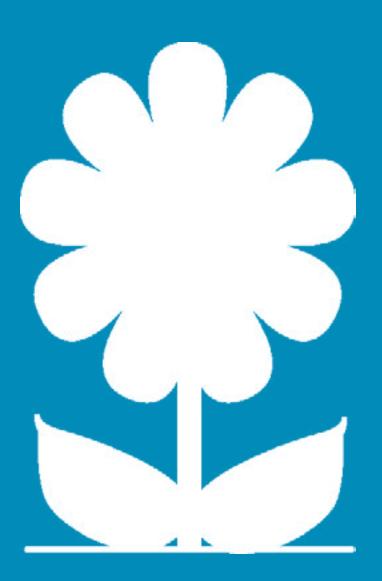# BOOK OF PROCEEDINGS

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MENTAL HEALTH AND SLEEP-VIGIL DISTURBANCES IN HIGH SCHOOL STUDENTS: SLEEP HYGIENE CONSULTATION

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ABSTRACT

Sleep disturbance has consequences on cognitive level as well as on the metabolic balance of youth. The improvement of literacy levels on sleep habits and rest promotes their suitability.

This study aimed to evaluate the mental health levels (anxiety, depression and stress) and sleep quality of higher education students through a descriptive and correlational study, quantitative and transversal in nature, on a non-probabilistic and by convenience sample of 510 higher education students. The Pittsburgh Sleep Quality Index and the Depression, Anxiety and Stress Scale were used.

Among the results we underline a poor quality of sleep in most of the sample as well as a statistically significant correlation between sleep quality and mental health in the analysed aspects, noting also the statistically significant poorer quality of sleep among female students and higher levels of depression and anxiety among male students.

We conclude that the Sleep Hygiene Consultations performed by the clinical office of the Polytechnic Institute of Bragança, are appropriate and timely to improve the literacy levels about sleep and rest habits, and to promote its fitness in the course of academic activities, contributing to a healthy development with less risk of anxiety, depression, stress and other risk behaviours.

Keywords: Sleep Quality, Mental Health, Higher Education Students.

JEL Classification: C93, Y90

1. INTRODUCTION

Today's society adopts inadequate lifestyles, motivated by changes in the pace of work, which in many cases extends beyond 8 hours a day, and by work schedules that involve shifts in various professional groups. Globalization and new information / communication technologies, as well as increased competitiveness, have created a 24-hour online society where the day goes on for the night, affecting sleep quality and increasing stress levels (Paiva & Penzel, 2011).

According to the National Mental Health Plan 2007-2016 (2008), mental health problems are currently the main cause of disability and one of the most important causes of morbidity in our societies. Indeed, mental health needs are of such magnitude that they require timely and creative responses from health services, with the involvement of other public structures and community bodies, within the framework of a clear, dynamic and Requirement of our day.

According to the WHO (2011), one in five children has evidence of mental problems and of these, about half have a psychiatric disorder.

It is equally important to be aware of sleep and rest habits, as well as recommended sleep practices and the consequence of lack of rest in behaviour, learning and development of young people, but also of their impact on performance.

Mental health and socio-emotional skills are the common pillars for promoting a healthy lifestyle and the prevention of risky behaviours.

Risk behaviours, such as psychoactive substance use, anxiety, depression, suicide risk, and self-inflicted injuries, among others, emerge and require specific interventions at the level of assessment and treatment.

At present, lifestyles show marked influence on sleep hygiene. There are several factors that contribute to both its maintenance and its failure. From the Latin "somnus", sleep is one of the most important biological needs of our body and a fundamental element for the cognitive functions. It is defined as a behavioural state characterized by physiological, periodic and reversible rest, immobility and relative abolition of sensitivity to external stimuli, with temporary withdrawal of consciousness.

The transition to higher education is a factor of change of habits and lifestyle for students, with particular impact on changing sleep habits, not always for the better. Irregularities between social and academic hours may promote variation in sleep schedules and constitute a predisposing factor for making sleeping more difficult. Studies show that college students

sleep on average less than 7 hours a night, take more than 30 minutes to fall asleep and that most show low sleep quality. It is also described that the students of more advanced years in their courses have more hours of sleep than the students of the first years. Stress is the most pointed factor as a justification for poor sleep quality and difficulty in initiating sleep, followed by anxiety and emotional factors. Excessive daytime drowsiness, as a non-restorative measure of sleep at night, has a negative impact on students' academic and psychomotor performance, with consequences on learning and memory consolidation, as well as mood, triggering feelings of anxiety, fatigue and irritability. As such, the population of higher education students is at particular risk to evidence a decrease in sleep quality.

