Original Article

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SLEEP QUALITY ANALYSIS IN INDIVIDUALS WITH ACUTE CORONARY SYNDROME

Caroline Inacio da Silva[1]
Manoel Victor Moura Silva[1]
Aline Batista Maurício[1]
Renan Alves Silva[2]
Leticia Fernanda Tavares Sousa de Oliveira[1]
Vinícius Batista Santos[1]
Alba Lúcia Bottura Leite de Barros[1]

[1]Universidade Federal de São Paulo, Escola Paulista de Enfermagem, Departamento de Enfermagem Clínica e Cirúrgica. São Paulo, São Paulo, Brasil.
[2]Universidade Federal de Campina Grande, Centro de Formação de Professores, Unidade Acadêmica de Enfermagem, Cajazeiras, Paraíba, Brasil.

ABSTRACT

Objective: to assess the prevalence of sleep disturbances and factors associated with sleep quality in patients with Acute Coronary Syndrome.
Method: this is a cross-sectional study, carried out in the Cardiology Unit of a public university hospital, from October 2021 to December 2022, with patients hospitalized for Acute Coronary Syndrome over 18 years old. Sociodemographic and clinical data were collected, and sleep quality was measured by the Pittsburgh Sleep Quality Index. Statistical association tests were performed, considering a value of $p<0.05$ as significant.
Results: a total of 96 patients were included, the majority being male, married and with a mean age of 63 years. The most prevalent comorbidities were hypertension, dyslipidemia and diabetes. It was identified that 92% had alteration in sleep quality and that the number of hours slept (p.<0.01), time to start sleep (p.0.03), sleep latency (p.<0.01), sleep duration (p.<0.01), habitual sleep efficiency (p.<0.02) and daytime sleepiness and daytime dysfunction (p.0.01) were significantly associated with sleep quality. There was a weak but significant correlation between age (r-0.22, p.0.02) and the presence of obstructive coronary lesions (r-0.23; p.0.02) with the Pittsburgh Sleep Quality Index score.
Conclusion: most patients with acute coronary syndrome were classified as poor sleepers, therefore educational interventions to promote sleep should be performed in this population to reduce cardiovascular risk.

DESCRIPTORS: Acute coronary syndrome. Sleep quality. Pittsburgh scale. Cardiovascular risk factor. Nursing.

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ANÁLISE DA QUALIDADE DO SONO EM INDIVÍDUOS COM SÍNDROME CORONARIANA AGUDA

RESUMO

Objetivo: avaliar a prevalência de distúrbios do sono e os fatores associados à qualidade do sono em pacientes com Síndrome Coronariana Aguda.
Método: estudo transversal, realizado na Unidade de Cardiologia de um hospital público universitário, no período de outubro de 2021 a dezembro de 2022, com pacientes hospitalizados por Síndrome Coronariana Aguda maiores de 18 anos. Foram coletados dados sociodemográficos e clínicos, e a qualidade do sono foi mensurado pelo Índice de Qualidade do Sono de Pittsburgh. Testes estatísticos de associação foram realizados, sendo considerado um valor de p<0,05 como significativo.
Resultados: foram incluídos 96 pacientes, sendo a maioria do sexo masculino, casados e com idade média de 63 anos. As comorbidades mais prevalentes foram hipertensão arterial sistêmica, dislipidemia e diabetes. Foi identificado que 92% tinham alteração na qualidade do sono e que a quantidade de horas dormidas (p.<0,01), o tempo para iniciar o sono (p.0,03), a latência do sono (p.<0,01), duração do sono (p.<0,01), eficiência do sono (p.<0,02) e sonolência diurna e disfunção diurna (p.0,01) apresentaram associação significativa com a qualidade do sono. Houve correlação fraca, porém, significativa entre a idade (r-0,22, p.0,02) e a presença de lesões obstrutivas coronarianas (r-0,23; p.0,02) com o escore do *Pittsburgh Sleep Quality Index*.
Conclusão: a maioria dos pacientes com Síndrome Coronariana Aguda foram classificados como maus dormidores, portanto intervenções educativas para promoção do sono devem ser realizadas nesta população para a redução no risco cardiovascular.

DESCRITORES: Síndrome coronariana aguda. Qualidade do sono. Escala de Pittsburgh. Fator de risco cardiovascular. Enfermagem.

