Journal of Disease and Global Health

Volume 17, Issue 1, Page 9-14, 2024; Article no.JODAGH.11938
ISSN: 2454-1842, NLM ID: 101664146

Preliminary Study of the Perception of Work Stress and Cardiovascular Diseases in Administrative Personnel of the Faculty of Medicine and Surgery, URSE

Mayra Judith Rodríguez Barroso [a], Silvia Lois López-Castellanos [a], Ana Lilia Ortíz Argumedo [a] and Iván Antonio García-Montalvo [a*]

[a] Faculty of Medicine and Surgery, Universidad Regional del Sureste, Oaxaca, Mexico.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.56557/JODAGH/2024/v17i18573

Open Peer Review History:
This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://prh.ikprress.org/review-history/11938

Short Communication

Received: 03/01/2024
Accepted: 22/02/2024
Published: 04/03/2024

ABSTRACT

Cardiovascular diseases (CVD) include coronary heart disease, cerebrovascular disease, heart failure, peripheral artery disease, and are the leading causes of morbidity and mortality among adults worldwide. The objective of the present study was to determine the relationship between work stress and risk factors for cardiovascular disease in the group of administrative workers of the Faculty of Medicine and Surgery of the Universidad Regional del Sureste (URSE), Oaxaca, Mexico.

**Corresponding author: E-mail: c.invest.medicina@urse.edu.mx;*

This was a descriptive cross-sectional study. The target population of the study was the total number of administrative workers assigned to the Faculty of Medicine and Surgery, URSE. The Perceived Stress Scale Questionnaire (PSS-14) was used and the database was exported to SPSS statistical software for statistical analysis. The reliability level for the test as a whole presented a Cronbach alpha of 0.8809. To determine cardiovascular risk in study subjects, the risk calculator provided by the Mexican Social Security Institute (IMSS) was used. The mean age of the heart was 37.29 years, which implies a risk percentage of 2.44%, therefore, we can indicate that our study population is out of risk with respect to this element. In conclusion, we can say that most of the administrative staff of the School of Medicine and Surgery have a low level of work stress and only 17.64% are considered to have an intermediate level of stress; among the main stressors or related stimuli are the feeling of overpressure, as well as the lack of collaborative work.

Keywords: Cardiovascular diseases; work stress; administrative workers; Oaxaca; Mexico.

1. INTRODUCTION

Cardiovascular diseases (CVD) include coronary heart disease, cerebrovascular disease, heart failure, peripheral arterial disease, and are the leading causes of morbidity and mortality among adults worldwide and in the United States [1-3]. The World Health Organization (WHO) estimates that 17.7 million people die each year from cardiovascular diseases, accounting for about 30% of all deaths worldwide. More than 75% of these deaths occur in low- and middle-income countries, and 80% of all these deaths are specifically due to coronary artery disease and cerebrovascular disease [4-6]. Work stress has now become an emerging issue, a topic of interest in public and private services, as workers are increasingly under pressure in their work environments, which affects the mental, physical, and family health of individuals. Work stress has increased in recent years and is associated with several outbreaks of diseases. Stress at work can directly or indirectly affect cardiovascular disease. People who are stressed develop unhealthy lifestyles that lead to smoking, alcoholism, atherogenic nutrition, physical inactivity, and drug use. In addition to the unique characteristics of sex and age, it becomes a risk factor for developing cardiovascular diseases such as hypertension, diabetes, dyslipidemia, myocardial infarction, and metabolic syndrome. The objective of the present study was to determine the relationship between work stress and risk factors for cardiovascular disease in the group of administrative workers of the Faculty of Medicine and Surgery of the Universidad Regional del Sureste (URSE), Oaxaca, Mexico.

2. MATERIALS AND METHODS

This is a descriptive cross-sectional study, conducted in collaboration with the administrative staff of the Faculty of Medicine and Surgery of the Universidad Regional del Sureste (URSE). The target population was the total number of administrative workers assigned to the Faculty of Medicine and Surgery, URSE. After having submitted and obtained authorization for the execution of the research proposal from the Research Committee of the Faculty of Medicine and Surgery, URSE; the corresponding permissions were requested from each of the participants for the approval and execution of the research. With the respective authorizations, the interview was planned and conducted with each study subject, obtaining data related to sociodemographic characteristics, presence of occupational stress, and cardiovascular risk factors in the study participants who met the selection criteria, as well as those who had voluntarily consented to participate in the study.