Caetano and Thomaz (2012) analysed the responses of youngsters and found that sleep habits and disturbances, negatively influencing quality of life, also generate stress, impatience and unavailability, irritability, aggressiveness, distractions and apathy, or on the contrary, to situations of hyperactivity, discomfort, difficulty of interaction, sadness, isolation, lack of mood and energy. Paiva (2015) states that those who sleep well have a great ability to adapt to adverse circumstances, such as stress.

The National School Health Programme 2015, in Axis 1 - Training, covers the following areas of intervention: mental health and social-emotional skills, affection and sexuality education, healthy eating and physical activity, body hygiene and oral health, sleep and rest, postural education, prevention of tobacco consumption, alcoholic beverages and other psychoactive substances, as well as other substance independent additive behaviours.

Sleep and rest habits are the basic biological rhythm of the human species and are fundamental for good health and quality of life, with special significance in children and young people. Primary sleep disturbances may be due to changes in the quantity or quality of sleep (dysphonia), or to abnormal behavioural or physiological events associated with sleep (nocturnal terrors, nightmares, somnambulism, etc.). Sleep disturbances have cognitive consequences on the metabolic balance of children and young people. Improving literacy about sleep and resting habits promotes their adequacy throughout their academic journey.

In general, sleep among young people assumes itself as an obstacle, that is, with increasing responsibilities due to social paradigms centred on "having" and "success", society has changed and developed new habits of life, occupying less time to sleep and more time for leisure and work. Higher education students sleep less and less every night, and they find that they sleep a few hours during the week and compensate at the weekend, which indicates an obvious disturbance of sleep (Paiva, 2015).

Coelho, Lorenzini, Suda, Rossini and Reimão (2010), in a sample of 49 university students revealed a statistically positive correlation between the scores that assessed sleep quality and depression, that is, the greater the loss in sleep, the higher the levels of depression. Prior and Ribeiro (2011) related sleep pattern and depression, and inferred that this is influenced only by insomnia, and that this relationship was statistically significant.

In a study by Chang, Ford, Mead, Cooper-Patrick, and Klag (1997), conducted among university students, it was found that the risk of developing depression was higher among students who complained of insomnia during college time compared to those who did not report sleep problems. In a similar study, Pinto *et al.* (2012), covering a sample of 1613 youngsters between 12 and 18 years of age, concluded that daytime sleepiness (a sign of insufficient or poor sleep) is correlated with anxiety symptoms (Rs = 0.371), depression (Rs = 0.327) and stress (Rs = 0.405).

Clark and Watson (1991) defined the tripartite model in which the symptoms of anxiety and depression come together in three basic structures. The practical use of this model has led to the construction of several measures, such as Lovibond and Lovibond's Depression, Anxiety and Stress Scale (DASS) (1995), whose objective is to discriminate these three dimensions.

Stress is related to sleep on a bilateral basis (Sahed & Gruber, 2002), that is, an excessively stressful life can disturb the wake-sleep cycle, and sometimes sleep itself is a "stressing" factor for the teenager who attaches greater importance to other areas of his life and has little time to sleep. On the other hand, the anxiety symptoms increase with the irregularity of adopted sleep schedules. There seem to be greater sleep difficulties, namely early awakenings, among students with higher levels of anxiety (Almondes & Araújo, 2003). Also, Dahl (2002) relates the personal regulation of the sleep-wake cycle in adolescents' lives with affective and cognitive processes, confirming the close connection between sleep deprivation and emotional changes.

Given the aforementioned, various studies indicate a significant relationship between the quality of mental health and the quality of healthy sleep habits.

2. METHOD

To assess mental health (levels of anxiety, depression and stress) and the quality of sleep of higher education students, we performed a descriptive-correlational, quantitative and transversal study on a sample of 510 higher education students.

A three-part questionnaire was applied to the students in the sample. The first part consisted of a socio-demographic questionnaire about the respondents as well as about substance use habits. The second part of the questionnaire consisted of the 19 questions from the Pittsburgh Sleep Quality Index (Portuguese version adapted by Ramalho, 2008), focusing on 7 components of sleep quality: subjective quality; latency; duration; usual efficiency; disorders; use of hypnotic medication; and diurnal dysfunction. Responses to the questions were given on a Likert scale of 0 to 3 points, with 0 meaning "Very Good" and 3 meaning "Very Poor". The overall score is obtained by adding each component by its relative weight and a total score equal or above 5 is considered to indicate a poor quality of sleep.