ANÁLISIS DE LA CALIDAD DEL SUEÑO EN INDIVIDUOS CON SÍNDROME CORONARIO AGUDO

RESUMEN

Objetivo: evaluar la prevalencia de trastornos del sueño y factores asociados a la calidad del sueño en pacientes con Síndrome Coronario Agudo.
Método: estudio transversal, realizado en la Unidad de Cardiología de un hospital universitario público, de octubre de 2021 a diciembre de 2022, con pacientes hospitalizados por Síndrome Coronario Agudo mayores de 18 años. Se recogieron datos sociodemográficos y clínicos, y la calidad del sueño se midió mediante el Índice de Calidad del Sueño de Pittsburgh. Se realizaron pruebas de asociación estadística, considerando significativo un valor de p<0,05.
Resultados: se incluyeron 96 pacientes, la mayoría hombres, casados y con una edad media de 63 años. Las comorbilidades más prevalentes fueron hipertensión arterial sistémica, dislipidemia y diabetes. Se identificó que el 92% presentaba cambios en la calidad del sueño y que la cantidad de horas dormía (p.<0,01), tiempo de inicio del sueño (p.0,03), latencia del sueño (p.<0,01), duración del sueño (p.<0,01), eficiencia del sueño (p.<0,02) y somnolencia diurna y disfunción diurna (p.0,01) se asociaron significativamente con la calidad del sueño. Hubo una correlación débil pero significativa entre la edad (r-0,22, p.0,02) y la presencia de lesiones coronarias obstructivas (r-0,23; p.0,02) con el puntaje del *Pittsburgh Sleep Quality Index*.
Conclusión: la mayoría de los pacientes con Síndrome Coronario Agudo fueron clasificados como insomnes, por lo que se deben realizar intervenciones educativas para promover el sueño en esta población para reducir el riesgo cardiovascular.

DESCRIPTORES: Síndrome coronario agudo. Calidad de sueño. Escala Pittsburgh. Factor de riesgo cardiovascular. Enfermería.

INTRODUCTION

Diseases of the circulatory system or cardiovascular diseases (CVD) are a group of illnesses that affect the heart and blood vessels; among them, we have coronary artery disease (CAD), cerebrovascular disease, peripheral arterial disease, rheumatic heart disease, congenital heart disease, deep vein thrombosis and pulmonary embolism[1]. In Brazil, it is estimated that, in 2019, there were 171,246 deaths attributed to CAD, representing 12% of all deaths in the country and 43% of deaths caused by CVD[2].

CAD is caused, in most cases, by total or partial obstruction of the coronary artery caused by atherosclerosis, being a chronic inflammatory disease of the arteries[3], and one of the manifestations of CAD is Acute Coronary Syndrome (ACS)[3–5].

ACS deals with a set of ischemic manifestations of the myocardial musculature due to complete or partial occlusion of the coronary arteries. ACS manifests itself in three clinical forms: unstable angina (UA), acute myocardial infarction without ST-elevation myocardial infarction (STEMI) and acute myocardial infarction with ST-elevation myocardial infarction (STEMI). They are caused by the instability of the atherosclerotic plaque, and this rupture of the plaque is related to the degree of exposure to risk factors, especially emotional ones, such as anxiety, stress and sleep deficit[3–5].

In recent years, studies have shown that sleep quality has been directly related to the development of several non-communicable chronic diseases such as CAD[6–10]. According to The Sleep Heart Study, which aimed to determine the association between insufficient sleep conditions, including insomnia, poor quality sleep and short sleep duration with the incidence of CVD and mortality in the general population, it was identified that these sleep conditions increase the risk of developing CVD by 29%[10].

In a study carried out with 27.935 patients, it was observed that those classified as poor sleepers were more likely to develop CAD and, when compared to total sleep time, those who slept less than 5 hours were 1.8 times more likely to develop CAD[7].

A meta-analysis carried out with 15 studies with a total of 160,897 individuals demonstrated a positive association between difficulty initiating sleep (Relative Risk 1.27), difficulty in maintaining sleep (Relative Risk 1.11) and perception of sleep as non-restorative (Relative Risk 1.18) with the risk of cardio and cerebrovascular events, taking into account a 95% confidence interval. These data showed a higher relative risk in women when compared to men[9]. Another systematic review study with meta-analysis also demonstrated, in the inclusion of 74 studies with 3,340,648 participants, that sleep pattern disturbance was associated with a 1.44-fold increase in the chance of developing CAD, but without a significant association with mortality[9].

One can also highlight the consequences of poor sleep quality on health, such as emotional labilities, changes in mood and judgment, tiredness, fatigue, increased chance of errors in work activities, reduced cognitive skills, reduced performance of students, increased risk of traffic accidents, increased chance of accidents in the workplace and even changes in moral judgments according to a narrative review of the literature on the global consequences of sleep disturbances[11].

