THE IMPACT OF SLEEP QUALITY AND PRACTICE OF PHYSICAL ACTIVITY IN THE LIFE QUALITY OF THE MEDICAL STUDENT

O IMPACTO DA QUALIDADE DO SONO E DA PRÁTICA DE ATIVIDADE FÍSICA NA QUALIDADE DE VIDA DO ACADÊMICO DE MEDICINA

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ABSTRACT

Considering the stressful context of medical students' life, this study purposed to quantify the quality of life and sleep in this group, and the impact of physical activity in these indicators. This is a cross-sectional study, witch 365 academics answered the questionnaires: World Health Organization Quality of Life Questionnaire, Pittsburgh Sleep Quality Index, International Physical Activity Questionnaire and a socio-demographic prepared by the authors. There was a difference in the mean overall quality of life score (P < 0.01), but there was no distinction in the domains apart. There was also a difference (P < 0.01) in the mean scores of sleep quality among the graduation years, and the sixth was the worst one. There was a significant correlation (r > 0.3) between the quality of life and sleep in the global sample. There was no evidence of an association between a number of minutes spent on physical activity and better quality of life or sleep. Medical academics have a poorer quality of life at the beginning and end of the course. The last year is associated with poorer overall sleep quality. Contrary to the expected, no positive correlation between the practice of physical activity, life and sleep quality was verified

KEYWORDS: Student, medical, quality of life, sleep, exercise, health.

RESUMO

Considerando o contexto estressante da vida dos estudantes de medicina, o objetivo deste estudo foi o de quantificar a qualidade de vida e do sono nesse grupo, bem como o impacto da atividade física nesses indicadores. Este é um estudo transversal, em que 365 acadêmicos responderam os questionários: Questionário de Qualidade de Vida da Organização Mundial de Saúde, Índice de Qualidade de Sono de Pittsburgh, Questionário Internacional de Atividade Física e questionário sociodemográfico elaborado pelos autores. Houve diferença no escore global médio de qualidade de vida (P < 0,01), mas não entre os domínios isoladamente. Também houve diferença (P < 0,01) nos escores médios de qualidade do sono entre os anos de graduação, o sexto obteve a pior média. Observou-se correlação significativa (r > 0,3) entre a qualidade de vida e do sono na amostra global. Não houve associação entre número de minutos gastos com exercícios físicos e melhores escores de qualidade de vida e do sono. Os acadêmicos de medicina apresentam pior qualidade de vida no início e no final do curso. O último ano está associado à pior qualidade geral do sono. Ao contrário do esperado, não foi verificada correlação positiva entre prática de atividade física, qualidade de vida e do sono.

PALAVRAS-CHAVE: Estudantes de medicina, qualidade de vida, sono, exercício físico, saúde.

1. INTRODUCTION

Quality of life is defined as an individual's perception of their position in life, considering the cultural context and values in which they live, as well as their goals, expectations, standards, and concerns. This holistic concept incorporates in a complex way the physical and emotional health, the level of independence, the social relations, the beliefs and their relations with the environment[1].

It is known that stress hurts health and quality of life, including physicians, since the undergraduate stage[2]. Factors such as demanding study load, lack of time for personal, social and leisure activities, contact with death and suffering implies a decrease in the quality of life of this population[2,4].

A recent study regarding sleep quality was conducted by the American Academy of Sleep Medicine and the Sleep Research Society recommend that an adult should sleep at least 7 hours a night regularly to achieve optimal health[5]. During the graduation period, medical students are considered to be particularly prone to reduced sleep quality, with a high prevalence of disorders in this population, including deprivation, poor quality and excessive daytime sleepiness. Thus, the crucial role of sleep in maintaining mental health, high-level learning and overall well-being has received considerable attention[6].

On the other hand, the regular practice of a physical activity is directly related to the reduction of morbidity and mortality due to chronic diseases[7], as well as in the improvement of sleep quality, mood, depressive disorders, anxiety[8] and, consequently, quality of life. At least 150 minutes per week of moderate physical activity is recommended to be beneficial[9]. Although medical students are often more active than the general population, the frequency in which they exercise themselves tends to decrease as the course progresses[10].

The present study aims to investigate the quality of life and sleep in medical students of a private college on the countryside of Minas Gerais, as well as to evaluate the impact of the practice of physical activity on these indicators.

