SLEEP QUALITY AND SLEEPINESS AMONG BEGINNING DENTISTRY STUDENTS AT A PRIVATE INSTITUTION DURING THE COVID-19 PANDEMIC

Natália Almeida Bastos-Bitencourt[1]; João Baptista Dallapicula Netto[2]; Ramon Patrick Oliveira Rocha[3]; Sandro Basso Bitencourt[4]; Manoelito Ferreira Silva-Junior[5]

[1]Professor, School of Dentistry, Federal University of Juiz de Fora (UFJF). Governador Valadares Campus, MG, Brazil. [2]Dentistry student at Centro Universitário do Espírito Santo (UNESC), Colatina, ES, Brazil.[3]Professor of Dentistry at Faculdade Multivix, Vitória, ES, Brazil. [4]Assistant Professor, University of Louisville School of Dentistry, Louisville, KY, USA..[5] Professor at the State University of Southwest Bahia (UESB), Jequié Campus, Brazil.

ABSTRACT

Due to the heavy workload and demands for high performance among dentistry students, sleep disorders are common, especially in the initial years of the course. These disorders can be exacerbated by external factors, such as during the Covid-19 pandemic. The aim of the study was to associate sociodemographic and academic factors with sleep quality and sleepiness among beginning dentistry students at a private institution during the Covid-19 pandemic. The cross-sectional and analytical study collected data online, between November and December 2021, with students regularly enrolled in the 1st, 2nd and 3rd year of the Undergraduate Dentistry Course at the Centro Universitário do Espírito Santo (UNESC), Colatina (ES), Brazil. The data collection instruments used were: a sociodemographic and academic questionnaire, sleep quality (Pittsburg sleep quality index) and sleepiness (Epworth sleepiness scale). Analysis was carried out using absolute (n) and relative (%) frequencies and the Chi-square or Fisher's exact test ($p<0.05$). 115 students took part. Sleep disturbance had a prevalence of 39.1% and abnormal sleepiness was 88.7%. Third-year students had a higher prevalence of poor sleep quality, and second-year students had more sleep disorders ($p=0.03$). It was concluded that there was a high prevalence of poor sleep quality and abnormal sleepiness, and an association between sleep quality and the year of completion of the dental course.

Keywords: *Index; form; online systems; dentistry.*

1 INTRODUCTION

Sleep is an essential biological phenomenon in the consolidation of memory, regulation of body temperature, preservation and restoration of energy, and restoration of cerebral energy metabolism (Reimão, 1996). Due to these important functions, sleep disorders can lead to significant alterations in the individual's physical, cognitive, occupational and social functioning, as well as causing major

Corresponding author: natalia.bitencourt@ufjf.br

compromises in quality of life (Bittencourt *et al*, 2005; Muller; Guimarães, 2007; Poyares; Tufik, 2003).

Sleep is an essential biological phenomenon in the consolidation of memory, regulation of body temperature, preservation and restoration of energy, and restoration of cerebral energy metabolism (Reimão, 1996). Due to these important functions, sleep disorders can lead to significant alterations in the individual's physical, cognitive, occupational and social functioning, as well as causing major compromises in quality of life (Bittencourt *et al*, 2005; Muller; Guimarães, 2007; Poyares; Tufik, 2003).

In modern society, sleep disorders are common complaints in the general population, especially insomnia and excessive daytime sleepiness. It is estimated that the prevalence of insomnia in populations ranges from 30 to 50% and chronic insomnia is around 10% (Poyares; Tufik, 2003). Sleep disorders bring with them various consequences for human beings, such as greater stress and a decline in quality of life, thus a decrease in professional or academic development, a higher incidence of psychiatric disorders and a decrease in vigilance (Martins; Ferreira; Valete, 2022; Malheiros *et al*., 2021).

People who sleep poorly tend to have more morbidities, premature ageing and lower life expectancy (Medeiros *et al*, 2002). Undergraduate dentistry courses are characterized by a high level of stress for students (Ersan *et al*., 2017). In the first years, which are configured as the pre-clinical period, there is a high load of theoretical subjects, which include basic concepts for dental practice and the development of clinical skills necessary for professional activity (Atalayin *et al*., 2015). Added to this is the search for a good professional qualification, complementing their training with extracurricular tasks such as academic leagues, internships, scientific initiations and monitorships. Thus, they are subjected to strong pressure and stress due to the demand for high performance and the time spent studying (Rodrigues *et al*., 2019). In addition, external work (during the night and/or in private institutions) with double shifts, by dentistry students (Nascimento *et al*., 2021), is considered an influential aspect in poor sleep quality (Teixeira *et al*., 2012).