Given the data shown above and the importance of analyzing sleep quality in the population of patients with CAD in the Brazilian population, this study aimed to analyze sleep quality in patients with ACS and the sociodemographic and clinical factors associated with sleep quality.

METHOD

This is a cross-sectional study guided by the STrengthening the Reporting of OBservational studies in Epidemiology (STROBE)[12]. Data collection was carried out in the cardiology units (Cardiology IU, Cardiology ICU) and in the hemodynamics service of a large public university hospital in the city of São Paulo, linked to the *Universidade Federal de São Paulo*, from October 2021 to December 2022.

Patients hospitalized for ACS, over 18 years of age, of both genders, who did not present clinical signs of severe acute ventricular dysfunction (acute pulmonary edema or cardiogenic shock) and/or ejection fraction less than or equal to 40% during hospitalization were included. Patients with dementia or neuropsychiatric diseases were excluded.

Sociodemographic characteristics, such as sex, age, religion, education, ethnicity, monthly family income in terms of minimum wages, type of housing, person responsible for medication and employment situation, were assessed through an interview with patients. Clinical variables were collected from medical records, such as the admission medical diagnosis, presence of comorbidities, lifestyle habits (smoking and alcohol consumption), number of coronary arteries with atherosclerotic plaque and number of coronary arteries with obstruction above 70%.

Sleep quality was assessed by the Pittsburgh Sleep Quality Index-(PSQI), translated and validated for Portuguese[13]. This instrument consists of assessing sleep quality in the last month, consisting of 19 self-assessment questions and five questions that are answered by their roommates and which are categorized into 7 components: subjective sleep quality; sleep latency; sleep duration; habitual sleep efficiency; sleep disturbances; use of sleeping medication; and daytime dysfunction. Each question is scored from 0 to 3 points, and their sum generates a global score from 0 to 21 points, with a higher score indicating worse sleep quality. A total score greater than five indicates that an individual has poor sleep quality[13–14].

Patients admitted for ACS were approached by the research team of this project. The Informed Consent Form was sent, and those who agreed to participate in the research completed the data collection instruments complemented by the analysis of patients' chart.

This project was submitted to the Research Ethics Committee (REC) of the *Universidade Federal de São Paulo*, meeting the scientific requirements in the treatment of research participants.

Statistics software, version 25.0 (IBM Corp., Armonk, NY, USA), was used for data analysis. Descriptive statistical analysis was performed to characterize the total sample. Qualitative measures were expressed through absolute (n) and relative (%) frequencies, and quantitative measures by calculating means, medians, standard deviations (SD) and interquartile range (IQR), depending on the distribution of data verified by the Kolmogorov-Smirnov test. The 95% Confidence Intervals were calculated using the bias-corrected and accelerated method, based on 2000 bootstrap replications.

To assess the associations between qualitative variables, the likelihood ratio test was used, and between quantitative and qualitative variables, the One-Way ANOVA test or the Mann-Whitney Non-Parametric u test, and between quantitative variables, Spearman's correlation was applied. It was considered significant when p-values lower than 0.05 were reached.

RESULTS

A total of 96 patients were included in this study, predominantly male, mean age 63 years, married, own house and mean family income of 1 to 3 wages, white ethnicity, incomplete primary education, retired, with the patient being responsible for medication, see Table 1.

Table 1 - Sociodemographic characterization data and factors associated with sleep quality. São Paulo, SP, Brazil, 2022 (n=96).

