Sleep Quality and Cardiovascular Risk in Patients Attending Family Medicine Outpatient Clinics at Cairo University

Sahar Zearban[2], Eman Ebrahim[1], Eman Raslan[1*]

[1] Family Medicine Department, Faculty of Medicine, Cairo University, Cairo, Egypt

[2] Ministry of Health and Population, Cairo, Egypt

Abstract:

Introduction: Cardiovascular disease (CVD) is a significant health problem. Comprehending the link between CVD risk and sleep quality is crucial to promote cardiovascular health. **Purpose:** To assess the association between cardiovascular risk and poor sleep quality. **Methods**: This is a case-control study; cardiovascular risk was calculated using the Systematic Coronary Risk Evaluation (SCORE) risk scale. Fifty participants identified as high cardiovascular risk (≥5%) were considered cases, while 63 participants identified as low (≤ 2%) or intermediate cardiovascular risk (3-5%) were considered controls. Sleep quality was assessed using the Arabic version of the Pittsburgh Sleep Quality Index (PSQI), and quality of life (QOL) was assessed by the World Health Organization Quality of Life questionnaire. We evaluated the association between sleep quality, Quality of life, and cardiovascular disease risk. **Results**: A total of 113 patients participated in this study. Comparing the case and control groups revealed a significantly poor sleep quality (P< 0.001) and a positive correlation (0.763) in the cases compared to the controls. Also, there was statistical significance between cases and controls (P<0.001) regarding all Quality of life domains. There was a significant negative correlation between PSQI score and all four domains of Quality of life (-0.728, -0.745, -0.763, -0.715). Multivariate logistic regression revealed that poor sleep quality was significantly associated with increased CVD risk after age and sex adjustment (odds ratio 167.147). **Conclusions**: High cardiovascular disease risk is associated with poor sleep quality and Quality of life, independent of age or sex.

Keywords: Estimated cardiovascular risk, Quality of life, Sleep quality.

Introduction

According to estimates from the World Health Organization (WHO), 17.9 million people worldwide died from cardiovascular diseases (CVD) in 2019, which accounted for 32% of all fatalities. CVDs remain the leading cause of death globally. (1)

One of the United Nations' sustainable development goals (SDGs) is to reduce mortalities from non-communicable diseases through prevention and treatment. Risk assessment is a crucial step in the present strategy for the primary prevention of atherosclerotic cardiovascular disease. (2)

*Corresponding author: emanraslan@kasralainy.edu.eg

Some studies have suggested that sleep may play a role in both the development and progression of CVD and may have possible downstream effects on the pathophysiology and clinical course of CVD. Specifically, short sleep duration and insomnia, alone or in combination, are associated with increased cardiovascular morbidity and mortality after adjusting for other key risk factors. [3, 4]

Chronic sleep deprivation is associated with an increased risk of developing obesity, diabetes, and hypertension; it can also lead to higher levels of inflammation in the body, contributing to the development of cardiovascular problems. [5]

The association between sleep-related disorders and CVD remains controversial and lacks epidemiological evidence in the general population. [6]

A poor quality of life (QOL) can profoundly affect physical health by having higher stress levels, which can lead to the release of stress hormones such as cortisol. Prolonged exposure to stress hormones can contribute to the development or exacerbation of various physical health problems, including CVD.[7]

Additionally, poor QOL may lead to unhealthy behaviors such as a sedentary lifestyle, poor nutrition, and inadequate sleep, further compromising physical health. [8]

Poor sleep can significantly impact various aspects of an individual's QOL, leading to a range of physical, mental, and emotional consequences. [9]

The cumulative effect of poor sleep on physical health, cognitive functioning, mental health, and social interactions can significantly impact an individual's overall well-being and QOL. It can lead to feelings of frustration, helplessness, and dissatisfaction. It may also contribute to a reduced sense of vitality, enjoyment, and fulfillment in daily activities. [10]

Prioritizing quality sleep can lead to numerous benefits, including improved physical health, mental well-being, and overall QOL. [11]

Knowledge gap: Estimating individual risk of developing cardiovascular disease is fundamental in preventive cardiology. Further studies are required to determine the role of sleep in the development of CVD. We must assess the association between sleep quality and cardiovascular risk by comparing low/intermediate and high cardiovascular risk profiles.