One factor that has impacted the world population since December 31, 2019 was the disease caused by a new type of Coronavirus, Sars-CoV-2, then named *Coronavirus Disease* 2019 (Covid-19) (Hsu; Chia; Lim, 2020), declared by the World Health Organization (WHO), on March 11, 2020, as a pandemic (Alharbi; Alharbi;

Alqaidi, 2020). From this perspective, the new routine of living conditions, associated with studying remotely, can potentiate effects on stress, anxiety, insecurity, as identified in the literature (Chang; Yuan; Wang, 2020), and this can consequently interfere with the quality of sleep of university students (Malheiros *et al*, 2021; Martins; Ferreira; Valete, 2022).

Thus, investigating the quality of sleep of dentistry students during the Covid-19 pandemic has become relevant, so that Higher Education Institutions (HEIs) can establish strategies that effectively help them cope with the situation during and after the pandemic (Malheiros *et al.,* 2021). Thus, the aim of this study was to associate sociodemographic and academic factors with sleep quality and sleepiness among beginning dentistry students at a private institution during the Covid-19 pandemic.

2 MATERIALS AND METHODS

2.1 STUDY DESIGN AND ETHICAL ASPECTS

The cross-sectional, analytical study using a virtual survey was approved by the Research Ethics Committee (CEP) of the Centro Universitário do Espírito Santo (Unesc) higher education institution, under CAAE: 52307621.9.0000.5062.

2.2 LOCATION AND POPULATION

All dentistry students regularly enrolled in the year 2021 from the first to the third year of graduation (classes in progress at the time of the research) in the undergraduate Dentistry course at the University Center of Espírito Santo (Unesc), respecting the following inclusion criteria: dentistry students who were duly enrolled in the institution's Dentistry course during the research period.

Exclusion criteria were applied when students did not agree to participate or refused to sign the Informed Consent Form.

They were enrolled in the Dentistry course and were eligible: 32 students in the 1st year, 43 in the 2nd year and 43 in the 3rd year.

2.3 DATA COLLECTION

The *emails* of the undergraduate dentistry students were registered with the academic secretariat and codes were created for each student, thus ensuring privacy and confidentiality in the handling of the participants' information. Data was collected *online*, using *Google Forms*®, and a *link* with instructions was sent to the students about this research, between the months of November and December 2021. The anonymity of the participants was preserved. The choice of this form of data collection was due to the social distancing required during the pandemic. Students, teachers and coordinators contributed to the internal dissemination of the questionnaires.

The self-administered survey instrument contained data on sociodemographic and course-related information, as well as sleep quality questionnaires: Pittsburgh Sleep Quality Index (PSQI) (Buysse *et al.,* 1989) and sleepiness: Epworth Sleepiness Scale (ESS) (Johns, 1991), using the versions validated in Brazil (Bertolazi *et al.,* 2009; Kawakami *et al.,* 2004).

The PSQI questionnaire has 10 questions. Questions 1 to 4 are open-ended and questions 5 to 10 are objective. Furthermore, in questions 5 and 10, there is space for comments from the interviewee, if necessary. These questions form seven components, which are analyzed using specific instructions to obtain the score for each one. For each component, the score can vary from 0 to 3, reaching a maximum score of 21 points. For the specific assessment of the PSQI components, the first component refers to the subjective quality of sleep; the second shows sleep latency, analogous to the time it takes to start sleeping; the third assesses sleep duration, i.e. how long the individual stays asleep; The fourth is indicative of habitual sleep efficiency, by means of the relationship between the number of hours slept and the number of hours spent in bed, without necessarily being asleep; the fifth refers to sleep disorders; the sixth is related to the use of drugs for sleeping; the seventh refers to daytime sleepiness and also to disturbances during the day, touching on the variation in daily mood when carrying out everyday activities (Buysse *et al*., 1989; Bertolazi *et al*., 2009).