The final part of the questionnaire consisted of a set of 21 questions, the Anxiety Depression and Stress Scale - DASS (Portuguese version adapted by Ribeiro, Horado, & Leal, 2004). Each of the three dimensions is measured by a set of 7 items and answers given on a Likert scale of 0 to 3 points where 0 means "Nothing" and 3 "Most of the time." According to

the authors of the original scale (Lovibond & Lovibond, 1995), the several levels for the three dimensions can be classified according to Table 1 (scorings obtained from the DASS subscales have to be multiplied by 2 to compare with the table according to the authors):

Table 1 - Levels of Anxiety, Depression and Stress

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Low	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely severe	>27	>19	>33

Source: Lovibond & Lovibond (1995)

3. ANALYSIS OF RESULTS

From the answers to the socio-demographic questions, of the 510 respondents, 364 (71.4%) are female, the most represented students are the undergraduate nursing students (81; 15.9%), 181 (35.5%) attend the second year of their respective course and 404 (79.5%) of the students are displaced, that is, they are not from the city where they study.

In terms of the variables measured, sleep quality, level of depression, level of anxiety and level of stress, the average values obtained by gender and in total are those that are presented in Table 2.

Table 2 - Average scores and Standard Deviations of the PSQI and the DASS subscales

Gender		PSQI	Depression	Anxiety	Stress
Male	Mean	9.2466	7.9247	6.2260	10.0000
	N	146	146	146	146
	SD	4.58718	3.52349	2.51004	4.51052
Female	Mean	7.8214	6.5110	6.9835	9.6896
	N	364	364	364	364
	SD	5.23797	4.09964	2.81275	5.55660
Total	Mean	8.2294	6.9157	6.7667	9.7784
	N	510	510	510	510
	SD	5.09674	3.99149	2.74854	5.27588

Source: Authors (2017)

From Table 2, we can conclude that, on average, male respondents have a relative better quality of sleep although presenting levels of depression, anxiety and stress above those of their female colleagues.

We emphasise that both genders have a PSQI score above 5, meaning poor sleep quality levels. In terms of stress, anxiety and depression, according to the classification made by Lovibond and Lovibond (1997), the three dimensions are at the "moderate" level, which is a worrying factor since it is the third step in a total of 5, and anxiety among male respondents is even on severe levels.

In terms of the internal consistency of the scales used for the 4 dimensions, the Cronbach alphas were calculated and we concluded that the one of the PSQI is weak ($\alpha = 0.584$), the internal consistency of the subscale to measure anxiety is good ($\alpha = 0.866$) and that the internal consistencies of the subscales for measuring stress and depression is excellent ($\alpha = 0.917$ for stress and $\alpha = 0.922$ for depression).

We also conducted tests to relate the results of the 4 dimensions with socio-demographic data, namely gender. The hypothesis of whether or not gender has an influence on the four measured dimensions, using the Mann-Whitney test, according to the data presented in Table 3, rejects the zero hypothesis ($p<0.05$) for all dimensions except for the dimension stress, that is, gender has a statistically significant relationship with sleep quality and the levels of depression and anxiety.

Table 3 - Mann-Whitney test results for grouping factor "gender"

	Gender	N	Mean Rank	Sum of Mean Rank
PSQI	Male	146	227.21	33173.00
	Female	364	266.85	97132.00
	Total	510		
Depression	Male	146	278.63	40680.00
	Female	364	246.22	89625.00
	Total	510		
Anxiety	Male	146	289.72	42298.50
	Female	364	241.78	88006.50
	Total	510		
Stress	Male	146	259.91	37947.00
	Female	364	253.73	92358.00
	Total	510		

Source: Authors (2017)

The quality of sleep perceived by the respondents and the quality of sleep measured through the PSQI were also compared. Table 4 shows that all the groups demonstrate a quality of sleep above 5 points, that is, a poor quality of sleep.

Table 4 - Relation between self perceived sleep quality and the PSQI and the DASS subscales

Self perception of sleep quality		PSQI	Depression	Anxiety	Stress
Very good	Mean	6.1875	3.7500	5.2031	6.6406
	N	64	64	64	64
	SD	5.02336	1.87718	3.83045	4.09555
Good	Mean	7.8918	6.3684	6.6784	9.3947
	N	342	342	342	342
	SD	4.64044	1.90044	3.72855	4.90009
Poor	Mean	10.0745	9.6383	8.2979	12.5213
	N	94	94	94	94
	SD	5.36865	2.34108	3.91257	5.32942
Very poor	Mean	15.5000	12.7000	13.0000	17.2000
	N	10	10	10	10
	SD	7.10634	3.62246	5.41603	6.17882
Total	Mean	8.2294	6.7667	6.9157	9.7784
	N	510	510	510	510
	SD	5.09674	2.74854	3.99149	5.27588

Source: Authors (2017)

It is also worth noting that there is a relationship between the measured sleep quality and the remaining 3 measured dimensions, that is confirmed by the correlation between the 4 dimensions that in all combinations is significant at the 0.01 level as presented in Table 5.