Data collection was carried out over the course of two months, using the proposed instrument. The questionnaire used was the Perceived Stress Scale (PSS-14), a standardized instrument consisting of 14 questions that are rated on a four-point Likert-type scale ranging from strongly disagree to strongly agree; and the indications of the test are that they must place an X on the alternatives. With the printed data collection sheets containing each subject's data, the data was copied one by one into an Excel spreadsheet. The constructed database was exported to SPSS ver. 24 statistical software for statistical analysis. The reliability level for the test as a whole presented a Cronbach alpha of 0.8809. To determine cardiovascular risk in study subjects, the risk calculator provided by the Mexican Social Security Institute (IMSS) was used.

3. RESULTS AND DISCUSSION

A descriptive cross-sectional study was carried out, evaluating a total of 17 subjects assigned as administrative personnel during the months of June and July 2023. Of these, 68.4% were women, while 31.6% were men, with a mean age of 36.23 years ±10.1027. Analyzing body mass index (BMI), the following results are presented: 47.05% of study subjects are overweight, while 29.41% have some degree of obesity, and only 23.53% are considered normal weight in relation to the official Mexican standard 008-SSA3-2017. The mean BMI of the study subjects was 28.84 ±6.1299, which gives us a classification as overweight subjects with a tendency towards obesity. Obesity can have several associated problems in the administrative staff of an educational institution [7,8]. These problems can affect both the physical and mental health of employees, as well as their job performance. Obesity is associated with an increased risk of chronic diseases, such as type 2 diabetes, cardiovascular disease, and liver disease [9,10]. Excess weight can increase joint load and cause problems such as back pain and osteoarthritis [11]. Obesity can make breathing more difficult, which can affect the ability to perform physical tasks and, in some cases, increase the risk of sleep apnea. People with obesity may feel more tired and have less energy to carry out their work responsibilities [12,13]. Obesity can cause stress and anxiety, as people can feel concerned about their health, appearance, and discrimination, and can face stigmatization and discrimination, which can affect their self-esteem and emotional well-being [14,15].

Regarding systolic blood pressure, the mean was 114.64 mm Hg ±11.22 mm Hg, which is considered normal as it is less than 120 mm Hg. Work stress can have an impact on blood pressure; the relationship between the two is complex and multifactorial [16]. Stressful work environments, characterized by high demands, long work hours, and limited control, can elicit physiological and psychological responses, which, in turn, can potentially affect blood pressure levels [17]. Chronic stress at work can trigger the release of stress hormones, such as cortisol and adrenaline, which can increase heart rate and constrict blood vessels, resulting in elevated blood pressure [18]. However, it is important to note that stress at work alone may not directly cause high blood pressure. Other factors, such as individual vulnerability, lifestyle choices, and genetic predispositions, also play a significant role in the development of hypertension [19,20]. In addition, the impact of work stress on blood pressure can vary between individuals, with some people more susceptible than others. Managing work stress and maintaining a healthy lifestyle can help mitigate the possible effects on blood pressure. The application of stress reduction techniques, such as regular exercise, meditation, and proper time management, can be beneficial [21].

Regarding capillary glucose levels, the mean obtained was 108 mg/dl ±39.65 mg/dl, which is considered normal values; however, 23.52% of the study subjects had values above normal. It is important to consider that stress can lead to unhealthy behaviors, such as poor dietary choices, sedentary lifestyles, inadequate sleep, and increased use of alcohol or tobacco. These behaviors, in turn, can contribute to the development of obesity, insulin resistance, and eventually diabetes. Furthermore, it can also directly affect glucose regulation in the body [22]. Cortisol and epinephrine can lead to increased blood glucose levels, prolonged periods of elevated blood glucose levels can challenge the body's ability to produce enough insulin or use it effectively, contributing to the development of diabetes. Although work-related stress can contribute to the development of diabetes, it is not the only cause. Individual susceptibility, genetic, and other lifestyle factors also play an important role [23]. The mean cholesterol levels presented by the study subjects were 147.35 mg/dl ±22.73 mg/dl, HDL cholesterol was 37.64 mg/dl ±16.66 mg/dl, while the triglyceride level was 157.17 mg/dl ±71.09 mg/dl, 23.52% of the subjects presented elevated triglyceride levels.