The study assesses the association between cardiovascular risk and poor sleep quality.

Methods:

Design: This is a case-control study conducted on two groups**.** The cases group includes patients with high cardiovascular disease risk according to the Systematic Coronary Risk Evaluation (SCORE) risk scale. The control group includes patients with low or intermediate cardiovascular disease risk.

Setting and participants: The participants were recruited from the Family Medicine outpatient clinics, Faculty of Medicine, Cairo University, with an average of 2-3 patients/day on three working days per week during the clinic working hours from August 2022 to July 2023.

After explaining the study's aims and benefits, patients attending family medicine clinics aged 40 to 65 years and not having any exclusion criteria were invited to participate.

Exclusion criteria include chronic liver, kidney disease, heart failure, patients known to have any mental illness, diabetes, previous cardiovascular events, familial hypercholesterolemia, and inherited lipid disorders. Participants were then classified into cases including high cardiovascular risk group and controls including low or intermediate cardiovascular risk group.

Based on evidence from a previous study by Zhu C *et al.*, 2022 [(12)], Epi-calc 2000 was used to calculate the sample size of this case-control comparative study. They assumed 80% power, 0.05 level of significance, and 8.3% proportion of cases exposed to detect odds ratio OR= 5 and with a ratio of cases to controls =1.

The sample size was = 92 participants (46 in each group). Considering the drop-out rate of 10%, the estimated sample size to fulfill the study objectives was 100 participants (50 in each group). However, the final sample size reached was 113 participants (50 in the cases group and 63 in the controls group).

After obtaining informed consent from the participants who agreed to participate in the study, the participants were interviewed using a predesigned structured questionnaire composed of personal, demographic, and medical data demographic data including age, gender, working status, and educational level.

The working status includes (not working, retired, blue-collar workers, which are one of three specific categories of manual workers, defined by the Australian Standard Classification of Occupations as tradespersons, plant and machine operators and drivers, and laborers, and white-collar workers known as suit-and-tie workers

include workers who work at a desk and abstain from physical labor. Brief history (name, age, occupation, residency, and marital status).

Medical history, including any chronic disease, medications, previous psychological problems, or particular habits (smoking, alcohol, or substance abuse), followed by general examination, including blood pressure measurement.

The participants were asked to come for another two visits. During the second visit, they came after fasting for ten hours to withdraw the blood sample to measure the serum lipid level.

They were interviewed for 15 minutes to complete the PSQI questionnaire for sleep quality assessment and the WHOQOL-BREF questionnaire for Quality of life assessment. On the third visit, the participants received the results of their cholesterol levels, and the cardiovascular risk score was calculated.

Study tools:

Cardiovascular risk assessment was assessed using (the SCORE) risk scale, a 10-year risk assessment system for fatal cardiovascular events in people 40–65 years of age. It is based on 12 European cohort studies and presents different national and regional risk calculation tables adapted to the cardiovascular disease rate of each country. It classifies risk ranging from less than 1 to 15% or more. Low risk is estimated to be (≤1%), intermediate risk (1% - 4%), and high risk (5% - ≥15%). The variables included are gender, age, smoking, systolic blood pressure, and total cholesterol. [13]

Sleep quality was assessed by the Pittsburgh Sleep Quality Index (PSQI), an effective instrument used to measure the Quality and patterns of sleep in adults. [14, 15] It is an 18-item constructed questionnaire to assess overall sleep quality over one month. The 18 items are divided into seven derived component scores: (1) sleep quality, (2) sleep latency, (3) sleep duration, (4) sleep efficiency, (5) sleep disturbance, (6) medication use, and (7) daytime dysfunction. These items are rated in terms of the frequency or severity of the problem on a four-point Likert scale (e.g., 0 = Not during the past month and ≥ 3 = Three or more times a week).

