



Science, Movement and Health, Vol. XVIII, ISSUE 2 Supplement, 2018
September 2018, 18 (2 supplement): 343 - 347
Original article

INVESTIGATION OF THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY AND SLEEP QUALITY IN ADULTS

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Abstract

Objectives. This study was conducted to determine the relationship between physical activity and sleep quality in adults.

Methods. Research is planned in a descriptive relational type. The study was conducted with face to face interviews with a total of 155 adults. In gathering the data; an information form prepared by researchers questioning the socio-demographic information about individuals, the International Physical Activity Questionnaire and the Pittsburgh Sleep Quality Index. Pearson correlation analysis was used to assess the relationship between the number and percentage distributions in the evaluation of the study's demographic data. T-test and variance analysis was used to assess the relationship between socio-demographic characteristics and the International Physical Activity Questionnaire and Pittsburgh Sleep Quality Index.

Results. When the relationship between the physical activity levels of individuals and the sleep quality was evaluated, it was found that there was a moderate correlation between physical activity and sleep quality in the positive direction and the difference was statistically significant ($r: 0.68, p > 0.05$). The average age of the adults is 32.14 ± 3.17 , 56.42% are male, 42.88% are female, 35.84% are university graduate, 50.56% are single and 45.44% are married. When physical activity levels of the individuals were evaluated, it was determined that 49.28% were inactive, 25.6% inactive and 24.32% were active, and 59.52% of sleep quality were good and 39.68% of sleep quality were worse when sleep quality levels were evaluated.

Conclusions. When the results obtained from the study are evaluated, in terms of physical activity, women, marriages and primary / secondary school graduates and women with sleep quality are at risk groups.

Key words: Adults, physical activity level, sleep quality.

Introduction

Exercise is important for the development and improvement of both physical and mental health. An effective physical activity program develops body strength, endurance, balance, physical function, mental function and quality of life (Lök, Lök 2016). Sleep, one of the basic human needs, has an important place in human life for healthy life. Insufficient sleep causes a threat to health, as well as a decrease in cognitive, psychomotor and emotional functions (Orzech, Salafsky and Hamilton, 2011). Sleep quality has recently been emphasized by researchers. Studies show that there are many factors that affect sleep quality. As the most important factor, physical activity is necessary for people to protect their health and maintain a high-quality life. A study found that physical activity and exercise are

associated with a better sleep quality and less sleep disorder in elderly people with mild cognitive impairment (Nakakubo et al 2017). The sleeping individual appears to be an important variable of health affecting quality of life and well-being (Kline, 2013). Regular exercise programs are recommended to improve the health status, sleep and quality of life of individuals (Chang et al., 2016)

Physical activity is associated with better sleep quality and less sleep disturbance in healthy adults (Borodulin et al., 2010). It is also stated that regular physical activity has psychological benefits as well as physical health protection and improvement. It has been reported to have positive effects on many clinical diseases such as depression, anxiety disorders, somatoform disorders, substance abuse, especially stress and anxiety symptoms, reducing negative feelings such as anger and aggression, increasing sleep quality (Artal et al. 1998). It has

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* the abstract was published in the 18th I.S.C. "Perspectives in Physical Education and Sport" - Ovidius University of Constanta, May 17-19, 2018, Romania
Received 11 march 2018 / Accepted 6 may 2018

been stated that exercise facilitates sleeping, provides deeper sleep, and individuals feel better when they wake up in the morning (Vardar, 2005).

It is stated that exercise has positive effects on sleep when studies evaluating the relationship between physical activity and sleep. People have reported that exercise facilitates diving into sleep, provides deeper sleep, and makes them feel better when they wake up in the morning. It has been reported that especially in the morning exercise or late evening exercise, the sleep is more positively affected by the exercise (Singh et al. 1997). According to the study about the effect of exercise on sleeping, it was stated that after exercising, the exercise performed towards the waist increased the sleep duration and that exercise in the morning hours did not affect the sleep (Youngstedt, O'Connor, Dishman 1997). Sleep, one of the basic human needs, has an important place in human life for healthy life. The physical activity involved in healthy lifestyle behavior is thought to be effective on sleep quality. In this context, the aim of this study is to determine the relationship between physical activity and sleep quality in adults.