2. MATERIAL AND METHODS

This is a cross-sectional study composed by a sample of 365 medical students, with inclusion criteria being: over 18 years old and both sexes. The only exclusion criteria were if aged bellow 18. They were summoned and took part in this study from the last week of August 2017 to the first week of October 2017. After filling out the Informed Consent Term, we applied the following questionnaires:

Questionnaire of socioeconomic, demographic and daily routine habits data, prepared by the authors;

WHOQOL-Bref (short-term World Health Organization Quality of Life Questionnaire): composed of 26 questions, being 5 answer options each, concerning subjective and objective feelings that have occurred in the last two weeks. Scores from 0 to 100 are generated in four domains (physical, psychological, social and environmental), in addition to the total score. The higher the score obtained, the better the indicator[11].

PSQI (Pittsburgh Sleep Quality Index): composed of 19 items grouped into 7 components, scored on a scale of 0 to 3. The overall sum can vary between 0 and 21 points. Values between 0 and 4 indicate good sleep quality; between 5 and 10, poor quality; above 10, sleep disorder[12].

IPAQ (International Physical Activity Questionnaire), short version: quantifies the activities performed in the week before the application of the questionnaire, allowing the following classifications[13]:

Sedentary: an individual who does not perform any physical activity for at least 10 continuous weekly minutes.

Irregularly active: A) An individual who exercises for at least 10 continuous minutes at a minimum frequency of 5 days a week; or with a duration of 150 minutes per week. B) An individual who does not meet any of the criteria of category A.

Active: An individual who performs vigorous physical activity for 3 or more days a week, lasting at least 20 minutes; or that performs moderate activity or walking for 5 or more days a week, for at least 30 minutes, or that performs any activity that is added 5 or more times per week, with a minimum duration of 150 minutes.

Very active: individual performing vigorous physical activity for at least 5 days a week with a minimum length of 30 minutes; or vigorous activity for at least 3 days a week with a minimum length of 20 minutes associated with moderate activities and/or walking for 5 days a week for at least 30 minutes.

We verified the normal distribution of the sample by the conduction of the Darling Anderson Test.

Analysis of variance (ANOVA) tested the difference between the means of the sample scores (quality of life and sleep quality) and was complemented by the Student's t-test in the case of significant differences. We used the Pearson correlation coefficient to correlate in pairs the quality of life, sleep quality and frequency of physical activity. Pearson's Chi-square test (X^2) has been used to quantify the difference in the prevalence of sleep disorders between the undergraduate phases. The quantification of the female gender's impact on sleep quality was calculated by the Odds Ratio (OR).

The minimum significance level required for rejection of the null hypothesis (H0) was $P<0.05$. Statistical analyses were performed in the Minitab® program, version 15.1.1.0 (Minitab LLC., State College, Pennsylvania, USA).

3. RESULTS

The sample consisted of 365 students (119 males and 246 females), about 60%of the 603 enrolled students, distributed among the 6 years of the undergraduate program: 83 students in the 1st year, 82 in the 2nd year, 63 in the 3rd year, 66 in the 4th year, 44 of the 5th year and 27 of the 6th year. The age ranged from 18 to 41 years, is the average and standard deviation, respectively 23.4 and 4.3 years.

Using the sample as a whole (n = 365), the overall average quality of life score was 74.3 (DP 10.2), the physical domain was 70.4 (DP 15.2), the psychological domain was 64.5 (DP 17.6), the domain of the social relation was 70.2 (DP 19.3) and the environmental domain was 67.6 (DP 13.4).

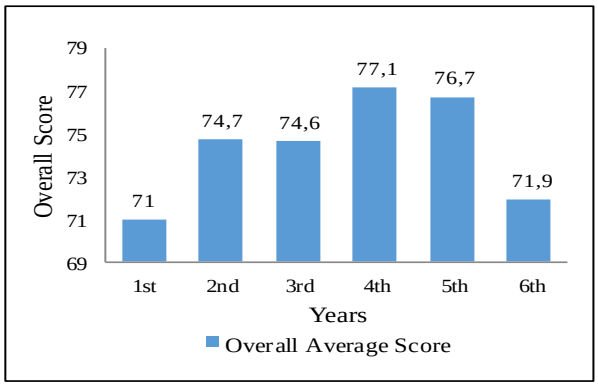

Figure 1. Overall quality of life score of the 365 medical students of a private college on the countryside of Minas Gerais, Brazil, in 2017, according to year of graduation. Data obtained by conducting the World Health Organization Quality of Life Questionnaire–Bref.

The ANOVA test revealed a difference (F = 3.60, P

= 0.003) in the overall quality of life score (Figure 1), but there was no significant difference when the domains were evaluated separately (Figure 2).