To assess excessive daytime sleepiness, we used the ESE, which has been tested and validated in Portuguese. In addition, clinical studies using polysomnography have shown that measurements above 10 on the ESS are directly related to sleep disorders (Johns, 1991; Kawakami *et al.,* 2004). The ESE presents instructions for applying scores to the situations addressed, such as the chance of

dozing off while sitting down, reading or watching television. The score is given according to the instructions: 0 corresponds to “would never doze off”, 1, to “small chance of dozing off”; 2, to “moderate chance of dozing off”; and 3, to “great chance of dozing off”.

2.4 VARIABLES

The study had two dependent variables: sleep quality and sleepiness. To categorize sleep quality, the scores given by the students were added together. Scores of 0-4 indicate good sleep quality, 5-10 indicate poor quality, and above 10 indicate sleep disturbance (Buysse *et al.,* 1989; Bertolazi *et al*., 2009).

To categorize sleepiness, the scores given by the students were added together. Scores from 0 to 10 indicate no sleepiness, from 10 to 16 points refers to mild sleepiness, from 16 to 20 points, moderate sleepiness, and 20 to 24 refers to severe sleepiness (Johns, 1991; Kawakami *et al*., 2004).

2.5 DATA ANALYSIS

The data was analyzed using *Statistical Package for Social Sciences* (SPSS), version 21.0. Descriptive data was calculated using absolute (n) and relative (%) frequencies. Bivariate analysis was carried out using Pearson’s chi-square test or Fisher’s exact test ($p<0.05$).

3 RESULTS

The questionnaire *online* received 118 responses. However, three participants indicated that they refused to take part. Thus, 115 Unesc dentistry students (97.4%) took part, of whom 29 (25.2%) were enrolled in the 1st year; 43 (37.4%) in the 2nd, and 43 (37.4%) in the 3rd.

Most of the undergraduate dentistry students taking part in the study were women (72.2%), aged 17-24 (80.0%), single (86.1%), had no children (90.4%) and worked (53.9%) (Table 1).

TABLE 1. SOCIODEMOGRAPHIC CHARACTERISTICS OF STARTING ACADEMICS IN THE DENTISTRY COURSE AT UNESC. COLATINA (ES), 2021.

VARIABLE	N	%
Year of graduation (N=115)		
1º	29	25.2
2º	43	37.4
3º	43	37.4
Sex (n=115)		
Man	32	27.8
Woman	83	72.2
Age (years) (n=115)		
17-24	92	80.0
25-32	11	9.6
33-41	12	10.4
Marital status (n=115)		
Married	14	12.2
Divorced	2	1.7
Single	99	86.1
Has children (n=115)		
No	104	90.4
Yes	11	9.6
Works (n=115)		
No	53	46.1
Yes	62	53.9

Source: Authors.

On the sleepiness scale, there was a higher proportion of students with no chance of falling asleep on the questions: ‘sitting idle in a public place (e.g. waiting room, cinema or meeting)’ (63.4%), ‘sitting talking to someone’ (79.1%), ‘behind the wheel in traffic for a few minutes’ (86.1%), and more likely to doze off, in the questions: ‘sitting calmly after lunch without having drunk alcohol’ (22.6%), ‘as a passenger in a car for an hour without stopping’ (24.3%) and ‘lying down resting in the afternoon when circumstances allow’ (42.6%) (Figure 2).

