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A COMPARATIVE STUDY OF SLEEPING PATTERNS IN RELATION TO CARDIORESPIRATORY EFFICIENCY IN UNDERGRADUATE AGRICULTURE STUDENTS

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ABSTRACT

The purpose of this study was to find out the differences in sleeping patterns among agriculture students on the basis of their cardiorespiratory efficiency. One hundred female agriculture students were selected for this study from Punjab Agriculture University, Ludhiana, with the age range of 20-22 years. Selected variables of cardiorespiratory efficiency and sleeping patterns were measured by the 12-minute run/walk test developed by Cooper (1968) and with the Pittsburgh Sleep Quality Index (PSQI) (Buysse et al. 1989), respectively. As per the objective of the study, descriptive statistics and comparative statistics (ANOVA) were employed by 'SPSS Version 23.' The results showed that there was a significant difference in sleeping patterns among female agriculture students in the terms of their cardiorespiratory efficiency.

Index Terms: Cardiorespiratory Efficiency, Sleeping Pattern, Pittsburgh Sleep Quality Index (PSQI).

INTRODUCTION

Sleep is an essential part of wellness, and if you've been missing several hours a night in order to get more work done, you'll be lowering the quality of your work. To be the best, you must rest. Poor sleep quality is considered a public health burden, and it has been linked to a variety of health issues (Colten et al., 2006). Those with short sleep duration have reported fatigue, tiredness, and daytime sleepiness (Bliwise, 1996). Poor sleep quality has also been linked to a variety of negative health outcomes, including hypertension (Gottlieb, D.J. et al., 2006), an increased risk of diabetes (Knutson et al., 2006), cardiovascular disease (Zhang et al., 2014), and poor cardiorespiratory fitness (Lim & Lee, 2020). These health issues may eventually be linked to an increased risk of mortality among people who have poor or disrupted sleep quality (Cappuccio et al. 2010).

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Cardiorespiratory fitness is the ability of the heart, lungs, and circulatory system to deliver oxygenated blood in response to the metabolic demands placed on the large group of muscles during heavy, dynamic activity (Strand et al., 2012). Cardiorespiratory fitness has been strongly linked to cardiovascular health. In this context, poor sleep quality has been linked to decreased cardiorespiratory fitness (Mota & Vale, 2009). Reduced cardiorespiratory fitness can increase the risk of cardiovascular disease (Al-Mallah et al., 2018). A growing body of evidence suggests that regular exercise can help with sleep disturbances (Dolezal et al., 2017). However, the link between cardiorespiratory fitness and sleep quality is debatable. This study's aim was to investigate the association between cardiorespiratory fitness and sleep quality in apparently healthy students.

AIM OF STUDY

The aim of the present study was to find out the difference in sleeping patterns among female agriculture students on the basis of their cardiorespiratory efficiency. It was hypothesized that there will be no significant difference in sleeping patterns among female agriculture students of Punjab on the basis of their cardiorespiratory efficiency.

MATERIAL AND METHODS

One hundred female agricultures students were selected for this study from Punjab Agriculture University, Ludhiana with the age range of 20-22 years. On the basis of Copper's classification, the subjects were classified into poor (Under 1500 meters), below-average (1500 - 1799 meters) and average (1800 - 2199 meters) cardiorespiratory efficiency groups according to their cardio-respiratory efficiency. Selected variables of cardiorespiratory efficiency and sleeping patterns were measured by 12 mints run/walk test developed by Cooper (1968) and with Pittsburgh Sleep Quality Index (PSQI) (Buysse et al.1989) respectively.

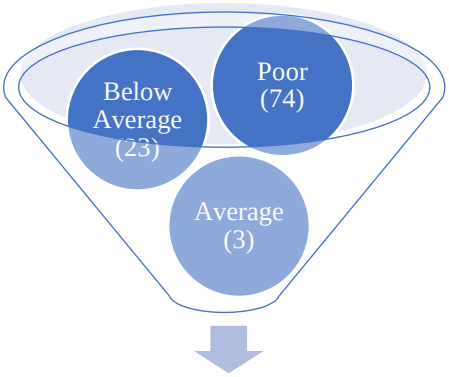

FIG.-I DESCRIPTION OF SUBJECTS

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PROCEDURE

All participants were fully informed about the research protocol and the study's basic characteristics. Prior to data collection, no special motivation techniques were used to motivate the students. All participants followed the same protocol under identical conditions and were supervised by the researcher.

STATISTICAL TECHNIQUE

As per objective of the study descriptive statistics i.e., mean and standard deviation were calculated and one-way analysis of variance (ANOVA) was applied to find out the difference between various groups. To further explore the degree and direction of significant differences between means, where 'f-value' was found significant 'Scheffe' post-hoc test was applied for pairwise comparisons. These all tests were employed with the help of SPSS-software version 23. The level of significance was set at 0.05.

RESULTS

TABLE-1: DESCRIPTIVE STATISTICS OF SLEEPING PATTERN OF DIFFERENT CARDIORESPIRATORY EFFICIENCY GROUPS

Dependent Variable	Cardio Respiratory Efficiency Group	N	Mean	SD	Std. Error
Sleeping Pattern	Poor	74	6.20	2.49	0.29
	Below-average	23	5.78	2.26	0.47
	Average	3	2.67	0.58	0.33
	Total	100	6.14	2.41	0.25

Table-1 shows that mean, standard deviation and standard error values of sleeping pattern variable of poor, below-average and average cardiorespiratory efficiency groups of female agriculture students are 6.20 ± 2.49 and 0.29, 5.78 ± 2.26 and 0.47, 2.67 ± 0.58 and 0.33 respectively.