Indicators	Total	Good sleeper	Poor sleeper	p-value
Sex n(%)				
Male	70 (72)	6 (8.5)	64 (91.5)	0.94*
Female	26 (27)	2 (8.0)	24 (92.0)	
Mean age (SD)	63.42 (9.7)	63.29 (9.82)	64.87 (8.75)	0.61†
Ethnicity n(%)				
White	46 (47.9)	7 (15.2)	39 (84.8)	
Brown	30 (31)	1 (3.3)	29 (96.7)	0.07*
Black	18 (18)	0	18 (100)	
Yellow	2 (3.9)	0	2 (100)	
Living n(%)				
With partner	53 (55.2)	6 (11.3)	47 (88.7)	0.29*
No partner	43 (44.8)	2 (5.0)	41 (95.0)	
Type of housing n(%)				
Rented	23 (23.9)	0	21 (100)	
Assigned	3 (3.13)	0	3 (100)	0.08*
Own	70 (72.92)	8 (11.1)	64 (88.9)	
Family income n(%) ‡				
Up to 3 minimum wages	4 6	4 (8.7)	42 (91.3)	
3 to 7 minimum wages	41	4 (9.8)	37 (90.2)	0.43*
More than 7 minimum wages	9	0	8 (100)	
Education n (%)				
Illiterate	3 (3.13)	0	3 (100)	
Elementary school	56 (58.3)	6 (10.7)	50 (89.3)	0.77*
High school	21 (21.9)	1 (4.8)	20 (95.2)	
Higher education	16 (16.7)	1 (6.3)	15 (93.8)	
Labor status n(%)				
Retired	44 (45.8)	5 (11.4)	39 (88.6)	
Employed	41 (42.7)	3 (8.3)	38 (91.7)	0.29*
Unemployed	11 (11.4)	0	11 (100)	
Responsible for medication				
Patient	70 (72.9)	5 (7.1)	65 (92.9)	
Partner	7 (7.3)	1 (14.3)	6 (85.7)	0.66*
Family member	5 (5.2)	0	5 (100)	
Does not use medication	14 (14.6)	2 (14.3)	12 (85.7)	

*Likelihood ratio; † Student ‘s t test for independent samples; ‡MW effective in 2022 of R$ 1,212.00 or US$220.36.

From a clinical point of view, patients were mainly admitted for STEMI (43.8%), and the main comorbidities were hypertension (79.2%), dyslipidemia (45.8%) and Diabetes Mellitus (35.4%). There was a predominance of active smokers (39.6%) and former smokers (20.8%) and patients who did not routinely drink alcohol (55%), as shown in Table 2.

With regard to sleep, most patients slept after 9 p.m. (62 patients, 64%), took a median of 30 minutes to fall asleep (IQR 102.5) and had a median of 6 hours of sleep (IQR 2,8 hours).

Table 2 - Clinical characterization data and lifestyle habits and factors associated with sleep quality. São Paulo, SP, Brazil, 2022 (n=96).

Clinical data	Total	Good sleeper	Poor sleeper	p-value
Comorbidities				
Hypertension	71 (79.2)	6 (7.9)	65 (92.1)	0.66 †
Diabetes Mellitus	34 (35.4)	3 (8.8)	31 (91.2)	0.65 †
Dyslipidemia	44 (45.8)	4 (9.1)	40 (90.9)	0.80 †
Renal insufficiency	9 (9.4)	1 (11.1)	8 (88.9)	0.59 †
Stroke	8 (8.3)	1 (12.5)	7 (87.5)	0.61 †
Cardiac insufficiency	2 (2.1)	0	2 (100)	0.68 †
Life habits				
Alcohol use				
Yes	30 (31)	1 (3.3)	29 (96.7)	0.55 †
No	52 (54.1)	6 (11.4)	46 (88.6)	
Former alcoholic	14 (14)	1 (7.7)	13 (92.3)	
Smoker				
Active	38 (39.6)	3 (7.9)	35 (92.1)	0.47 †
Former smoker	20 (20.8)	3 (15)	17 (85)	
Never smoked	38 (39.6)	2 (5.3)	36 (94.7)	
Admission reason				
Unstable angina	24 (25)	1 (4.2)	23 (95.8)	0.69 †
With ST-elevation myocardial infarction	30 (31.3)	3 (10)	27 (90)	
Without ST-elevation myocardial infarction	42 (43.8)	4 (9.5)	38 (90.5)	
Number of obstructive lesions on coronary angiography Mean (SD) *	2.4 (1.78)	3.0 (1.67)	2.33 (1.50)	0.35 ‡
Number of arteries with obstruction >70% Mean (SD) *	1.7 (0.85)	1.77 (0.85)	2.00 (0.89)	0.53 ‡

* SD - standard deviation; † likelihood ratio. ‡ Student's t test for independent samples.

In the analysis of the instrument's total score, a mean score of 9.90 points was obtained, with 8 patients (8%) being classified as good sleep quality, and 88 patients (92%) as poor sleep quality.

Table 3 shows the average score of each assessed component, with the group classified as poor sleepers having higher median scores in components related to subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency and sleepiness, and daytime dysfunction.

When analyzing sleep time with sleep quality, we found that patients who were good sleepers slept a median of 8.0 hours a day, and poor sleepers a median of 5.0 hours, with a statistically significant difference (p<0 .01), and that poor sleepers took longer to sleep, as shown in Table 3.