The component scores yield a global PSQI score ranging from 0 to 21, with higher scores representing lower sleep quality. The Arabic version of the questionnaire proved to be reliable and valid. [16]

The World Health Organization Quality of Life- Brief (WHOQOL-BREF)

questionnaire assessed Quality of life. The Arabic version of the questionnaire proved to be valid and reliable. It consists of 26 items. Items 1 and 2 assess an individual's overall perception of QOL and health, respectively; the remaining items are categorized under physical, psychological, social, and environmental domains. A 5-point Likert scale rates each item.

The responses were scaled in a positive direction. The mean score of the items within each domain was used to calculate the raw score. Raw scores were then transformed to a 0–100 scale using a transformation formula. A higher score reflects a better QOL. [17, 18]

Data management and statistical analysis:

All collected questionnaires were revised for completeness, and data were coded. A database in Excel was developed for data entry and analysis. The data was treated on a compatible personal computer using the Statistical Package for Social Sciences (SPSS version 23) program. A suitable analysis was performed according to the type of data obtained for each parameter.

Qualitative data was presented as numbers and percentages (proportions). Quantitative data was presented in the form of mean and standard deviation. Differences were considered significant at (p-value) less than or equal to 0.05. Analysis of relations was done using the Shapiro-Wilk test to verify the normality of distribution.

Mann-Whitney test for abnormally distributed quantitative variables was used to compare the two studied groups. A chi-square test compares categorical values in different groups—the Spearman coefficient to correlate between two abnormally distributed quantitative variables.

The strength of the association of sleep quality with cardiovascular risk was assessed using univariate and multivariate logistic regression analysis after adjustment for confounding factors, such as age and sex.

Ethical approval: The study was revised and approved by the Family Medicine Department Council at the Faculty of Medicine, Cairo University. The study protocol was approved by the Scientific Research Ethical Committee of the Faculty of Medicine, Cairo University, and the Research Ethics Committee at Cairo University. The approval number is (MS-633-2022).

The patient consent form was developed according to the international ethical guidelines for medical research involving human subjects based on the WHO

Research Ethics Review Committee report on obtaining informed consent. [19]

Results

In total, 113 participants were included in this study; of these, 50 were identified as high cardiovascular risk and considered as cases, while the remaining 63 were a control group identified as low and intermediate cardiovascular risk.

The mean age of the cases and controls was 61.60 ± 2.539 and 52.397 ± 6.197, respectively. There was a statistically significant difference in age between both groups. Case and control groups are matched as regards gender, working status, and educational level (Table 1).

Scores of PSQI were significantly higher in cases than controls (P value < 0.001). Participants with high cardiovascular risk were significantly poor sleepers. The mean score of total PSQI in the cases group (7.720 ± 1.5654) is higher than in the control group (3.619 ± 1.197) (Table 2). The PSQI Scores were positively correlated with CVD risk scores with a correlation coefficient of 0.763 (Table 4).

All health-related quality-of-life domains, including physical health, psychological health, social relationships, and environment. are significantly lower in the cases group than controls, which was statistically significant (P<0.001). (Table 3). The PSQI Scores were negatively correlated with all four domains of Quality of life. life (-0.728, -0.745, - 0.763, -0.715) (Table 4).

Multivariate logistic regression after adjusting for confounding factors (Age and gender) showed that poor sleeping was significantly associated with CVD risk (p <0.0001), so poor sleep quality can be considered a significant independent risk factor for cardiovascular disease (Table 5).

Discussion

Our study showed a significant difference in sleep quality between case and control groups. This agrees with a large registry-based Prospective cohort study at The Stockholm Heart Epidemiology Program, Sweden, on a total of 2,246 first-time AMI cases [20], which showed that disturbed sleep in women and impaired awakening in men was associated with a moderately increased risk of adverse cardiac outcomes after a mean follow-up of 10 years.