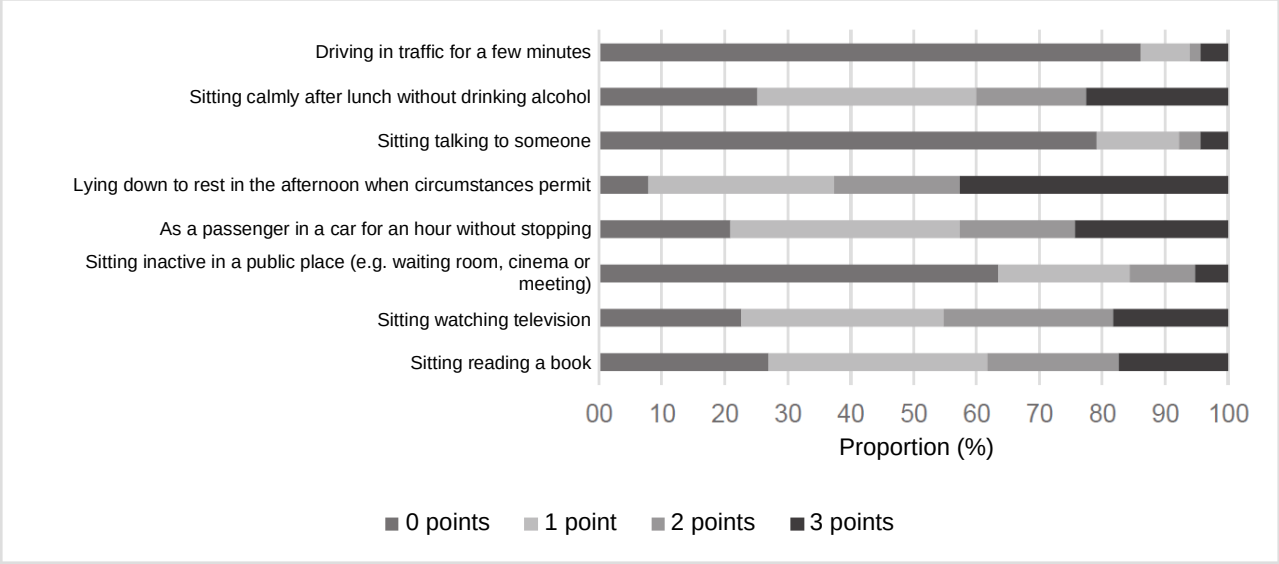

Figure 1. Distribution of the Pittsburgh Sleep Quality Index score among undergraduate dentistry students at Unesc. Colatina (ES), 2021.
Note: 0 points: No chance of dozing off; 1 point: Slight chance of dozing off; 2 points: Moderate chance of dozing off; 3 points: High chance of dozing off.
Source: Authors.

The distribution of the Pittsburgh Sleep Quality Index score ranged from 4 to 16 points (Figure 2). A total of 58.3% had poor sleep quality (between 5 and 10 points) and 39.1% had a sleep disorder (above 11 points) (Figure 2).

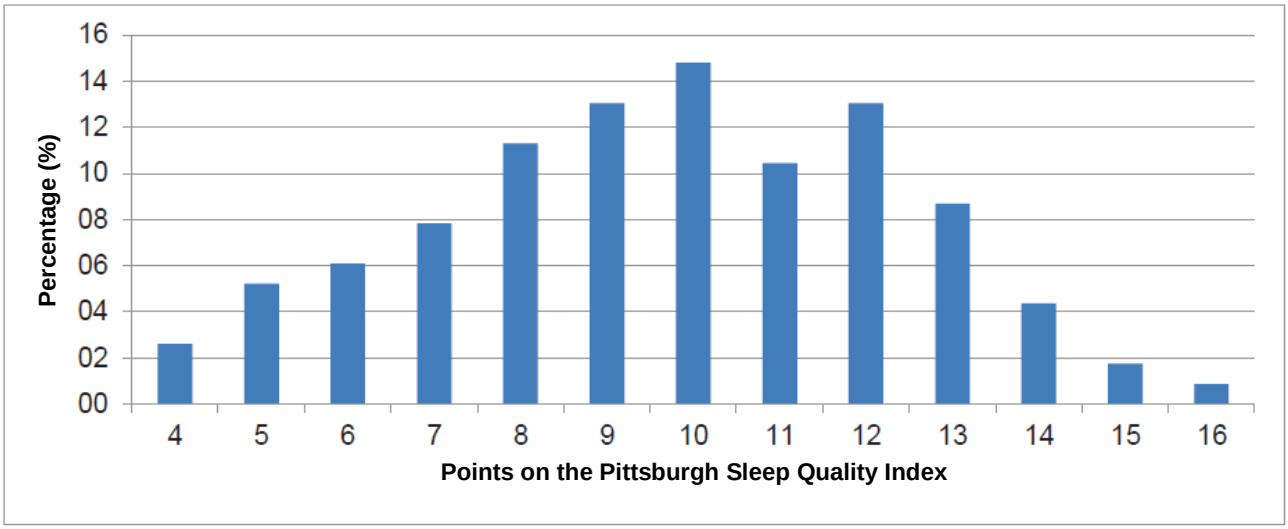

Figure 2. Distribution of the Pittsburgh Sleep Quality Index score among undergraduate dentistry students at Unesc. Colatina (ES), 2021
Source: Authors.