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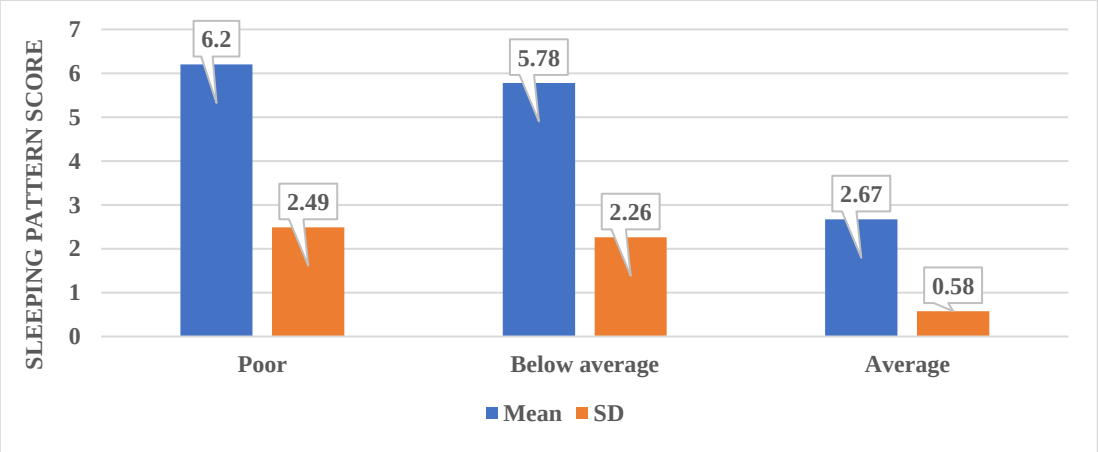

FIG. II GRAPHICAL REPRESENTATION OF DESCRIPTIVE STATISTICS FOR SLEEPING PATTERN

TABLE- 2: ANALYSIS OF VARIANCE (ANOVA) OF SLEEPING PATTERN OF DIFFERENT CARDIORESPIRATORY EFFICIENCY GROUPS OF FEMALE AGRICULTURE STUDENTS

Dependent Variable	Sources of Variance	Sum of Squares	df	Mean Square	F-value	p-value
Sleeping Pattern	Between Groups	37.46	2	18.73	3.21	**0.04***
	Within Groups	556.54	97	5.84		
	Total	604	99			

* Indicate differences is significant at the 0.05 level.

Table-2 shows that p-value (p = 0.04) is less than 0.05 which means that there exists a significant difference between different cardiorespiratory efficiency groups of female agriculture students in case of sleeping pattern variable.

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TABLE 3: PAIRWISE COMPARISON OF SLEEPING PATTERN OF DIFFERENT CARDIORESPIRATORY EFFICIENCY GROUPS OF FEMALE AGRICULTURE STUDENTS

Dependent Variable	Group		Mean Difference (I-J)	Std. Error	p-value
	Cardio Respiratory Efficiency (I)	Cardio Respiratory Efficiency (J)			
Sleeping Pattern	Poor	Below average	0.42	0.58	1.00
		Average	3.54	1.42	**0.04***
	Below average	Average	3.12	1.48	0.12

* Indicate differences is significant at the 0.05 level.

Table 3 shows that there exists an insignificant difference (p-value = 1.00) between poor and below-average cardiorespiratory efficiency groups of female agriculture students in terms of sleeping pattern variable. It also shows that there exists a significant difference (p-value = 0.04) between poor and average cardiorespiratory efficiency groups of female agriculture students in the case of sleeping pattern variable. It also shows that there exists an insignificant difference (p-value = 0.12) between below-average and average cardiorespiratory efficiency groups of female agriculture students in the case of sleeping pattern variable.

DISCUSSION

In the present study, the assumption was that there would be no significant difference in sleeping patterns among agriculture students on the basis of their cardiorespiratory efficiency.

The result indicated that there was a significant difference between poor, below-average, and average cardiorespiratory efficiency groups of female agriculture students in the case of their sleeping patterns. Further, the result indicated that the students of the average cardiorespiratory efficiency group have better sleeping patterns as compared to the poor and below-average cardiorespiratory efficiency groups. The result of this finding is supported by the study conducted by Mota and Vale (2009), who conducted a cross-sectional study on adolescent girls to examine the association between sleeping quality with cardiorespiratory fitness and obesity status. For this study, cardiorespiratory fitness was measured by maximal multistage 20 m shuttle run test, and the subjects were classified into fit and unfit groups on the basis of their cardiorespiratory fitness. In his study, they found that there was a significant

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difference in sleeping patterns among different groups of cardiorespiratory fitness, and girls who were classified as fit were more likely to report better sleep quality compared to their unfit peers.

CONCLUSION

The present study concluded that the sleeping patterns of female agriculture students vary based on their cardiorespiratory efficiency.

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