Also, our findings agree with those of Elnahas *et al.*, 2020. [21] A study conducted at Kasr Alainy Hospital showed that about 40% of bad sleepers and 20% of good sleepers had intermediate to high ASCVD risk.

Furthermore, a study done by Wang *et al.* 2022. [22] involved 5594 participants from the National Health and Nutrition Examination Survey (NHANES) in 2005–2008. Among the participants with poor sleep quality, PSQI was positively associated with increased 10-year CVD risk ($P < 0.001$).

The positive correlation between sleep quality and CVD risk is based on data from a study conducted by Yazdanpanah *et al.* (2020). [23] that investigated the sleep quality and sleep quantity among Iranian people and concluded that the prevalence of CVD was nearly 30% in males who sleep less than 6 hours.

The increase was just around 19% in people with long sleep duration, which could indicate that many neuroendocrine systems affect sleep homeostasis. A lack of sleep results in increased sympathetic activity, blood pressure, and impaired glucose tolerance, all augmenting the risk of atherosclerosis.

In contrast to our study, Abraham, C. 2016. [24] conducted a cross-sectional observational study aimed to assess how sleep quality and high-intensity physical activity associated with cardiovascular disease (CVD) risk factors and inflammatory biomarkers in a sample of young adults (n=106, ages 18-25 years), And the results showed that sleep behaviors displayed no significant association with CVD risk factors and this might have been due to the young population (aged between 18–25 years) recruited in Abraham's study.

Also, in contrast to our study, Everding *et al.* (2016) conducted a cross-sectional study among cohort officers to determine whether sleep quality is associated with an increased risk for cardiovascular disease or worsened mental health.

They found that compared with good sleepers, borderline and poor sleepers reported decreased health-related Quality of life. Still, there was no increased risk for CVD. This may be explained by the age group and profession of the study participants.

In our study, we cleared that all domains of HRQOL were significantly lower in cases than in controls (P value < 0.001). In agreement with our study, Chen *et al.*, 2010. [26] conducted a cross-sectional study on 125 participants recruited from the outpatient departments of 2 hospitals in southern Taiwan. Patients with CAD estimated significantly worse HRQOL in all domains.

In contrast to our results, Komalasari, R., & Yoche, M. M. 2019. [27] The study involved 397 older participants with a

history of essential hypertension, coronary heart disease, heart failure, and ischemic heart failure who were assessed on their Quality of life consisting of physical health, psychological aspects, social relationships, and environment.

The study results showed that most of the elderly patients in the hospital's outpatient department where this study was performed demonstrated a good quality of life (94.5%). These results were surprising as it is known that people with heart conditions had impaired Quality of life as compared to those with healthy populations.

In our study, we demonstrated that PSQI Scores were significantly and positively correlated with CVD risk score (P value < 0.001) and negatively correlated with all domains of HRQOL (P value < 0.001 in all). In agreement with our findings, Jain *et al.* 2021. [28] found that 77.4% of the study participants had poor sleep quality and poor Quality of life, worst in the physical domain, followed by the psychological, social relationship, and environmental domains.

In agreement with our study, Lou *et al.*, 2015. [29] found that in a study of almost 1 thousand Chinese people, 33.6% of participants were poor sleepers according to their PSQI. Poor sleepers had significantly lower Quality of life (*P* < 001). After adjustment for confounders, poor sleep quality was positively associated with a lower health-related quality of life (OR: 3.67, 95% CI: 1.30–10.33, *P* < 0.001).

Study Limitations

The cases and control groups were not matched regarding age; however, after age adjustment in multivariate logistic regression analysis, poor sleeping was significantly associated with CVD risk, so poor sleep quality remains a significant independent risk factor for cardiovascular disease.

Conclusion

High CVD risk is associated with poor sleep quality and poor QOL compared to intermediate and low CVD risk, and this is independent of age or sex.

Recommendations

A cardiovascular risk assessment should be part of their routine evaluation for patients with sleep disorders.

Extensive epidemiological studies are required to better understand the link between sleep quality and cardiovascular health on a larger scale using more recent cardiovascular risk estimates.