Comparing the average of the global quality of life scores between the undergraduate years, the t-test showed a distinction between the 1st/2nd (P = 0.024), 1st/3rd (P = 0.039), 1st/4th (P= 0.0003), 1st/5th (P = 0.006), 4th/6th (P = 0.007) and 5th/6th years (P = 0.031).

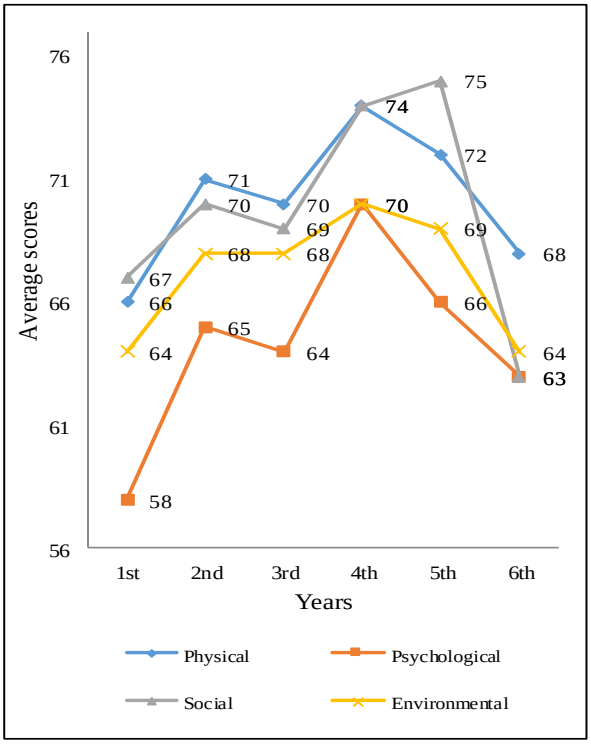

Figure 2. Average scores of the domains of quality of life of the 365 medical students of a private college on the countryside of Minas Gerais, Brazil, in 2017, according to year of graduation. Data obtained by conducting the World Health Organization Quality of Life Questionnaire–Bref.

Regarding the average scores of sleep quality, three possible variables have been observed in all years of graduation (Figure 3).

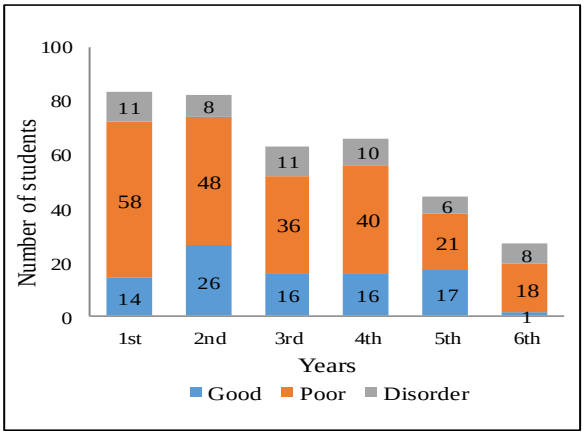

Figure 3. Classification of sleep quality of the 365 medical students of a private college on the countryside of Minas Gerais, Brazil, in 2017, according to year of graduation. Data obtained by conducting the questionnaire Pittsburgh Sleep Quality Index.

The ANOVA test also showed a significant difference between the years (F = 2.65, P = 0.023), the lowest (6.2) and the highest (8.5) average scores found in the 5th and 6th years, respectively. The average scores of the 3rd (7.1) and the 4th (7.2) were the closest to the global (7.0). The average score of the 2nd year (6.4) was close to the minimum score and the 1st year (7.5) was close to the average score (7.35). The t-test showed a significant difference between the 1st and 2nd year (P = 0.026); the 2nd and 6th (P = 0.002) and as well between the 5th and the 6th year (P = 0.004).

Analyzing the sample as a whole, the Pearson correlation coefficient (r) showed an inverse association between quality of life and sleep quality (r = -0.374). In addition to this finding in the global sample, correlation was found in the 1st (r = -0.541), in the 2nd (r = -0.626) and in the 3rd year (r = -0.468).