To determine cardiovascular risk in study subjects, we used the risk calculator provided by the Mexican Social Security Institute; this tool is based on the Framingham Heart Study (https://www.imss.gob.mx/salud-en-linea/apps-sano/riesgo-cardiovascular-colesterol). Measures the probability of suffering a cardiac arrest in the next 10 years in people over 20 years of age. The mean age of the heart was 37.29 years, which implies a risk percentage of 2.44%, indicating that our study population is not at risk with respect to this element. The concept of "cardiac age" is a valuable tool for assessing overall health and condition of the cardiovascular system. Cardiac age refers to the age of a person's heart in relation to their chronological age, taking into account factors such as blood pressure, cholesterol levels, smoking history, and

other risk factors. Understanding cardiac age can be important because it provides individuals with a clearer understanding of their cardiovascular health and the potential risks they may face. It can help people recognize the impact of their lifestyle choices and make informed decisions about their health. Cardiac age can serve as a wake-up call, motivating people to adopt healthier behaviors, make positive lifestyle changes, and work to improve cardiovascular health [24]. By addressing modifiable risk factors, such as quitting smoking, exercising regularly, adopting healthy eating habits, controlling weight, and reducing stress, individuals can potentially lower their heart age and reduce the risk of heart disease and other cardiovascular diseases. By highlighting the importance of preventing and treating cardiovascular disease, the age of cardiac disease may be a valuable health education tool. Enables healthcare professionals to effectively communicate the potential risks associated with different lifestyle choices and encourages people to take action to improve their cardiovascular health. However, it is important to note that cardiac age is only one tool among many to assess cardiac health and risk. It should be used in conjunction with other clinical assessments and evaluations performed by healthcare professionals to provide a comprehensive understanding of an individual's cardiovascular health status [25].

With respect to work stress, a mean score of 22 was presented, this perceived stress score can be categorized as "almost never" I feel stressed, with respect to the relationship there is no relationship between perceived stress and cardiovascular health of the study subjects.

4. CONCLUSIONS

In conclusion, we can say that the administrative staff of the School of Medicine and Surgery has a low level of work stress and only 17.64% are considered with an intermediate level of stress, among the main stressors or related stimuli is the feeling of overpressure, the second stressor was the lack of collaborative work, it is important to consider that some of the most common stressors in this context may be: a) Workload and time management, administrative staff often have multiple responsibilities, such as managing student records, coordinating events, responding to inquiries, and supporting faculty as well as students, balancing these tasks within limited time frames can create pressure and stress; b) Deadlines and urgent tasks, higher education institutions often have strict deadlines for various administrative processes, such as admission, enrollment, and disbursement of financial aid, meeting these deadlines can be demanding and stressful for administrative staff; c) Constantly changing and evolving policies, higher education institutions are dynamic environments where policies, procedures, and regulations can change frequently, keeping up with these changes, and implementing them effectively can be a challenge, causing stress among administrative staff; d) Respond to student and faculty concerns, administrative staff often interact with students and faculty who may have questions, complaints or requests, managing these concerns in a timely and effective manner can generate pressure and stress, especially during peak periods such as enrollment, or exams; e) Limited resources and budgetary constraints, administrative departments in higher education institutions are often faced with limited resources and budgetary constraints, this can make it difficult to provide adequate support and services while managing competing demands, which can be a major stress factor for staff; f) Organizational and interpersonal conflicts, as in any workplace, administrative departments may experience conflicts between colleagues, departments or with people in positions of authority, these conflicts can create tension and stress, which impacts the overall work environment. Implementing stress management strategies and fostering a supportive work environment can help mitigate these stressors. Regarding the risk of suffering from cardiovascular diseases, the results obtained show that there is a low risk of suffering from some cardiac problem. It is important to note that a low risk is considered to be an incidence of less than 10%, intermediate to an incidence of between 10% and 40%, and a high risk when it is more than 40% at 10 years of age.