References

1. Shah Amran Md, Binte Bahar N, Akash S. Perspective Chapter: Physiology and

Pathology of the Cardiovascular System [Internet]. Novel Pathogenesis and Treatments for Cardiovascular Disease. IntechOpen; 2023. Available from: http://dx.doi.org/10.5772/intechopen.108355

2. Lloyd-Jones DM, Braun LT, Ndumele CE, *et al.* Use of Risk Assessment Tools to Guide Decision-Making in the Primary Prevention of Atherosclerotic Cardiovascular Disease: A Special Report From the American Heart Association and American College of Cardiology. J Am Coll Cardiol. 2019; 73(24): 3153–67.
3. Israel B, Buysse DJ, Krafty RT, *et al.* Short-term stability of sleep and heart rate variability in good sleepers and patients with insomnia: For some measures, one night is enough. Sleep. 2012; 35(9): 1285–91.
4. Roth GA, Huffman MD, Moran AE, *et al.* Global and regional patterns in cardiovascular mortality from 1990 to 2013. Circulation. 2015; 132(17): 1667–78.
5. Nizami, N. S., Uddin CSM. Strong Immunity- A Major Weapon to Fight against Covid-19. IOSR Journal Of Pharmacy And Biological Sciences, 15(3). 2020; 15(3): 22–9.
6. Kadier K, Qin L, Ainiwaer A, *et al.* Association of sleep-related disorders with cardiovascular disease among adults in the United States: A cross-sectional study based on national health and nutrition examination survey 2005–2008. Front Cardiovasc Med. 2022; 9(August):1–13.
7. Tang AL, Thomas SJ, Larkin T. Cortisol, oxytocin, and Quality of life in major depressive disorder. Qual Life Res [Internet]. 2019; 28(11): 2919–28. Available from: https://doi.org/10.1007/s11136-019-02236-3
8. Ali AM, Kunugi H. Physical Frailty/Sarcopenia as a Key Predisposing Factor to Coronavirus Disease 2019 (COVID-19) and Its Complications in Older Adults. BioMed. 2021; 1(1): 11–40.
9. Hajj J, Mathelier H, Drachman B, *et al.* Sleep Quality, Fatigue, and Quality of Life in Individuals With Heart Failure. J Nurse Pract [Internet]. 2020;1 6(6): 461–5. Available from: https://doi.org/10.1016/j.nurpra.2020.03.002
10. Brown JP, Martin D, Nagaria Z, *et al.* Mental Health Consequences of Shift Work: An Updated Review. Curr Psychiatry Rep. 2020; 22(2): 1–7.
11. Hung S Te, Cheng YC, Wu CC, *et al.* Examining Physical Wellness as the Fundamental Element for Achieving

Holistic Well-Being in Older Persons: Review of Literature and Practical Application in Daily Life. J Multidiscip Healthc. 2023; 16(July): 1889–904.