The distribution of Epworth Sleepiness Scale scores ranged from 2 to 32 points, with a higher proportion between 14-18 points (Figure 3), in which 88.7% had abnormal sleepiness (above 10 points, possibly pathological).

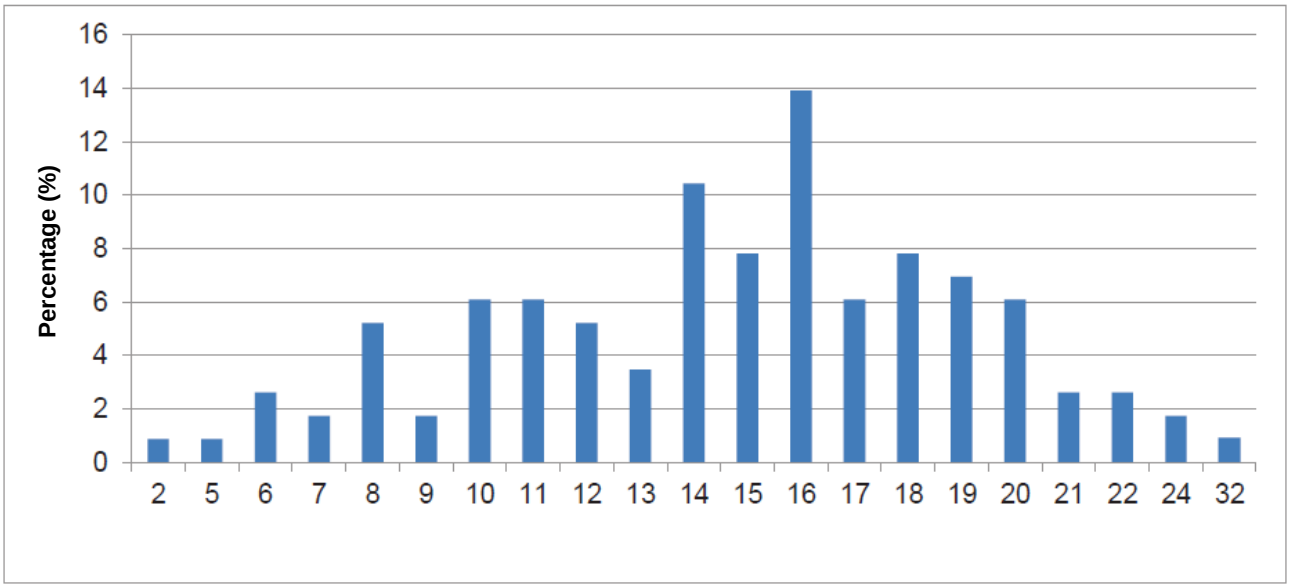

Figure 3. Distribution of scores on the Epworth Sleepiness Scale among beginning dentistry students at Unesc. Colatina (ES), 2021.
Source: Authors.

In the bivariate analysis, there was a difference between the year of graduation and sleep quality, with 2nd year students having a higher prevalence of sleep disorders and 3rd year students having a higher prevalence of poor sleep quality (p=0.033). There was no difference between sleepiness and the sociodemographic and academic variables assessed (p<0.05) (Table 2).

TABLE 2. BIVARIATE ANALYSIS OF SOCIODEMOGRAPHIC AND ACADEMIC CHARACTERISTICS WITH SLEEP QUALITY AND SLEEPINESS AMONG DENTISTRY STUDENTS AT UNESC. COLATINA (ES), 2021.

	Sleep quality (n=112)*			Drowsiness (n=110)**		
Variable	**Bad n (%)**	**Disorder n (%)**	**p-value*** **	**Media n (%)**	**Abnormal n (%)**	**p-value**** **
Sex						
Woman	45(67,2)	37(82,2)	0.078	7(87,5)	71(69,6)	0.283
Man	22(32,8)	8(17,8)		1(12,5)	31(30,4)	
Age (years)						
17-24	51(76,1)	38(84,4)	0.285	5(62,5)	83(81,4)	0.199
>24	16(23,9)	7(15,6)		3(37,5)	19(18,6)	
Year of graduation						