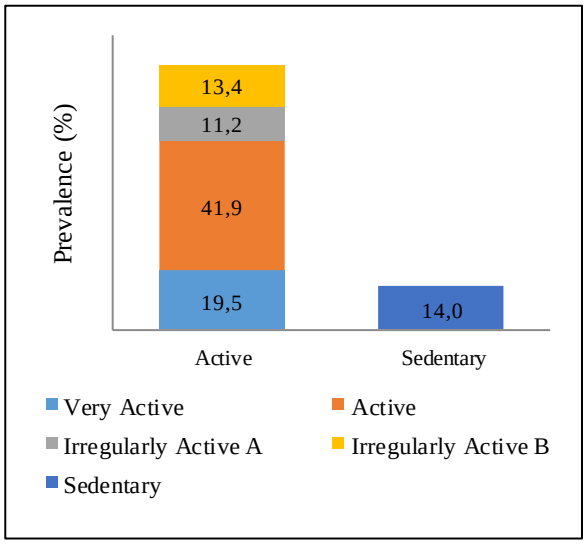

Figure 4. Distribution of the 365 medical students of a private college on the countryside of Minas Gerais, Brazil, in 2017, according to the activity profile, considering the frequency and intensity of physical activity practice. Data obtained by conducting the International Physical Activity.

The Odds Ratio showed a positive association of sleep disorder in female sex (OR = 1.43). The chi-square test did not present a relevant clinical difference in the evaluation of sleep disorders ($X^2 = 11.07$).

Regarding the practice of physical activity, 14% (n = 51) of the sample has been classified as sedentary. Among the students who practice physical activities (n = 314, 86%), the prevalence of other categories (very active, active, irregularly active A/B) is shown in Figure 4.

Pearson's correlation coefficient did not show an association between regular physical activity (number of minutes spent on physical exercises) and better quality of life scores, both in the Global score (r = 0.2) and in the Physical, Psychological, Social Relations and the Environment (r = 0.1). There was also no significant correlation with sleep quality (r = -0.1) (Table 1). The analysis of phase/year of graduation has not been performed since there was no correlation using the sample as a whole.

Table 1. Correlation between physical activity practice, quality of life and sleep quality of the 365 medical students of a private college on the countryside of Minas Gerais, Brazil, in 2017, using Pearson's correlation coefficient.

		Correlation (*r*)
Quality of life	Overall	0,2
	Physical	0,1
	Psychological	0,1
	Social	0,1
	Environmental	0,1
Sleep quality		-0,1

4. DISCUSSION

The medical course is not the same as a few decades ago. The great technological evolution, facilitating diagnoses, treatments and access to information has demanded more and more from academics and also from physicians. These are constantly charged to have a great income, to develop communication skills, to express themselves in different languages, and to consolidate a strong curriculum that can guarantee a good placement in the job market. Overall, such high demand tends to bring negative repercussions on the quality of life and sleep of academics, requiring measures to minimize these effects.

In the evaluation of the quality of life, the average score from the first to the sixth year was 74.3 (DP 10.2). This data is similar to that found in a recent study conducted in Brazil on medical students, also using a questionnaire from the World Health Organization upbringing an average of 72.1 (DP 7.7)[14]. Thus, one can conclude that despite the differences between teaching methods, physical environment and other contextual factors of the colleges, there is a general similarity between the quality of life of the students of the same course.

Comparing the same average score of the sample with that of the general population, a study performed in Brazilian basic health units with the same questionnaire, also did not observe a significant difference, since they presented a global quality of life score equal to 65.2 (DP 19.2)[15]. Thus, it can be inferred that, although academics are inserted in a context of greater vulnerability to worsening quality of life, when comparing them with the general population, it must be considered that many individuals also face particular conditions that may have negative repercussions on their quality of life, such as chronic diseases, unemployment, living in violent environments, among others.

Thus, in addition to academics having the difficulties offered by the course, they may also face social difficulties, such as those mentioned above. This population is segmented (by year of graduation) the worst average of quality of life were brought up in the first and sixth years (71.0 and 71.9, respectively). This may be related to the fact that in the first year there is a great expectation for the beginning of the course, difficulty in adapting to the new rules of teaching and the scheduling routine[16]. Also, independence, new responsibilities and change of homing environment develop a great change in the academics' lives[17]. The decrease in the average of the sixth year possibly involves tension with the responsibilities of the end of the graduation, workload and hospital shifts, as well as being divided between the concern about the choice between specialties and the residency tests[16,18].

Also, there was a difference in the overall quality of life score, but not in the WHOQOL-Bref specific domains. Relevant data was the lowest score in the psychological domain (64.5). Similarly, the previous study in Brasília - DF found a worse average in this domain (64.93), which reflects very personal issues of the individual, such as beliefs, acceptance regarding physical appearance, self-esteem and concentration.3 Psychological wearing is one of the factors that most interferes in the exercise of care, a fundamental medical function[19].