12. Zhu CY, Hu HL, Tang GM, *et al.* Sleep Quality, Sleep Duration, and the Risk of Adverse Clinical Outcomes in Patients With Myocardial Infarction With Non-obstructive Coronary Arteries. Front Cardiovasc Med. 2022; 9(February):1–11.
13. Cavaliere M, De Luca P, Scarpa A, *et al.* SCORE risk scale as a prognostic factor after sudden sensorineural hearing loss. Eur Arch Oto-Rhino-Laryngology [Internet]. 2020; 277(3): 953–4. Available from: https://doi.org/10.1007/s00405-019-05771-4
14. Liu D, Kahathuduwa C, Vazsonyi AT. The Pittsburgh Sleep Quality Index (PSQI): Psychometric and clinical risk score applications among college students. Vol. 33, Psychological Assessment. Vazsonyi, Alexander T.: Department of Family Sciences, University of Kentucky, 316 Funkhouser Building, Lexington, KY, US, 40506, vazsonyi@uky.edu: American Psychological Association; 2021; p. 816–26.
15. Manzar MD, Moiz JA, Zannat W, *et al.* Validity of the Pittsburgh sleep quality index in Indian university students. Oman Med J. 2015; 30(3): 193–202.
16. Suleiman KH, Yates BC, Berger AM, *et al.* Translating the Pittsburgh sleep quality index into Arabic. West J Nurs Res. 2010; 32(2): 250–68.
17. Malibary H, Zagzoog MM, Banjari MA, *et al.* Quality of Life (QoL) among medical students in Saudi Arabia: A study using the WHOQOL-BREF instrument. BMC Med Educ. 2019; 19(1): 1–6.
18. Borgeat Meza M, Luengo-Charath X, Arancibia M, *et al.* Council for International Organizations of Medical Sciences (CIOMS) Ethical Guidelines: advancements and unsolved topics in 2016 upgrade. Medwave. 2018 Apr 25;18(2):e7208. Spanish, English. Doi: 10.5867/medwave.2018.02.7208. PMID: 29701729.
19. Joshi U, Subedi R, Poudel P, *et al.* Assessment of Quality of life in patients undergoing hemodialysis using the WHOQOL-BREF questionnaire: A multicenter study. Int J Nephrol Renovasc Dis. 2017; 10: 195–203.
20. Clark A, Lange T, Hallqvist J, Sleep Impairment and Prognosis of Acute Myocardial Infarction: A Prospective Cohort Study, Sleep, Volume 37, Issue 5, 1 May 2014; Pages 851–858, https://doi.org/10.5665/sleep.3646

21. Elnahas HG, Said MS, Elsyed RM, Khafagy GM. Relationship Between Sleep Quality, Sleep Disturbance, and Estimated Cardiovascular Risk. Journal of High Institute of Public Health. 2020 Dec 1; 50(3): 158-64.
22. Wang L, Sun M, Guo Y, *et al.* The Role of Dietary Inflammatory Index on the Association Between Sleep Quality and Long-Term Cardiovascular Risk: A Mediation Analysis Based on NHANES (2005–2008). Nat Sci Sleep. 2022; 14(March): 483–92.
23. Yazdanpanah MH, Homayounfar R, Khademi A, *et al.* Short sleep is associated with higher prevalence and increased predicted risk of cardiovascular diseases in an Iranian population: Fasa PERSIAN Cohort Study. Sci Rep [Internet]. 2020; 10(1): 1–13. Available from: http://dx.doi.org/10.1038/s41598-020-61506-0
24. Abraham C. The Effect of Sleep Quality and High-Intensity Physical Activity on Inflammation and Cardiovascular Disease Risk Factors in College Students. Honor Sch Theses [Internet]. 2016; Available from: https://opencommons.uconn.edu/srhonors_theses/500
25. Everding B, Hallam JE, Kohut ML, *et al.* Association of Sleep Quality with Cardiovascular Disease Risk and Mental Health in Law Enforcement Officers. J Occup Environ Med. 2016; 58(8): e281–6.
26. Jain N, Pathania M, Bahurupi Y. Assessment of Sleep Quality and Quality of Life in Hypertensive Subjects at a Tertiary Care Hospital in Uttarakhand, India. Int J Prev Med. 2021 Nov 30;12:158. Doi: 10.4103/ijpvm.IJPVM_465_20. PMID: 35070191; PMCID: PMC8724674.
27. Chen HM, Clark AP, Tsai LM, *et al.* Self-reported health-related Quality of life and sleep disturbances in Taiwanese people with heart failure. J Cardiovasc Nurs. 2010; 25(6): 503–13.
28. Komalasari R, Nurjanah, Yoche MM. Quality of life of people with cardiovascular disease: A descriptive study. Asian Pacific Isl Nurs J. 2019; 4(2): 92–6.
29. Lou P, Qin Y, Zhang P, *et al.* Association of sleep quality and Quality of life in type 2 diabetes mellitus: A cross-sectional study in China. Diabetes Res Clin Pract [Internet]. 2015; 107(1): 69–76. Available from: http://dx.doi.org/10.1016/j.diabres.2014.09.060

Table 1: Demographic data among cases and controls.