1º	10(29,9)	9(20,0)	0.033	1(12,5)	26(25,5)	0.642
2º	18(26,9)	23(51,1)		4(50,0)	37(36,3)	
3º	29(43,3)	13(28,9)		3(37,5)	39(38,2)	
Marital status						
Single	57(85,1)	41(91,1)	0.344	6(75,0)	90(88,2)	0.279
Married	10(14,9)	4(8,9)		2(25,0)	12(11,8)	
Has children						
Yes	9(13,4)	2(4,4)	0.117	2(25,0)	9(8,8)	0.142
No	58(86,6)	43(95,6)		6(75,0)	93(92,2)	
Work						
Yes	36(53,7)	25(55,6)	0.849	6(75,0)	54(52,9)	0.228
No	31(46,3)	20(44,4)		2(25,0)	48(47,1)	

*Participants in the 'Good' category were excluded.
** Participants in the 'Normal' category were excluded.
***Chi-square test ($p<0.05$).
****Fisher's exact test ($p<0.05$) (in the case of categories with fewer than 5 individuals).
Source: Authors.

4 DISCUSSION

This study found a high prevalence of poor sleep quality and abnormal sleepiness among undergraduate dentistry students during the pandemic period. Previous studies with dentistry students (Malheiros *et al.,* 2021) have shown poor sleep quality among academics from different health courses. One study showed that academics with greater sleep deprivation had greater demand for mental health care, greater self-perception of high anxiety/nervousness, sadness, affective isolation and a lower level of physical activity during the pandemic (Camargo *et al.,* 2022).

National and international studies have found that students get fewer hours of sleep per night (Medeiros *et al*, 2021; Lourenço; Viana, 2022; Martins; Ferreira; Valete, 2022) compared to the general adult population (seven to nine hours) (Poyares; Tufik, 2003). Furthermore, one study showed that even in the presence of changes in sleep quality, academics have a good perception of their sleep quality, which negatively interferes with identifying the problem (Lourenço; Viana, 2022). This result could be a reflection of an adult population that studies and works at the same time, which could already justify the shorter sleep time (Poyares; Tufik, 2003). In addition, when compared to other studies in an academic environment in Dentistry, it can be seen that this private institution has a higher proportion of individuals with a

higher age group, who are married and/or have children (Malheiros *et al*., 2021). However, it should be remembered that some individuals need fewer hours of sleep compared to others who require more hours (Poyares; Tufik, 2003).

Third-year undergraduate students had the highest proportion of poor sleep quality, while second-year students had more sleep disturbance than first-year students. A study of medical students found that students in the final years had a lower quality of sleep compared to those in the initial years, which may be due to the greater number of hours allocated to the specific training process and clinical practice activities, which are less present in the initial years of the course (Medeiros *et al*., 2021). In addition, these results can be explained by risk factors for insomnia and sleep disorders, such as older age, greater workload devoted to the dental training process, among other aspects (Poyares; Tufik, 2003), factors that were not studied or used as an adjustment in the statistical analysis in this study, but which need to be better studied in future studies.

This can be explained by the fact that these years had seen a return to classroom teaching, at laboratory and clinical level, at the time of data collection. In addition, anxiety and insecurity about biosafety procedures and operating techniques can be exacerbated even more during the pandemic, in an educational process of theoretical content in remote teaching, at a time of learning adaptation for both teachers and students. In addition, there is insecurity regarding the dental care of suspected/confirmed Covid-19 patients, and the possibility of contamination of the student themselves, as well as transmission to family members, friends and/or other users, at a time when there was no well-established clinical protocol (Huang *et al.,* 2020).

In this study, poor sleep quality may explain the high prevalence of abnormal sleepiness. This fact becomes relevant as there is evidence that sleep deprivation is associated with lower academic and professional performance among dentistry students (Danda *et al*., 2005; Malheiros *et al*., 2021), and should be considered in the academic environment. Thus, fear and anxiety about the academic activities to be carried out trigger sleep problems, and lack of sleep negatively interferes with performance in the course's practical activities (Malheiros *et al*., 2021).