Considering the statistical tests applied, no variable associated with sleep quality was identified, as shown in Tables 1 and 2, however, when assessing the correlation between age and the total score of PSQI, a negative, significant, but weak correlation was observed between age and instrument score, i.e., the worse the sleep quality, the lower the identified age (r-0.223; p.0.02), demonstrating that sleep quality was worse in younger people.

A weak, negative, but significant correlation was also identified between the number of obstructive coronary lesions and the PSQI score, i.e., the worse sleep quality, the smaller the number of arteries with chronic obstructions above 70% (r- 0.23; p.0.02).

Table 3 - Mean score of the Pittsburgh Sleep Scale Quality Index components comparing good and poor sleepers. São Paulo, SP, Brazil, 2022 (n=96).

	Total sample* Med* (IQR) †	**Good sleeper** Med* (IQR) †	**Poor sleeper** Med* (IQR) †	**p-value ‡**
Time to sleep (minutes)	30.0 (102)	12.5 (13.8)	30.0 (110)	0.03
Sleep hours (hours)	6.0 (2.8)	8.0 (1.8)	5.0 (3.0)	<0.01
C1 - Subjective sleep quality	1.0 (1.0)	0.5 (1.0)	1.0 (1.0)	<0.01
C2 - Sleep latency	2.0 (2.0)	0.5 (1.0)	2.0 (2.0)	<0.01
C3 - Sleep duration	2.0 (2.0)	0 (0.8)	2.0 (2.0)	<0.01
C4 - Habitual sleep efficiency	2.0 (3.0)	0 (0.8)	2.5 (3.0)	<0.02
C5 - Sleep disturbances	2.0 (1.0)	1.0 (1.0)	2.0 (1.0)	0.14
C6 - Use of sleeping medication	0	0 (0)	0 (0.8)	0.17
C7 - Sleepiness and daytime dysfunction	1.0 (2.0)	0 (0.8)	1.0 (2.0)	0.01
Total score	**10.0 (5.0)**	**3.0 (1.0)**	**10.0 (4.8)**	**<0.01**

*Med - median; † ** IQR - interquartile range; ‡, Mann-Whitney U test.

DISCUSSION

Sleep is a multidimensional biobehavioral process that includes several components, such as sleep duration, sleep continuity, rhythmicity, regularity and satisfaction[15]. Many consequences are described due to poor sleep quality, such as worsening quality of life, exhaustion, daytime dysfunction, altered mood, excessive sleepiness and fatigue. Therefore, sleep should be considered a functional health pattern to be assessed by nurses so that measures can be implemented to improve this health functionality[11].

Participant sociodemographic and clinical characterization included in the study is consistent with the profile of patients hospitalized for ACS. In other words, most patients are male, aged over 63 years and had the presence of comorbidities, such as hypertension, DM and DLP, and this profile, as explained in the literature, is directly related to exposure to risk factors for the development of atherosclerosis[16]. Another study, in which we identified similarity with the profile of our patients, was carried out in Brazil, which assesses the prevalence of nursing diagnosis “Disturbed sleep pattern” in a sample of 75 patients hospitalized for ACS[17].

The profile of patients in our study is similar to that of patients included in another study, which aimed to assess sleep quality in patients with coronary artery disease. This study carried out in China identified a lower frequency of poor sleepers (47.1%), and this divergence may be related to the cut-off point established for the diagnosis of poor sleepers and also to the inclusion in this study of patients with chronic CAD, because, in the present study, we only included patients hospitalized for ACS, which are more associated with states of anxiety and stress, as previously discussed[18].

When we compared our findings regarding the prevalence of sleep in patients hospitalized for ACS in Brazil, we identified similarities in the frequency of poor sleepers, where, in a study with 113 patients, a prevalence of 71.7% of poor sleepers was identified, but with a median in the total score lower than that of this study. Also in this study, it was identified that women, patients with Diabetes Mellitus and increased waist circumference were associated with higher PSQI scores, data not identified in this study[19].

As previously mentioned, our findings identified a high prevalence of poor sleepers. ACS is the acute presentation of CAD, showing a high relationship with the state of stress and anxiety, since these situations increase the risk of shearing of the atherosclerotic plaque, culminating in partial or total thrombosis of the coronary artery and, consequently, loss of cardiomyocytes, and when associated

with worsening sleep quality, this risk increases by increasing inflammatory, sympathetic, autonomic, and metabolic activation[20–23].