Variables	Cases (n = 50)	Controls (n = 63)	P Value
Age (Years)[1] Mean ± SD	61.60 ± 2.539	52.397 ± 6.197	**< 0.001***
Gender:			0.255
Male	30 (60%)	30 (47.6%)	
Female	20 (40%)	33 (52.4%)	
Working status[2]			0.455
Not working	32 (64.0%)	38 (60.3%)	
Retired	4 (8%)	2 (3.2%)	
Blue collar worker[s]	13 (26%)	19 (30.2%)	
White collar work	1 (2.0%)	4 (6.3%)	
Education level[2]			0.265
Illiterate	25 (50%)	32 (50.8%)	
Reading and writing	0 (0%)	5 (7.9%)	
Lower education level	14 (28%)	15 (23.8%)	
Medium education level	5 (10%)	3 (4.8%)	
Higher education level	6 (12%)	8 (12.7%)	

[1]: Mann Whitney test *: significant p-value ≤ 0.05

[2]: Chi-square test

Table 2: Sleep quality among cases and control groups

Sleep Quality	Cases (n = 50)	Controls (n = 63)	P Value
PSQI Score[1] Mean ± SD	7.720 ± 1.5654	3.619 ± 1.197	**< 0.001***
Sleep quality according to PSQI score[2]			**< 0.001***
Poor sleeper	49 (98%)	19 (30.2%)	
Good sleeper	1 (2%) [2]	44 (69.8%)	

1:Mann-Whitney test

2: Chai square test *Significant p-value ($p \leq 0.05$)

PSQI: Pittsburgh Sleep Quality Index

Table 3: Health-related quality-of-life among cases and control groups.

Health-related Quality of life	Cases (n = 50)	Controls (n = 63)	P value
Physical health[1]	28.060 ± 1.621	36.381 ± 1.979	**<0.001***
Psychological health	19.62 ± 1.6399	27.65 ± 1.993	**<0.001***
Social relationships	5.360± 2.1548	12.206 ± 1.416	**<0.001***
Environmental	15.740 ± 2.239	32.048 ± 2.392	**<0.001***

1: Mann Whitney test *significant p-value ($p \leq 0.05$)

Table 4: Correlation between PSQI Score and CVD risk and HRQOL domains

Variables	PSQI Score	
	R	**P Value**
CVD risk score	0.763	**< 0.001**
HRQOL		
Domain 1	-0.728	**< 0.001**
Domain 2	-0.745	**< 0.001**
Domain 3	-0.763	**< 0.001**
Domain 4	-0.715	**< 0.001**

CVD: Cardiovascular disease

HRQOL: Health-related quality-of-life

PSQI: Pittsburgh Sleep Quality Index

Table 5: Multivariate logistic regression of CVD risk and PSQI scores

PSQI Scores	Without adjustment	With age adjustment	With age and sex adjustment
β	4.732	3.829	5.119
OR	113.474	46.003	167.147
CI	14.584 - 882.924	4.325 - 489.261	8.884 - 3144.686
P value	**< 0.001***	**0.002***	**0.001***

PSQI: Pittsburgh Sleep Quality Index

β; Regression coefficient, OR; Odds ratio, CI; Confidence interval,

*: Statistically significant p-value ($p \leq 0.05$).

CVD: Cardiovascular disease

الملخص العربي

جودة النوم ومخاطر القلب والأوعية الدموية لدى المرضى المترددين على العيادات الخارجية لطب الأسرة بجامعة القاهرة

سحر زيربان[٢]، إيمان ابراهيم[١]، إيمان إسماعيل رسلان[١]