This research reflects the importance of a comprehensive look at the quality of sleep of undergraduate dentistry students in the midst of the Covid-19 pandemic, given that it has contributed to the worsening of sleep quality in these students. In

addition, it will help teachers, managers and researchers to see the quality of this public's sleep beyond the confines of the institutions, also indicating the need for greater attention to other courses at the institution. It has been observed that the quality of sleep interferes with lifestyle (Martins; Ferreira; Valete, 2022), nutritional health (Lourenço; Viana, 2022), with low physical activity (Camargo *et al*., 2022), and these are forms of transdisciplinary action that need to be reinforced throughout the course.

The limitations of this study are related to the type of research, considering the fact that the variables were collected at a single moment in time, making it difficult to establish a temporal relationship between the events and to consider whether the relationship between them was causal or not, an aspect inherent to a cross-sectional study, which does not denote a follow-up of the participants over time. In this sense, it is not possible to determine whether sleep disturbances were present long before the study was carried out and their cause, which may or may not be due to academic aspects, aspects of the pandemic period or other factors. But in any case, its presence has been assessed, and therefore deserves attention, as it can trigger negative aspects in their academic performance.

In addition, although the *online* form of data collection can confer information bias, with the social distancing resulting from the Covid-19 pandemic, the *online* format has contributed to the advancement of scientific research, especially on topics related to the Covid-19 pandemic. Although the limited final sample size may partly explain the non-significance or borderline significance of some of the data, the study had a high response rate, especially considering that the Unesc Dentistry course is in its initial implementation phase and therefore only included students from the first to third year of Dentistry.

5 CONCLUSION

It was concluded that there was a high prevalence of poor sleep quality or sleep disturbance, as well as abnormal sleepiness. There was an association between poor sleep quality and more advanced years of schooling in beginning dentistry students at a private institution.

In this way, the study is able to highlight the need to develop preventive programs that guide students on the importance of regular sleep and sleep hygiene

measures, regardless of the factor causing these changes, in order to improve their academic performance, and also to help the role of the teacher as a facilitator of the teaching-learning process.

REFERENCES

ALHARBI, A.; ALHARBI, S.; ALQAIDI, S. Guidelines for dental care provision during the Covid-19 pandemic. **Saudi Dent Journal**, v. 32, n.4, 181-186, 2020.

ATALAYIN, C.; BALKIS, M.; TEZEL, H.; ONAL, B.; KAYRAK, G. The prevalence and consequences of burnout on a group of preclinical dental students. **Eur J Dent**., v. 9, n. 3, 356-363, 2015.

BERTOLAZI, A. N.; FAGONDES, S. C.; HOFF, L. S.; PEDRO, D.; BARRETO, S. S. M.; JOHNS, M. W. Portuguese-language version of the Epworth sleepiness scale: validation for use in Brazil. **J Bras Pneumol.** v. 35, n. 9, 877-883, 2009.

BITTENCOURT, L. R. A; SILVA, R. S; SANTOS, R. F; PIRES, M. L. N; MELLO, M. T. Sonolência excessiva. **Revista Brasileira de Psiquiatria**, 27(Supl.1):16-21, 2005.

BUYSSE, D. J; REYNOLDS 3rd, C. F; MONK, T. H; BERMAN, S. R; KUPFER, D. J. The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research. **J Psychiatr Res**, v. 28, n. 2, 193-213, 1989.

CAMARGO, L. C; CAMARGO, N. C.; SOUSA, R. B. N; COSTA, L. H. A; ALVES, A. G. P; ALVES, F. M; SILVA, M. S. Qualidade do sono em universitários no contexto da pandemia da Covid-19: um olhar multifatorial. **Psicol Saúde e Debate,** v. 8, n. 1, 97- 124, 2022.

CHANG, J.; YUAN, Y.; WANG, D. Mental health status and its influencing factors among college students during the epidemic of Covid-19. **Nan Fang Yi Ke Da Xue Que Bao**, v. 40, n. 2, 171-176, 2020.

DANDA, G. J. N; FERREIRA, G. R; AZENHA, M.; SOUZA, K. F. R.; BASTOS, O. Padrão do ciclo sono-vigília e sonolência excessiva diurna em estudantes de medicina. **J Bras Psiquiatria,** v. 54, n. 2, 102-6, 2005.
ERSAN, N.; FISEKÇIOGLU, E.; DÖLEKOGLU, S.; OKTAY, I.; ILGÜY, D. Perceived sources and levels of stress, general self-efficacy and coping strategies in clinical dental students. **Psychol Health Med**., v. 22, n. 10, 1175-85, 2017.