Research Questions

1. How are individual physical activity levels?
2. How are the sleep qualities of individuals?
3. Do sociodemographic characteristics affect the physical activity levels of individuals?
4. Do sociodemographic characteristics affect individuals' sleep quality?
5. Is there a relationship between physical activity levels and sleep quality?

Methods

Research is planned in a descriptive relational type. In determining the sample of the research, the universal sampling method was used. Since the prevalence is unknown, the frequency of occurrence is calculated as 50%, the sample is calculated as 155 individuals with a standard deviation of 5% and 95% confidence interval. In gathering the data; "International Physical Activity Questionnaire" and "Pittsburgh Sleep Quality Index" were used by the researchers who questioned the socio-demographic information of the individuals.

Collection of data

The data of this study were collected by face-to-face interview technique from adult individuals.

Personal Information Form

In the Personal Information Form, demographic questions such as age, gender, educational status, marital status were included.

International Physical Activity Questionnaire

In this study, the short form of the International Physical Activity Questionnaire (IPAQ) was used to determine the physical activity levels of the individuals. For this survey, conducted by the International validity and reliability study of Craig et al, validity and reliability study of university students in Turkey are made by Ozturk. There are 7 questions in the questionnaire. Questions 1 and 2 are violent activities, questions 3 and 4 are moderate violent activities, questions 5 and 6 are gait, and question 7 is the time when the individual is spending time with the resident. In the evaluation of all the activities, it is taken as a criterion that each activity is done at least 10 minutes at a time. A score of "MET minutes / week" is obtained by multiplying the minutes, days and MET values (times of resting oxygen consumption). Physical activity levels were found to be physically inactive (<600 MET / week), low level of physical activity (600-3000 MET-min / week) and adequate physical activity level (> 3000 MET- min / week). In the calculation of energy consumption for physical activities, the weekly duration (minutes) of each activity and the MET energy values for the International Physical Activity Questionnaire were multiplied. Thus, for each individual, energy consumption for severe, moderate, walking, sitting, and total physical activities was obtained in the MET minutes / week unit.

Pittsburgh Sleep Quality Index (PSQI)

The Pittsburgh Sleep Quality Index (PSQI) was used to assess sleep quality. PUKI was developed in 1989 by Buysse et al. Validity and reliability studies in Turkey Ağargün et al (1996) was made by. PUKI provides a reliable, valid and standard measurement of sleep quality. The scale consists of a total of 24 questions. The total score is between 0-21. Sleep quality is good (0-4 points) and sleep quality is poor (5-21 points). The correlation between the total scores belonging to the scale was found to be $r = 0.81$.

Ethical and Legal Dimension of the Study

In order to be able to carry out the research, it is started after the institutional leave and approval from the individuals. The verbal permission of the individual was taken before the investigation began. The principle of "Illuminated Consent" has been fulfilled by the principle of "autonomy", which states that patients can be withdrawn without seeking them whenever they want, by explaining the purpose of the research, the duration and the procedures to be carried out during the research. Before the forms to be used in the research were given, necessary explanations were made orally and care was taken to

create a silent environment with little stimulation during application.

Evaluation of Data

After the data were collected, the option that each individual indicated for each item on the scales was entered into the SPSS 21 program by the researchers and the total scores of the individuals from the scales were calculated. Pearson's correlation analysis was used to evaluate the relationship between number and percentage distributions in the evaluation of the study's demographic data, t-test with normal distribution in binary groups to evaluate the relationship between sociodemographic characteristics and communication skills and internet dependency, Oneway ANOVA in two groups and

communication skills and internet addiction. The results were assessed at 95% confidence interval and $p < 0.05$ significance level.

Results

The average age of the individuals is 32.14 ± 3.17 , 56.42% is male, 42.88% is female, 35.84% is university graduate, 50.56% is single and 45.44% is married. When physical activity levels of the individuals were evaluated, it was determined that 49.28% were inactive, 25.6% inactive and 24.32% were active, and 59.52% of sleep quality was good and 39.68% of sleep quality was poor when sleep quality levels were evaluated (Table 1).

Table 1. Individual Physical Activity and Sleep Quality Levels

Physical Activity	n	%
Inactive (< 600 MET-min/week)	40	25.6
Minimal Aktive ($600-3000$ MET- min/week)	77	49.28
Very aktive (> 3000 MET- min/week)	38	24.32
Total	155	100,0
Sleep Quality Levels		
Sleep quality is good (0–4 score)	93	59.52
Sleep quality is bad (5–21 score)	62	39.68
Total	155	100,0

When the socio-demographic characteristics and physical activity levels of the individuals were evaluated, it was found that the male was more active than the primary school / middle school and high school graduates and the difference was statistically

significant ($p < 0.05$) (Table 2). When the socio-demographic characteristics and sleep quality levels of the individuals were evaluated, it was found that the sleep quality was better and the difference was statistically significant ($p < 0.05$).