CONSENT

As per international standards or university standards, Participants' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. GBD 2013 Mortality and Causes of Death Collaborators. Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990-2013: a systematic analysis for the Global burden of disease study 2013. Lancet Lond Engl. 2015;385(9963): 117-71.
2. Detels R. Oxford textbook of global public health. Sixth Edition. Oxford, United Kingdom: Oxford University Press; 2015. 3. (Oxford medical publications).
3. Townsend N, Wilson L, Bhatnagar P, Wickramasinghe K, Rayner M, Nichols M. Cardiovascular disease in Europe: epidemiological update 2016. Eur Heart J. 2016;37(42):3232-45.
4. WHO. Cardiovascular diseases (CVDs). Consulted on: 18 de julio de; 2023. Available:http://www.who.int/cardiovascular_diseases/en/.
5. Bahonar A, Saadatnia M, Khorvash F, Maracy M, Khosravi A. Carotenoids as Potential Antioxidant Agents in Stroke Prevention: A Systematic Review. Int J Prev Med. 2017;8:70.
6. Naito R, Miyauchi K. Coronary Artery Disease and Type 2 Diabetes Mellitus. Int Heart J. 2017;58(4):475-80.
7. Meller FO, Grande AJ, Quadra MR, Schäfer AA. Overweight and its associated factors among employees of a university from the state of Santa Catarina. Rev Bras Med Trab. 2020;18(2):158-68.
8. Lin X, Li H. Obesity: Epidemiology, Pathophysiology, and Therapeutics. Front Endocrinol (Lausanne). 2021;12:706978.
9. Armenta-Hernandez OD, Maldonado-Macias AA, Ortiz Solís M, Serrano-Rosa MÁ, Baez-López YA, Hernández-Arellano JL. Effects of Job Content and Physical Activity on Body Mass Index among Obese Managers of the Mexican Manufacturing Industry. Int J Environ Res Public Health. 2020;17(11):3969.
10. Anderson E, Durstine JL. Physical activity, exercise, and chronic diseases: A brief review. Sports Med Health Sci. 2019;1(1): 3-10.
11. King LK, March L, Anandacoomarasamy A. Obesity & osteoarthritis. Indian J Med Res. 2013;138(2):185-93.
12. Jehan S, Zizi F, Pandi-Perumal SR, Wall S, Auguste E, Myers AK, Jean-Louis G, McFarlane SI. Obstructive Sleep Apnea and Obesity: Implications for Public Health. Sleep Med Disord. 2017;1(4): 00019.
13. Salman LA, Shulman R, Cohen JB. Obstructive Sleep Apnea, Hypertension, and Cardiovascular Risk: Epidemiology, Pathophysiology, and Management. Curr Cardiol Rep. 2020;22(2):6.
14. Sarwer DB, Polonsky HM. The Psychosocial Burden of Obesity. Endocrinol Metab Clin North Am. 2016; 45(3):677-88.
15. Saxena I, Kumar M. Obesity discrimination in healthcare. Eur J Intern Med. 2017;46: e29-e30.
16. Rosenthal T, Alter A. Occupational stress and hypertension. J Am Soc Hypertens. 2012;6(1):2-22.
17. Yaribeygi H, Panahi Y, Sahraei H, Johnston TP, Sahebkar A. The impact of stress on body function: A review. EXCLI J. 2017;16:1057-72.
18. Chu B, Marwaha K, Sanvictores T, et al. Physiology, Stress Reaction. [Updated 2022 Sep 12]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024.
    Available:https://www.ncbi.nlm.nih.gov/books/NBK541120/.
19. Khonde Kumbu R, Matondo H, Labat A, Kianu B, Godin I, Kiyombo G, Coppieters Y. Job stress, a source of hypertension among workers in Sub-Saharan Africa: a scoping review. BMC Public Health. 2023;23(1):2316.
20. Oparil S, Acelajado MC, Bakris GL, Berlowitz DR, Cífková R, Dominiczak AF, Grassi G, Jordan J, Poulter NR, Rodgers A, Whelton PK. Hypertension. Nat Rev Dis Primers. 2018;4:18014.
21. Babapour AR, Gahassab-Mozaffari N, Fathnezhad-Kazemi A. Nurses' job stress and its impact on quality of life and caring behaviors: a cross-sectional study. BMC Nurs. 2022;21(1):75.
22. Stults-Kolehmainen MA, Sinha R. The effects of stress on physical activity and exercise. Sports Med. 2014;44(1):81-121.
23. Sharma K, Akre S, Chakole S, Wanjari MB. Stress-Induced Diabetes: A Review. Cureus. 2022;14(9):e29142.

24. Rodgers JL, Jones J, Bolleddu SI, Vanthenapalli S, Rodgers LE, Shah K, Karia K, Panguluri SK. Cardiovascular Risks Associated with Gender and Aging. J Cardiovasc Dev Dis. 2019;6(2):19.

25. Rippe JM. Lifestyle Strategies for Risk Factor Reduction, Prevention, and Treatment of Cardiovascular Disease. Am J Lifestyle Med. 2018;13(2):204-12.

Peer-review history:
The peer review history for this paper can be accessed here:
https://prh.ikprress.org/review-history/11938