HSU, L. Y; CHIA, P. Y; LIM, J. F. The novel coronavírus (SARS-CoV-2) epidemic. **Ann Acad Med Singapore**, v. 49, n. 3,105-107, 2020.

HUANG, J. Z; HAN, M. F; LUO, T. D; REN, A. K; ZHOU, X. P. Mental health survey of 230 medical staff in a tertiary infectious disease hospital for Covid-19. **Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi,** v. 38, E001, 2020.

JOHNS, M. W. A new method for measuring daytime sleepiness: the Epworth sleepiness scale. **Sleep,** v. 14:540-545, 1991.

KAWAKAMI, N.; TAKATSUKA, N.; SHIMIZU, H. Sleep disturbance and onset of type 2 diabetes. **Diabetes Care,** v. 27, n. 1, 282-3, 2004.

LOURENÇO, M. T; VIANA, E. S. M. Avaliação da qualidade do sono e estado nutricional de estudantes universitários de uma instituição privada de ensino superior de Viçosa-MG, durante a Pandemia de Covid-19. **Brazilian Journal of Health Review**, v. 5, n. 2, 6012-21, 2022.

MAFLA, A. C; VILLA-TORRES, L.; POLYCHRONOPOULOU, A.; POLANCO, H.; MORENO-JUVINAO, V.; PARRA-GALVIS. D.; DURÁN, C.; VILLALOBOS, M. J; DIVARIS, K. Burnout prevalence and correlates amongst Colombian dental students: the STRESSCODE study. **Eur J Dent Educ**., v.19, n. 4, 242-50, 2015.

MALHEIROS, A. S; NASCIMENTO, N. E; MAIA-FILHO, E. M; DIBAI, D. B; NOVAIS, V. R; TAVAREZ, R. R. J; FERREIRA, M. C; SIMAMOTO JUNIOR, P. C. The impact of Covid-19 on sleep quality, degree of stress and routine study of dental students. **Research, Society and Development**, v. 10, n. 6, e51910616073, 2021.

MARTINS, J. M. S; FERREIRA, E. A. L; VALETE, C. O. S. Estilo de vida e qualidade do sono de estudantes de medicina em uma universidade pública, durante a pandemia da Covid-19: um estudo transversal. **Rev Med,** São Paulo, mar.-abr., v. 101, n. 2, e- 193941, 2022.

MEDEIROS, A. L. D.; LIMA, P. F; ALMONDES, K. M; DIAS JUNIOR, A. S; ROLIM, S. A. M; ARAÚJO, J. F. Hábitos de sono e desempenho em estudantes de medicina. **Revista Saúde do Centro de Ciências da Saúde,** v. 16, n.1, 49-54, 2002.

MULLER, M. R.; GUIMARÃES, S. S. Impacto dos transtornos do sono sobre o funcionamento diário e a qualidade de vida. **Estudos Psicologia**. (Campinas), v. 24, n. 4, 519-28, 2007.

NASCIMENTO, M. C.; VIEIRA, P. M. R.; CARVALHO, F. M. T.; FIGUEIRA, M. A. S.; GODOY, G. P. Percepção dos concluintes sobre a qualidade do curso noturno de Odontologia em instituição pública do nordeste brasileiro. **Revista ABENO,** v. 21, n. 1, e1044, 2021.

POYARES, D.; TUFIK, S. I Consenso Brasileiro de Insônia: introdução. **Hypnos: Revista do Sono**, São Paulo, Sociedade Brasileira de Sono, 2003.
REIMÃO, R. **Sono:** estudo abrangente. 2 ed. São Paulo: Atheneu; 1996.

RODRIGUES, M. I; FROTA, L. M. A; FROTA, M. M. A; TEIXEIRA, C. N. G. Fatores de estresse e qualidade de vida de estudantes de Odontologia. **Revista ABENO**, v. 19, n. 1, 49-57, 2019.

TEIXEIRA, L.; LOWDEN, A; DA LUZ, A. A.; TURTE, S. L.; VALENTE, D.; MATSUMURA, R. J.; PAULA, L. P.; TAKARA, M. Y.; NAGAI-MANELLI, R.;

FISCHER, F. M. Sleep patterns and sleepiness of working college students. **Work,** v. 41 Suppl 1:5550-2, 2012.