The median number of hours slept was statistically lower in the group of poor sleepers when compared to good sleepers, and this data is associated with the risk of cardiovascular events. In a meta-analysis, it was identified that people who sleep less than 7 hours or more than 9 hours have a higher risk of cardiovascular events[24]. This data also corroborates another systematic review with more than 50,000 participants, where it was shown that people with short sleep duration and poor sleep quality have higher levels of interleukin 6 and C-reactive protein, which may increase the risk of coronary atherosclerotic plaque injury[25].

It was identified that age influences sleep quality, i.e., younger people tend to sleep worse, but this finding disagrees with most studies, where it is identified that sleep quality worsens with age, due to low energy expenditure of older people and greater sleep fragmentation after retirement[26].

Another association identified in this study was that patients with a lower PSQI score had a greater number of obstructed coronary arteries; however, when correlating this variable with sleep quality classification, we did not identify this association. This non-significant finding with the sleep quality classification was also identified in another study, which did not associate sleep quality with the presence of calcified lesions in the coronary artery, in a sample of 512 women, from the Women's Health Across the Nation[27].

It was also identified that poor sleepers had worse medians in relation to subjective sleep quality, latency, duration and efficiency and greater sleepiness and daytime dysfunction, demonstrating that poor sleep quality impacts on several sleep components and this alteration can impact global mortality and cardiovascular disease, as demonstrated in a study with 607 patients[18].

With the data obtained regarding the high prevalence of sleep disturbances in patients hospitalized for ACS, the need for public and institutional policies that aim to guide the population about the importance of sleep for preventing the development of CVD, especially CAD, is evident[15]. These measures should include health education, to control cardiovascular risk factors, and education, to promote sleep, mainly encouraging the adult and older adult population to take non-pharmacological measures such as: mindfulness; relaxation techniques with music; stimulus for physical activity; aromatherapy; incorporating healthy habits to improve sleep quality; avoiding exposure to light; reduction of food consumption before bed; and warm to hot bath before bed[28–29].

This study had some limitations that should be analyzed for future studies. Data collection was carried out in a single center and in a cross-sectional manner, therefore, to increase the degree of data generalization, longitudinal studies and in several centers should be carried out with a more representative sample. Due to the low frequency of poor sleepers, statistical calculations were performed using the bootstrap resampling method in order to reduce statistical biases. Another limitation identified in this study was the lack of analysis of depression and anxiety that could explain the main construct of this study.

CONCLUSION

The vast majority of patients with ACS had changes in sleep quality, and the components with the worst scores associated with poor quality were subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleepiness and daytime sleep dysfunction. It was identified that people with poor sleep quality slept less time and took longer to sleep, and people with higher PSQI scores were younger and had fewer coronary obstructive lesions.

The high prevalence of sleep disturbances in the studied population justifies the need to implement educational measures to improve this risk factor. Therefore, the multidisciplinary team should include educational interventions using different types of technologies to raise public awareness about healthy sleep promotion.