Table 5 - Spearman correlation between the measured dimensions

	PSQI	Stress	Anxiety	Depression
PSQI	1.000	.449**	.396**	.397**
Stress		1.000	.806**	.826**
Anxiety			1.000	.791**
Depression				1.000

** Correlation is significant at the 0,01 level (bilateral)

Source: Authors (2017)

We can therefore conclude that the results show poor sleep quality for the majority of students surveyed, as well as a statistically significant correlation between sleep quality and mental health in the analysed dimensions, and also the statistically significant poorer sleep quality among female students and higher levels of depression and anxiety among male students.

These results are in line with the complaints made by students who use psychology consultations in the clinical office of the Polytechnic Institute of Bragança (IPB).

4. DISCUSSION OF RESULTS

The results of the present study are in line with other studies carried out, namely with those of Caetano and Thomaz (2012), Paiva (2015) and Pinto *et al.* (2012). The poor quality of sleep among students of higher education is symptomatic and there is an urgent need to take measures to inform students about the possible consequences and the measures to be taken to reverse the situation.

In the study of Boscolo, Sacco, Antunes, Mello and Tufik (2007), it was verified that the period of study and sleep habits are associated and can influence academic performance, being that students with fewer complaints about sleep showed better performance in memorising words. When inefficient diurnal behaviours occur in which there is greater instability in the overall performance of the youth, including their academic performance, they occur simultaneously with interrupted nights of sleep or insufficient quantity (Dewald, Meijer, Oort, Kerkhof & Bögels, 2010).

Also, the relationship between sleep quality and mental health, which is confirmed in our study, is worrying and may lead to other psychic problems and risky behaviours. However, as in the present study, it has been difficult to determine cause and consequence, and there may even be a circular and alternating relationship as the parameter of anxiety as an endogenous factor affects the temporal expression of the sleep-wake cycle pattern, and the irregularity of the sleep-wake cycle derived from school schedules and academic demands (exogenous factors) cooperate to increase the state of anxiety (Almondes & Araújo, 2003).

A good night's sleep is essential for physical and mental wellbeing, but sleep is sometimes modified or even disturbed by biological and environmental factors (Kabrita, Muça, & Duffy, 2014). The preservation of its quality is fundamental, since those who sleep well have a high capacity of adaptation to adverse circumstances, such as stress, anxiety, among others.

It is also noteworthy that female students, despite having a poorer quality of sleep than male colleagues, present lower mean levels of stress, anxiety and depression, and this difference is statistically significant for anxiety and depression. This result, together with the fact that women need, on average, more sleep time than men (Horne, 2007), leads us to recommend a focus on this apparent better resistance on the part of women to stress, anxiety and depression in future studies.

Thus, the results obtained in our study lead us to conclude that the sleep quality levels of the students of the sample, as well as the levels of anxiety, depression and stress, show values that we can classify as worrying, being that the 4 dimensions are correlated and a group of these students can enter a decreasing spiral with worsening indicators.

These results are in line with previous studies on the same problem and lead us to think that the implementation of a Sleep Hygiene Consultation programmes can be an efficient help in solving this problem.

5. CONCLUSIONS

There is evidence of a relationship between sleep habits and students' mental health. It will be important, however, to continue to gauge the cause in this correlational relationship, in order to propose action measures on the origin of the problem instead of trying to correct the consequence.

Based on the National Mental Health Plan 2007-2016 (2008), the following promotion and prevention strategies were favoured:

(...) Mental health education programmes in schools, teacher awareness, youth violence prevention, counselling for children and adolescents with specific problems, drug abuse prevention, personal and social development programmes, suicide prevention and eating disorders; (...) programmes for the prevention of depression (second cause of disability in the European Union) (...)

In general, young people should have knowledge about the importance of sleep hygiene, changing harmful lifestyles through more appropriate behaviours such as physical exercise (dance, gymnastics, athletics...), playing music, do yoga, among others.

In this context, and considering the results of our study, the Sleep Hygiene Consultation inserted in the clinical office of IPB, makes perfect sense. In particular, the comparative results between the perceived quality of sleep and the measured quality of sleep lead us to understand that in most of the situations the subjects assume to have a good quality of sleep when in reality and according to the defined standards that same quality is considered to be poor, having consequences at various levels.

Improving literacy about sleep and resting habits will promote students' fitness throughout academic activities and thus contribute to a healthy development with fewer risks of anxiety, depression and stress.

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