[١] قسم طب الأسرة، كلية الطب، جامعة القاهرة

[٢] وزارة الصحة والسكان، القاهرة، مصر

مقدمة: تعد أمراض القلب والأوعية الدموية مشكلة صحية كبيرة كما تعتبر مرض التهابي لأن العديد من المؤشرات الحيوية الالتهابية تلعب دورًا في تصلب الشرايين كما تم ربط عوامل الخطر التقليدية لأمراض القلب مثل السمنة والتدخين والخمول البدني بمستويات اعلي من وسطاء الالتهابات. كذلك يؤثر سوء النوم أيضا على العوامل المؤدية للالتهاب بشكل مباشر، فالحرمان من النوم يزيد من تحفيز الجهاز العصبي اللاإرادي ويرفع مستوى الكاتيكولامين الذي يمكن ان يؤدي الى إنتاج وسطاء التهابات. قد تؤثر اضطرابات النوم على جودة الحياة . وقد أشارت بعض الدراسات لاحتمالية وجود علاقة بين اضطرابات النوم وزيادة انتشار عوامل أخطار أمراض القلب والأوعية. **الهدف من الدراسة** هو الكشف عن العلاقة بين جودة النوم وخطورة الإصابة بأمراض القلب والأوعية الدموية إلى جانب جودة الحياة. **الطرق**: هذه دراسة مقارنيه لمقارنة الأشخاص من أصحاب خطورة عالية للإصابة بأمراض القلب والأوعية الدموية بالأشخاص أصحاب الخطورة المتوسطة أو منخفضة من المرضي المترددين على العيادة الخارجية لطب الأسرة بمستشفيات جامعة القاهرة. قد تم حساب أخطار القلب والأوعية الدموية باستخدام مقياس المخاطر المنهجي لتقييم أخطار الشريان التاجي(SCORE). وقد شارك خمسين مريض على أنهم معرضون لخطر الإصابة بأمراض القلب والأوعية الدموية (</= ٥٪) حالات، في حين تم اعتبار ٦٣ مشاركًا على أنهم معرضون لخطر الإصابة بأمراض القلب والأوعية الدموية المنخفضة (=> ٢٪) أو المتوسطة (٣-٥٪) كمجموعة ضابطة. وتم تقييم جودة النوم باستخدام النسخة العربية من مؤشر جودة النوم في بيتسبرغ، وتم تقييم جودة النوم من خلال استبيان جودة الحياة لمنظمة الصحة العالمية. وقد قمنا بتقييم العلاقة بين نوعية النوم، ونوعية الحياة، وخطر الإصابة بأمراض القلب والأوعية الدموية. **النتائج**: شارك في هذه الدراسة ١١٣ مريضا. كشفت مقارنة الحالات والضوابط عن نوعية نوم سيئة بشكل ملحوظ (P<0.001) وارتباط إيجابي (٠,٧٦٣) في الحالات مقارنة بالضوابط. كما كانت هناك دلالة إحصائية بين الحالات والضوابط (P<0.001) فيما يتعلق بجميع مجالات جودة الحياة. كان هناك ارتباط سلبي كبير بين درجة PSQI وجميع المجالات الأربعة لنوعية الحياة (-٠,٧٢٨، -٠,٧٤٥، -٠,٧٦٣، -٠,٧١٥). كشف الانحدار اللوجستي متعدد المتغيرات أن سوء نوعية النوم كان مرتبطًا بشكل كبير بزيادة خطر الإصابة بأمراض القلب والأوعية الدموية بعد تعديل العمر والجنس (نسبة الأرجحية ١٦٧,١٤٧). **الاستنتاجات**: يرتبط ارتفاع خطر الإصابة بأمراض القلب والأوعية الدموية بسوء نوعية النوم وسوء نوعية الحياة، بغض النظر عن العمر أو الجنس. **التوصيات:** يجب اعتبار تقييم اخطار امراض القلب والاوعية الدموية من التقييم الروتيني الخاص بالمرضى الذين يعانون من اضطرابات النوم كما ينبغي مراعاة تحسين النوم للوقاية من الأمراض القلبية الوعائية. يعتبر أطباء الأسرة مناسبين بشكل مثالي لإدارة عوامل خطر الإصابة بأمراض القلب والأوعية الدموية لدى المرضى الذين يعانون من مشاكل في النوم.