REFERENCES

1. Tsao CW, Aday AW, Alçmarzooq ZI, Alonso A, Beaton AZ, Bittencourt MS, et al. Heart Disease and Stroke Statistics - 2022 Update: A Report from the American Heart Association. Circulation [Internet]. 2022 [cited 2022 Oct 20];145(8):153-639. Available from: https://doi.org/10.1161/CIR.0000000000001052
2. Oliveira GMM, Brant LCC, Polanczyk CA, Malta DC, Biolo A, Nascimento BR, et al. Estatística Cardiovascular. Arq Bras Cardiol [Internet]. 2022 [cited 2022 Nov 20];118(1):115-373. Available from: https://doi.org/10.36660/abc.20211012
3. Ibanez B, James S, Agewall S, Antunes MJ, Bucciarelli-Ducci C, Bueno H, et al. ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation. Eur Heart J [Internet]. 2018 [cited 2022 Nov 20];39:119-77. Available from: https://doi.org/10.1093/eurheartj/ehx393
4. Précoma DB, Oliveira GMM, Simão AF, Dutra OP, Coelho OR, Izar MCO, et al. Updated Cardiovascular Prevention Guideline of the Brazilian Society of Cardiology. Arq Bras Cardiol [Internet]. 2019 [cited 2022 Nov 18];113(4):787-891. Available from: https://doi.org/10.5935/abc.20190204
5. Fisseren FKJ, Mach F, Smulders YM, Carballo D, Koskinas KC, Back M, et al. ESC Guidelines on cardiovascular disease prevention in clinical practice. Eur Heart J [Internet]. 2021 [cited 2022 Nov 10];42(34):3227-337. Available from: https://doi.org/10.1093/eurheartj/ehab484
6. Madsen MT, Huang C, Zangger G, Zwisler ADO, Gögenur I. Sleep disturbances in patients with coronary heart disease: a systematic review. J Clin Sleep Med [Internet]. 2019 [cited 2022 Nov 10];15(3):489-504. Available from: https://doi.org/10.5664/jcsm.7684
7. Zhang B, Wang Y, Liu X, Zhai Z, Sun J, Yang J, et al. The association of sleep quality and night sleep duration with coronary heart disease in a large-scale rural population. Sleep Med [Internet]. 2021 [cited 2022 Oct 20];87:233-40. Available from: https://doi.org/10.1016/j.sleep.2021.09.013
8. Carneiro ME, Oliveira AV. The association between insomnia symptoms and risk of cardio-cerebral vascular events: a meta-analysis of prospective cohort studies. Rev Port Med Geral Fam [Internet]. 2018 [cited 2022 Nov 10];34(3):168-9. Available from: https://www.researchgate.net/publication/328092652_Associacao_entre_sintomas_de_insonia_e_risco_de_eventos_cardio-cerebrovasculares_uma_meta-analise_de_estudos_de_coorte_prospetivos
9. Kmok CS, Kontopantelis E, Kuligowski G, Gray M, Gale CP, Peat GM, et al. Self-reported sleep duration and quality and cardiovascular disease and mortality: a dose-response meta-analysis. J Am Heart Assoc [Internet]. 2018 [cited 2022 Nov 10];7(15):008552. Available from: https://doi.org/10.1161/JAHA.118.008552
10. Bertisch SM, Pollock BD, Mittleman MA, Buysse DJ, Bazzano LA, Gottlieb DJ, et al. Insomnia with objective short sleep duration and risk of incident cardiovascular disease and all-cause mortality: Sleep Heart Health Study. Sleep [Internet]. 2018 [cited 2022 Nov 15];41(6):47. Available from: https://doi.org/10.1093/sleep/zsy047
11. Chattu VK, Manzar MD, Kumary S, Burman D, Spence DW, Pandi-Perumal SR. The global problem of insufficient sleep and its serious public health implications. Healthcare [Internet]. 2019 [cited 2022 Nov 15];7(1):1. Available from: https://doi.org/10.3390/healthcare7010001
12. Malta M, Cardoso LO, Bastos FI, Magnanini MMF, Silva, CMFP. STROBE initiative: guidelines on reporting observational studies. Rev Saude Publica [Internet]. 2010 [cited 2022 Oct 10];44(3):559-65. Available from: https://doi.org/10.1590/S0034-89102010000300021

13. Buysse DJ, Reynolds CF, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh sleep quality index: a new instrument for psychiatric practice and research. Psychiatry Res [Internet]. 1989 [cited 2022 Oct 20];28:193-213. Available from: https://doi.org/10.1016/0165-1781(89)90047-4

14. João KADR, Becker NR, Jesus SN, Martins RIS. Validation of the Portuguese version of the Pittsburgh Sleep Quality Index-(PSQI-PT). Psychiatry Res [Internet]. 2017 [cited 2022 Oct 10];247:225-9. Available from: https://doi.org/10.1016/j.psychres.2016.11.042

15. Nelson KL, Davis JE, Corbett CF. Sleep quality: an evolutionary concept analysis. Nurs Forum [Internet]. 2022 [cited 2022 Nov 15];57:144-51. Available from: https://doi.org/10.1111/nuf.12659

16. Santos AJS, Souza CSG, Ázara JR. Profile of patients admitted to hospital with diagnosis of acute coronary syndrome. Rev Soc Bras Clin Med [Internet]. 2018 [cited 2022 Oct 15];16(2):104-7. Available from: https://www.sbcm.org.br/ojs3/index.php/rsbcm/article/view/341/309

17. Mazoli JPB, Correia MDL, Botelho ML, Begnami NES, Costa PCP, Duran ECM. Diagnostic accuracy of the disturbed sleep pattern in patients with acute coronary syndrome. Int J Nurs Knowl [Internet]. 2020 [cited 2022 Nov 10];31(2):101-8. Available from: https://doi.org/10.1111/2047-3095.12252

18. Cheng M, Lei X, Zhu C, Hou Y, Lu M, Wang X, et al. The association between poor sleep quality and anxiety and depression symptoms in Chinese patients with coronary heart disease. Psychol Health Med [Internet]. 2022 [cited 2022 Nov 10];27(6):1347-56. Available from: https://doi.org/10.1080/13548506.2021.1874440

