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Sport and physical activity, sleep quality, perceived stress, and body mass index among Algerian individuals: A cross sectional study

Issam Bellem
University of Abdelhamid Mehri- Constantine2 (Algeria)
Email: issam.bellem@univ-constantine2.dz

Benchouita Belkacem
University Of Alger 03 (Algeria)
Email: Benchouita.Belkacem@univ-alger3.dz

Boukelia Boukhemis Britannia
Sport and Exercise Science Academy (UK)

Gasmi Amin
Société Francophone de Nutrithérapie et de Nutrigénétique Appliquée, Villeurbanne, France
Email: dr.amin.gasmi@gmail.com

Bougherra Amina
University of Mohamed Boudief M'sila (Algeria)
Email: animaanima870@gmail.com

***Abstract*---**This research aims to evaluate the sleep quality index and the level of perceived effort among individuals, in addition to measuring differences in body mass index among Algerian individuals based on gender and level of physical activity variables. A quantitative approach was used, where the study was correlational and predictive. The study sample consisted of 394 Algerian adults, and researchers used a set of measures including physical activity scale, sleep quality scale, and perceived stress scale. The study found a number of results, including: No statistically significant differences in body mass index based on gender and level of physical activity, Low level of sleep quality index, and high level of perceived stress index.

***Keywords*---**physical activity, sleep quality, perceived stress.

1. Introduction

Sport is called as a complicated issue in some resources. In its modern form, sport is a new phenomenon, and it is now thought as a refuge against the industrial communities; a refuge where the people can seek facing the life and occupational stress and problems in those countries. Joining a club now has become an accepted tradition and sport is now one of the main aspects of life. Some of the sport sociologists regard sport as the "civil religion" of the modern society. (Elaheh Medadi Nansa, Farzad Ghafouri, 2019, 142)

Notably sport is recognized as a significant contributor to physical health by promoting the accumulation of sufficient physical activity along with recognized social and psychological benefits. Moreover, sport is likely to provide both aerobic and strengthening exercise, which has a significant additive effect on reducing mortality. (Richard Davison Daryl T. Cowan, 2023, 2).

In the other side sleep is one of the physiological needs that has an influence on the quality and balance of life. Individuals who experience obstacles in the sleep cycle, so that other physical activities of the body will be hampered or changed. Failure to maintain a stable individual sleep-wake cycle will disrupt individual health (Muhammad Irwan et al, 2024, 19).

And as it's known poor sleep quality is part of the risk consisting of physical and psychological problems, Physical problems that arise are risk factors for cardiovascular disease, such as blood pressure in children, adolescents and adults. Lack of sleep and rest is caused by frequent interruptions in the NREM and REM cycles, which cause an increase in blood pressure. Norepinephrine that passes through the nervous system increases, causing blood vessels to get vasoconstriction, which triggers an increase in blood pressure (Muhammad Irwan et al, 2024, 20).

In the stress cycle; Stress is a highly person-specific phenomenon in that it varies between people on dimensions of individual vulnerability and resilience. Due to this fact, different individuals can have different thresholds for stress resistance. At the same time, stress severity also varies between different types of tasks (Kateryna Maltseva, 2024, 187). Additionally perceived stress severity (i.e., a subjective experience of stress resulting from individuals facing a stressor. (Kateryna Maltseva, 2024, 190).

This research aims to evaluate the sleep quality index and the level of perceived effort among individuals, in addition to measuring differences in body mass index among Algerian individuals based on gender and level of physical activity variables.

2. Materials and Methods

As the topic is about Sport and physical activity, Sleep Quality, Perceived stress, and body mass index among Algerian individuals: a cross sectional study we opted for a descriptive approach that's what describes, explains the phenomenon and determines the relationship between its elements, then collects the data to

get results and approves or Denys the hypotheses; This study was correlational and predictive. (Hedj ben ichouch. S, Ghadban Ahmed. H, 2022, 333)

2.1 Research Design:
This research is quantitative, and has a cross-sectional design which conducted on Algerian individuals in the period from 07/ 2021to 03/2022

2.2 Participants:
The sample is a part of the community, and research using the sampling method is a study that examines a specific part or a specific proportion of the original community, and then ends with generalizing the results to the total community members. (Boudawed abd El yamine, Attallah Ahmed, 2009, 68).
The research sample was selected convenience method from Algerian individuals, numbering 394 participants.

