occasions like marriage in the family, death in the family, the birth of a child, and any function were excluded from taking part in the study. The 'athlete' population used in the current study included sportspersons representing selected universities in different events. Irrespective of the event, the complete list of sportspersons in selected universities was prepared and from that list, 514 participants were selected using a simple random sampling technique.

The data were collected from the samples using well-structured questionnaires. The questionnaires were administered to all participants via email and google forms. All questionnaires asked participants to answer the questions relating to their normal sleep behaviour (i.e before lockdown) and sleep behaviour during the COVID-19 lockdown period. The data were collected during the period of the second lockdown in India (i.e. May-2021 to June 2021).

2.2. Measure

In the questionnaire, the data concerning sports persons' sleep behaviours data was collected using the sports persons' sleep behaviour Questionnaire (ASBQ) by Driller et al., (2018). Rather than a clinical screening tool, the ASBQ is an 18-item survey to identify areas of sleep behaviour.

The 18- items measuring three challenges of sleep behaviour namely Routine/environmental factors (6 items), Behavioural factors (7 items), and Sport-related factors (5 items). The survey asks participants how frequently they



engage in specific behaviours (never, rarely, sometimes, frequently, and always). Scoring for each response (1 = never, 2 = rarely, 3 = sometimes, 4 = frequently, 5 = always) were summed independently to obtain the mean scores of each component independently. But in all cases, higher scores indicate poor sleep behaviours.

2.3. Statistical tool used

The collected data were analyzed using a paired sample t-test, which is a type of inferential statistic used to determine whether there exists a significant difference between the means of two tests on the same persons before and during COVID-19 lockdown. The t-test tells you how significant the differences between tests are; In other words, it lets you know if those differences (measured in means/averages) could have happened by chance. A t-test is used as a hypothesis testing tool, which allows testing of an assumption applicable to a population.

3. Analysis and Interpretation

In order to examine whether there exists a significant difference between the average intensity of sports persons' sleep behaviour before COVID-19 lockdown and the average intensity of sports persons' sleep behaviour during COVID-19 lockdown.

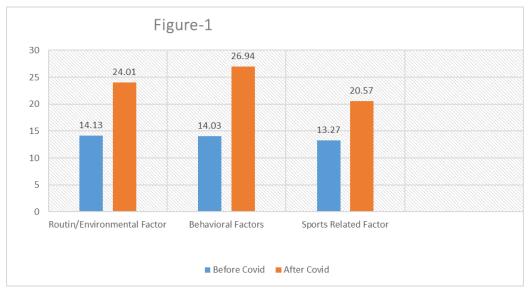
The totality of each component of sports persons' sleep behaviour before COVID-19 lockdown which represents the intensity of each challenge faced by sports persons was taken individually. Similarly, the totality of each component of sports persons' sleep behaviour during COVID-19 lockdown which represents the intensity of each challenge faced by sports persons was taken individually. The below stated null hypothesis was formulated, to test the formulated hypothesis paired sample t-test was computed and the results were presented in the following consolidated table.

H0: Average intensity of sports persons' sleep behaviour before and during COVID-19 lockdown remains same.

 Table 1. Paired Samples Statistics

| | - | Mean | N | Std. Deviation | t value | p (sig) |
|-------------------------------|--------------------|---------|-----|-------------------|---------|---------|
| Routine/environmental factors | Before COVID-19 | 14.1304 | 514 | 3.54318 | -56.752 | .000 |
| | After COVID- 19 | 24.0136 | 514 | 2.58309 | | |
| Behavioral factors | Before COVID-19 | 14.0311 | 514 | 3.41522 | -63.646 | .000 |
| | After COVID- 19 | 26.9436 | 514 | 3.60889 | | |
| Sport-related factors | Before COVID-19 | 13.2763 | 514 | 3.51182 | -38.563 | .000 |
| | After COVID- 19 | 20.5759 | 514 | 2.71216 | | |





In the above table, the p-value for routine/environmental factors, behavioural factors, and sport-related factors was found to be 0.000. Since all the values of p < 0.005, the null hypothesis was rejected. Hence, it was found that the average intensity of challenges faced by sports persons before and during COVID-19 lockdown differs significantly in all three cases. The t values were found to be -56.75, -63.646, and -38.563 for routine/environmental factors, behavioural factors, and sport-related factors respectively.

These larger t-values pronounced more difference between the before and during COVID-19 lockdown period sports persons' sleep behaviour and also indicated that the probability of difference occurred by chance was smaller. The mean difference of -9.88327, -12.91245, and -7.29961 clearly represented that the average scores of during COVID-19 were higher than the average scores of before COVID-19 in all the three cases.

This clearly specified that the challenges faced by the sportspersons during COVID-19 were higher than the challenges faced by the sportspersons before COVID-19. Finally, all the values in the table confirmed that COVID-19 lockdown made the many sportspersons poorer sleepers.

4. Conclusions

Sleep is an important factor for human performance. Various researches about sleep have been done in different areas such as law enforcement (4-7), the military (8-11), or aviation (12-15). But, researches about the sleep of the sportspersons, in particular, are limited. There are several reasons which affect the sleep behaviour of sportspersons.

Therefore, it is foremost important to investigate the changes in sports persons' sleep in different contexts. In this context, this study is proposed to examine whether there exists any difference in the average intensity of sports persons' sleep behaviour before and during the COVID-19 lockdown in India.

For which, the survey was conducted among 514 sportspersons representing various Universities (296 male/218 female) across various states of India using the snowball sampling technique. The collected data were analyzed using a paired samples t-test. The results of this study indicated that the sleep behaviour of sportspersons was affected during the COVID-19 lockdown in India.



Declarations

Source of Funding

This research did not receive any grant from funding agencies in the public, commercial, or not-for-profit sectors.

Competing Interests Statement

The author declares no competing financial, professional and personal interests.

Ethical Approval

Ethical approval for this research was given based on institutional guidelines.

Consent for publication

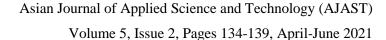
Author declares that he/she consented for the publication of this research work.

Availability of data and material

Author is willing to share data and material according to the relevant needs.

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