19. Andrechuk CRS, Ceolim MF. Sleep quality in patients with acute myocardial infarction. Texto Contexto Enferm [Internet]. 2015 [cited 2022 Nov 15];24(4):1104-11. Available from: https://doi.org/10.1590/0104-0707201500002970014

20. Marin TS, Walsh S, May N, Jones M, Gray R, Muir-Cochrane E, et al. Screening for depression and anxiety among patients with acute coronary syndrome in acute care settings: a scoping review. JBI Evid Synth [Internet]. 2020 [cited 2022 Nov 10];18(9):1932-69. Available from: https://doi.org/10.11124/JBISRIR-D-19-00316

21. Martica HH, Brindle RC, Buysse DJ. Sleep and cardiovascular disease: emerging opportunities for psychology. Am Psychol [Internet]. 2018 [cited 2022 Nov 10];73(8):994-1006. Available from: https://doi.org/10.1037/amp0000362

22. Yu J, Rawtaer I, Fam J, Jiang MJ, Feng L, Kua EH, et al. Sleep correlates of depression and anxiety in an elderly Asian population. Psychogeriatrics [Internet]. 2016 [cited 2022 Nov 10];16(3):191-5. Available from: https://doi.org/10.1111/psyg.12138

23. Irwin MR, Olmstead R, Carrol JE. Sleep disturbance, sleep duration, and inflammation: a systematic review and meta-analysis of cohort studies and experimental sleep deprivation. Biol Psychiatry [Internet]. 2016 [cited 2022 Nov 10];80(1):40-52. Available from: https://doi.org/10.1016/j.biopsych.2015.05.014

24. Kwok CS, Kontopantelis E, Kuligowski G, Gray M, Muhyaldeen A, Gale CP, et al. Self-reported sleep duration and quality and cardiovascular disease and mortality:a dose-responsemeta-analysis. JAHA [Internet]. 2018 [cited 2022 Nov 10];7(5):8552. Available from: https://doi.org/10.1161/jaha.118.008552

25. Hublin C, Lehtovirta M, Partinen M, Koskenvuo M, Kaprio J. Changes in sleep quality with age-a 36-year follow-up study of Finnish working-aged adults. J Sleep Res [Internet]. 2018 [cited 2022 Oct 15];27(4):12623. Available from: https://doi.org/10.1111/jsr.12623

26. Matthews KA, Everson-Rose SA, Kravitz HM, Lee L, Janssen I, Sutton-Tyrrell K. Do reports of sleep disturbance relate to coronary and aortic calcification in healthy middle-aged women? Study of women's health across the nation. Sleep Med [Internet]. 2013 [cited 2022 Nov 10];14(3):282-7. Available from: https://doi.org/10.1016/j.sleep.2012.11.016

27. MacLeod S, Musich S, Kraemer S, Wicker E. Practical non-pharmacological intervention approaches for sleep problems among older adults. Geriatr Nurs [Internet]. 2018 [cited 2022 Nov 12];39(5):506-12. Available from: https://doi.org/10.1016/j.gerinurse.2018.02.002

28. Feng F, Zhang Y, Hou J, Cai J, Jiang Q, Lix X, et al. Can music improve sleep quality in adults with primary insomnia? A systematic review and network meta-analysis. Int J Nurs Stud [Internet]. 2018 [cited 2022 Nov 15];77:189-96. Available from: https://doi.org/10.1016/j.ijnurstu.2017.10.011

29. Santos MAD, Conceição APD, Ferretti-Rebustini REL, Ciol MA, Heithkemper MM, Cruz DALMD. Non-pharmacological interventions for sleep and quality of life: a randomized pilot study. Rev Lat Am Enfermagem [Internet]. 2018 [cited 2022 Nov 10];26:3079. Available from: https://doi.org/10.1590/1518-8345.2598.3079

NOTES

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CONTRIBUTION OF AUTHORITY

Study design: Silva CI, Silva MVM, Barros ALBL, Santos VB.
Data collection: Silva CI, Silva MVM.
Data analysis and interpretation: Silva CI, Silva RA, Barros ALBL, Santos VB.
Discussion of results: Silva CI, Silva RA, Barros ALBL, Santos VB.
Writing and/or critical review of content: Oliveira LFTF, Maurício AB, Barros ALBL, Santos VB.
Review and final approval of the final version: Oliveira LFTF, Maurício AB, Barros ALBL, Santos VB.

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CONFLICT OF INTEREST

There is no conflict of interest.

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CORRESPONDING AUTHOR

Vinícius Batista Santos
v.santos@unifesp.br