Considering the possible influence of the environment on the psychological condition of the academics, we sought to compare private and public schools. In this study, conducted in a private institution, the average score of the environmental domain was 67.6 (DP 13.4). A study conducted in a public university, found a score of 58 (DP 15.8)[19]. Thus, there seems to be no relevant difference between public and private academic environments, even though this domain is more sensitive to changes in socioeconomic factors, such as transportation, security, and financial resources.

Regarding the average sleep quality score, the overall sample (7.04) has been classified as poor. This result was similar to that of a survey conducted in the Middle East, using the same questionnaire in medical students, whose average was 7.11[20]. In another study, conducted at the University of Kuwait, comparing students from different courses such as arts, law and engineering with medical scholars, the latter presented worse scores[21]. This is because, usually, future doctors tend to reduce the hours of sleep due to the innumerable demands of the academic environment, not considering sleep a priority[20].

As for sleep quality among the different stages of graduation, the sixth year presented the worst average. This information is similar to that found in the literature, which shows insufficient hours of sleep during the clinical years (fourth, fifth and sixth year), which can be justified by high stress and concern with the grades[4].

About sleep disorder there was no significant difference between the different phases. However, a higher prevalence has been found in the female gender, as the literature points out, whose justification is the greater female propensity to stress and therefore sleep disorder[20].

In this research there was a significant correlation

between the quality of life and quality of sleep in the global sample and the first three years of graduation; that is, the better the quality of sleep, the better the quality of life. However, there is an insufficiency of data in the literature that justifies this finding.

To improve sleep and quality of life, the practice of a physical activity is recognized as a fundamental tool. The majority of the students performed some exercise (n = 314, 86%), a finding consistent with research conducted in North America, which identified a higher prevalence of assets (n = 1413, 61%). Extensive hours, restriction of free time and laziness were identified as justification for the irregularity or absence of exercises[9].

This study did not show the expected positive correlation between the regular practice of physical activity, in the quantity, intensity and time of performance rated by IPAQ, and quality of life and sleep quality. In a survey of Taiwanese academics8, there was also no relation between frequency or cumulative hours of exercise and better quality of sleep. Besides, exercise intensity itself was associated with a better score in the mental domain of quality of life and correlated negatively with the physical domain. Therefore, suggesting that the regular practice of physical activity would likely be related to good scores in these domains, except for excessive physical activities.

There is a lack of studies correlating these variables among young people attending higher education[8]. Most research on this subject investigated older populations, individuals with sleep disorders or other chronic diseases, making it difficult to compare results, since the predictors of sleep disorders between university students may be different. There are several associated factors: emotional and academic stress, irregular sleeping hours, absence of breakfast, consumption of psychostimulants and low social support[8]. Also, among academics there are high rates of Internet use, which may be associated with reduced sleep hours, lack of energy the next day and less physical activity[22].

This study addressed different aspects of the same population, and there were some methodological limitations. The use of questionnaires, including retrospective questions, does not guarantee total reliability of the answers. Also, we did not use instruments that could quantify levels of stress and anxiety, as well as possible depressive disorders or other disorders such as attention deficit and learning.

It is known that to take good care and improve patients' lives, physicians and medical students must take care of themselves[3]. It is important that medical education institutions are aware of the physical and emotional health of their academics. The strengthening of psycho-pedagogical support centers, the creation of an hourly matrix with free time for students to organize, the incentive to practice physical exercises, and teachers who promote mental health can have a positive personal and professional impact on the life of the students.

Therefore, it is the suggestion for future researches with a prospective study, which allows a more sensitive identification of the vulnerabilities in the institutions and allows greater promotion of quality of life and sleep.

5. CONCLUSIONS

Medical academics present a worse quality of life at the beginning and the end of the course, with the worst score being the psychological domain. The sixth-year had the worst overall average sleep quality score, although no relevant clinical difference on sleep disturbance has been observed. Although most students perform some type of physical exercise, there was no positive relationship between the number of minutes spent on exercise and a better quality of life and sleep scores.

Since there was no statistical difference in the quality of life scores between the graduation phases, as well as no positive correlation between physical activity practice and quality of life and sleep, a follow up research is encouraged to be done to evaluate the same students in different phases of graduation and with different forms of physical activity or other exercise duration intervals, as well as their regularity. maybe it could find different results.

6. ACKNOWLEDGMENTS

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