2.3 Data collection:
The tool is generally known as anything used to perform a specific action or behavior with the availability of energy and control. A search tool is used to facilitate the retrieval of information or resources by indicating their locations or availability. (Karzi Fatima et al, 2022, 37)

International Physical Activity Questionnaire (short version): The questionnaire includes seven questions asking about the duration and intensity of physical activity during the past seven days, for the purpose of classifying individuals. According to this questionnaire, three levels of physical activity are used as follows (Craig et al.2003):
-Walking MET-minutes/week = 3.3 * walking minutes * walking days
-Moderate MET-minutes/week = 4.0 * moderate-intensity activity minutes * moderate days
-Vigorous MET-minutes/week = 8.0 * vigorous-intensity activity minutes * vigorous-intensity days.
-Total physical activity MET-minutes/week = sum of Walking + Moderate + Vigorous MET
*minutes/week scores.
Categorical Score:
Low: This is the lowest level of physical activity, with individuals scoring less than 600 MET minutes per week.
Medium: Individuals who engage in at least 600 MET-minutes of total physical activity per week.
High: Individuals who engage in at least 3000 MET-minutes of total physical activity per week.
* Sleep Quality Index: The Sleep Quality Index was used in (PSQI) Pittsburgh to assess sleep habits (Buysse et al.1989), where sleep quality and potential disorders in the previous month are evaluated. The index is recorded using seven component grades ranging from 0 (no difficulty) to 3 (severe difficulty). The component grades are summed together to produce a total score (from 0 to 21). Higher scores indicate poorer sleep quality. A total score of "5" or more indicates a "poor" sleeper.
* Perceived Stress Scale (Cohen et al.1983): consists of 10 items to assess perceived stress in youth and adults aged 12 and above. Individual PSS scores

range from 0 to 40, with scores ranging from 0 to 13 indicating low stress, scores ranging from 14 to 26 indicating moderate stress, and scores ranging from 27 to 40 indicating high stress.

2.4 data analysis:
We used version 27 of the SPSS program to obtain accurate results, including mean, standard deviation, T-test and Anova test.

3. Results

Table 1. Descriptive characteristics of the participants (sample)

n = 394	
Variables	Mean ± SD or n (%)
Gender	
Male	231 (58.6)
Female	163 (41.4)
BMI (kg m^{-2})	24.33 ± 4.14
PSQI	6.87 ± 3.72
Preceived stress scale	27.66 ± 6.55
IPAQ	
Law	133 (33.8)
Moderate	246 (62.4)
High	15 (3.8)

Note. PSQI = Pittsburgh Sleep Quality Index, IPAQ = International Physical Activity Questionnaire, SD = Standard Deviation

Table 2. Levels of the PSQI and Preceived stress scale (sample)

	Mean	SD	level
PSQI	6.87	3.72	low
Preceived stress scale	27.66	6.55	high

The table shows that the average sleep quality for individuals reached 6.87, and this value, according to the previously described criteria, is greater than 5, and therefore individuals enjoy poor sleep quality. As for perceived stress, the table showed that the average score of individuals swallowing was 27.66, and according to the tests described previously, it is clear that the level of perception of stress among individuals is high.

Table 3. Differences between males and females in body mass index (BMI)

Gender	N	Mean ± SD	SEM	t-test	P-Value (sig)	Significant
Male	231	24.67 ± 3.64	0.24	1.86	0.06	N.S
Female	163	23.85 ± 4.74	0.37			

Note. NS = Not a Significant

This independent-samples t-test analysis indicates that the males (Mean ± SD = 24.67 ± 3.64) did not have a significantly diferent than females (Mean ± SD = 23.85 ± 4.74), t = 1.86, p = 0.06 > 0.05

Table 4. Differences in body mass index (BMI) according to level of physical activity

		ANOVA				
PL	Mean ± SD		Sum of Squares	Mean Square	F	P-Value (sig)
Low	24.47 ± 4.26	Between Groups	5.43	2.72		
Moderate	24.28 ± 4.15	Within Groups	6736.90	17.23	0.16	0.85
High	23.94 ± 2.93	Total	6742.34	-		

Note. PL = physical activity levels

The ANOVA table shows that there isn't a significant difference between groups (F = 0.16, P (0.85) > 0.05).

4. Discussion

The research objectives aimed to evaluate the quality of sleep and the perceived stress levels among Algerian individuals, then to measure the differences in body mass index among Algerian individuals based on gender and level of physical activity variables. The results showed poor sleep quality and high perceived stress levels, where perceived stress is "a psychological response accompanied by a disturbance in physiological balance that manifests as a set of self-sensations such as fatigue, frustration, and mental exhaustion" (Barzouane, Ferchane, 2019, 242). The researchers attribute this condition in the sample individuals perhaps to life demands and multiple sources of pressure, such as high cost of living, lack of job opportunities, and irregular physical activity practice to a large extent...etc. Also, we did not find differences in body mass index based on gender, Which may be attributed to the same data and requirements experienced by the sample members.

Similarly, we did not find differences in body mass index based on the level of physical activity, This is due to the demands of life and the multiple sources of stress that the sample members suffer from.

5. Conclusion

As in the current study, in this study there were No statistically significant differences in body mass index based on gender and level of physical activity, additionally Low level of sleep quality index, and high level of perceived stress index. To obtain more comprehensive findings, conducting new research using different questionnaires to measure Sleep Quality, Perceived stress would be beneficial. Additionally, it is recommended to propose programs aimed at developing these qualities.

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