Table 2. Evaluation of sociodemographic characteristics and physical activity levels of individuals

Physical Activity	Inactive (< 600 MET- min/week)	Minimal Aktive ($600-3000$ MET- min/week)	Very aktive (> 3000 MET- min/week)
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	n (%)	n (%)	n (%)	
Gender				
Female	22(14.19)	30(19.2)	15(9.6)	t=2.275**
Male	18(11.52)	47(30.08)	23(14.72)	p=0.01*
Marital Status				
Married	18(11.52)	46(29.44)	7(4.48)	t=2.024**
Single	20(12.8)	42(26.88)	23(14.72)	p=0.01*
Educational Level				
Primary/secondary school	17(10.88)	24(15.36)	11(7.04)	F=7.207**
High school	10(6.4)	21(13.44)	16(10.24)	p=0.02*
University	13(8.32)	25(16.0)	18(11.52)	

*p<0,05

When the relationship between the physical activity levels of individuals and the sleep quality was evaluated, it was found that there was a moderate correlation between physical activity and sleep

quality in the positive direction and the difference was statistically significant (r: 0.68, p> 0.05). It has come to the conclusion that the physical activity levels of the individuals are better quality.

Table 4. Relationship between Individual Physical Activity Levels and Sleep Qualities (r, p)

Variable	X ± SS	r , p deęeri
Physical Activity Scale	1730.37±24.37	0,68 0,002*
Sleep Quality Scale	6.24±1.43	

p<0,05*

Discussion

In this study, it was found that there was a moderate correlation between physical activity levels of individuals and sleep quality in the positive direction. The increased level of physical activity of the individuals has resulted in better quality sleep. In a study conducted by McClain et al. (2014) also show that age and sex dependence of associations between physical activity and sleep. They found that physical activity were significantly lower in adults reporting more frequent daytime sleepiness in younger (20–39) and older (≥60) age groups, but not in middle-aged (40–59), respondents. In younger respondents, physical activity increased with sleep duration, but in middle aged and older respondents physical activity was either unrelated to sleep duration or lower in those reporting ≥8 h of sleep. Objectively measured sedentary time showed limited evidence of associations with sleep duration (McClain et al. 2014). Sleep characteristics were also associated with age and sex men and the older individuals were less likely to report daytime sleepiness, and middle-aged

men were more likely to report short sleep duration than older women (McClain et al. 2014).

In this study It has also been found that those who are physically female, married, and primary / secondary school graduates have low levels of physical activity. However, it has turned out that the quality of sleep is poor in those who are female and those who are married. Further research is needed to understand how sex and marital status interact to influence associations between sleep duration and physical activity. Similarly, in a study conducted by Feng, Du, Ye, & He (2014) indicated that the decrease in physical activity results in a decrease in sleep quality. Contrary to this study, in a study conducted by Kakinami et al. (2017) found that the more time spent doing sedentary activities was associated with poorer sleep quality, but physical activity was not associated.

Increasing evidence suggests that physical activity and sleep duration are associated with numerous health benefits (Janssen, Leblanc 2010). Sleep, sedentary behavior, physical activity and diet all interact and influence each other to ultimately

impact health. Sleep is not a waste of time and sleep hygiene is an important factor to consider in the prevention and treatment of obesity (Chaput & Dutil 2016). In a recent review, shorter sleep duration was associated with increased obesity risk in five out of five longitudinal studies that controlled for self-reported physical activity (Patel and Hu, 2008). In a study conducted by individuals with obesity problems it was found that altered sleep duration and quality in obesity and physical activity improves sleep duration, sleep quality (Mendelson et al. 2016).

Conclusion

In this study, it was found that there was a moderate correlation between physical activity and sleep quality in the positive direction and the difference was statistically significant. Further studies are needed to understand how sex and marital status interact to influence associations between sleep duration and physical activity. Increasing evidence suggests that physical activity and sleep duration are associated with numerous health benefits.

Acknowledgments

I thank all students for participating in this study. No funding was used for this study.

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