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Physical activity: academic stress regulator in time of
covid-19 pandemic. Covid-19 and academic stress

Actividad física: regulador de estrés académico en tiempos de
pandemia Covid-19. Covid-19 y estrés académico

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Abstract

Introduction. The pandemic derived from the presence of the SARS-CoV-2 virus, forced the population to adopt measures for biosecurity purposes, such as: healthy distance and confinement, the tasks that were normally carried out outside the home were temporarily stopped, triggering with this a series of stressors.

Objective. The objective of this work was to analyze the relationship between physical activity and perceived academic stress during the SARS-CoV-2 pandemic in students of the Faculty of Medicine and Surgery of the Universidad Regional del Sureste.

Methods. It was a descriptive-cross-sectional study, the sample was determined conveniently since the surveys were applied to second- and third-year students, through the Moodle platform of the advisor of this project, surveying 6 groups, the Cognitivist Systemic Inventory was applied to study academic stress (SISCO) and the International Physical Activity Questionnaire (IPAQ).



Results. 84% refer to physical activity on a daily basis, in addition to the fact that 65.4% of students consider themselves to be under moderate stress, 16.6% do not present stress, 15.5% with mild stress and only 2.5% with severe stress, this perhaps derived from individual personalities and levels of self-demand.

Conclusions. The main stressors are related to the self-directed study and the characteristics of the complementary activities of self-directed learning. The manifestations of stress are varied and of multifactorial origin, the most common being chronic fatigue, anxiety and headache. The practice of regular physical activity is related to greater physical and psycho-emotional well-being.

Keywords

Undergraduate students, physical activity, pandemic, stress, COVID-19

Resumen

Introducción. La pandemia derivada de la presencia del virus SARS-CoV-2, obligó a la población a adoptar medidas con fines de bioseguridad, tales como: distancia sana y confinamiento, las tareas que normalmente se realizaban fuera del hogar fueron detenidas temporalmente, desencadenando con esto una serie de factores estresantes.

Objetivo. El objetivo de este trabajo fue analizar la relación entre la actividad física y el estrés académico percibido durante la pandemia SARS-CoV-2 en estudiantes de la Facultad de Medicina y Cirugía de la Universidad Regional del Sureste.

Métodos. Se trató de un estudio descriptivo-transversal, la muestra se determinó convenientemente ya que las encuestas se aplicaron a estudiantes de segundo y tercer año, a través de la plataforma Moodle del asesor de este proyecto, encuestando a 6 grupos, para el estudio del estrés académico se aplicó el Inventario Cognitivista Sistémico (SISCO) y el Cuestionario Internacional de Actividad Física (IPAQ).

Resultados. el 84% refiere realizar actividad física en el día a día, además de que el 65,4% de los estudiantes se considera bajo estrés moderado, el 16,6% no presenta estrés, el 15,5% con estrés leve y solo el 2,5% con estrés severo, esto quizás derivado de personalidades individuales y niveles de autoexigencia.

Conclusiones. Los principales factores estresantes están relacionados con el estudio autodirigido y las características de las actividades complementarias del aprendizaje autodirigido. Las manifestaciones del estrés son variadas y de origen multifactorial, siendo las más frecuentes: fatiga crónica, ansiedad y dolor de cabeza. La práctica de actividad física regular está relacionada con un mayor bienestar físico y psicoemocional.

Palabras clave

Estudiantes de pregrado; actividad física; pandemia; estrés; COVID-19



Introduction

In late 2019, the world underwent the start of a new pandemic caused by the so-called SARS-CoV-2 virus, referring to the clinical state caused by the new coronavirus as COVID-19⁽¹⁻⁵⁾, which in its severe form leads to massive alveolar damage and progressive respiratory failure⁽⁶⁾. The incubation period for SARS-CoV-2 is 5 days on average⁽⁷⁻⁹⁾. As a consequence of the foregoing, conditions of forced confinement, social distancing and activity stoppage were imposed, thereby affecting our daily routines. Being specific, Higher Education, which presented a delay in teaching, research activities as well as the extension of this educational level. Not only the Institutions were disturbed, in particular the students have been affected in different ways, from the cancellation of face-to-face classes leading to the delivery of online classes, organized with haste and insufficient preparation, which has generated great difficulties thus increased the processes of exclusion and marginalization within our country. We were not prepared for an educational disruption of this magnitude, where a moment's schools and universities closed their doors, rushing to deploy solutions for distance education to ensure continuity in andragogy and thus strengthen the process of self-regulation learning^(10,11).

Stress has been recognized as an endemic disease of modern society, the health area has prepared to face it, however, specifically, academic stress or student stress does not receive enough attention, and is more serious, that institutions do little or nothing to prevent it, academic stress is one of the main causes of student failure⁽¹²⁾. Stress is manifest among full-time university students, being higher, in exam periods, when there is an academic overload, in the first years of career, teaching and learning too focused on memorization or incompatible personalities with teachers, the demands of some subjects, during public interventions, when there are methodological deficiencies of the teaching staff and when unsatisfactory results are obtained⁽¹³⁾. Academic stress affects variables as diverse as emotional state, physical health or interpersonal relationships, and can be experienced differently by different people, there are three types of effects: behavioral, cognitive and physiological⁽¹⁴⁾.

Medical education has been characterized by a high level of demand, which generates significant levels of stress among university students and a greater probability of suffering from psychological morbidities compared to the general population, such as anxiety and depression, the most recognized stressors are exams, the writing of works, the overload of practices, the lack of time to complete the tasks and to carry out recreational activities; high levels of stress and emotional morbidities can have negative personal and professional consequences, including social isolation, emotional exhaustion, undetected or untreated mental disorders⁽¹⁵⁾.



The objective of this work was to analyze the relationship between physical activity and perceived academic stress during the SARS-CoV-2 pandemic in students of the Faculty of Medicine and Surgery of the Universidad Regional del Sureste.

Methods

Type of study

It was a descriptive-cross-sectional study, the sample was determined conveniently since the surveys were applied to second- and third-year students, through the Moodle platform of the advisor of this project, surveying 6 groups with a total of 162 students.

Data collection

The study subjects were sent through the Moodle platform, the Cognitivist Systemic Inventory was applied to study academic stress (SISCO) and the International Physical Activity Questionnaire (IPAQ), informed consent was also sent, the answered instruments were derived by the same means and to the researcher's email, the surveys were downloaded and stored on USB for evidence.

Data analysis

The statistical analysis of the results was carried out by descriptive statistics using the SPSS® 24 program and Excel® was used in the generation of the database.

Ethical considerations

The study project, in the form of a protocol, was approved by the Research Committee of the Faculty of Medicine of the Universidad Regional Sureste. The research units (students) signed the informed consent before entering the study, leaving them clear freedom in their decision to participate or not in the study. The information collected is kept confidential and anonymous, in addition to being stored in a place of exclusive access for the researchers in charge of the study.

Results

The universe of study was made up of a total of 162 second- and third-year students of the degree in Medicine and Surgery of the Universidad Regional del Sureste, of which 62%



correspond to women and 38% to men; 80.9% refer to a regular academic status and 19.1% belong to the irregular group, that is, repeaters of a subject or full cycle. Regarding physical activity, 83.9% report doing some type of scheduled activity, while 16.1% report not doing it. The presence of academic concern during the pandemic: 82.1% accept having had some level, while only 17% do not report it. The types of exercises performed are aerobics at home, following a protocol learned in previous stages (25.3%), going for a run (21.6%), cardiovascular (20.4%), weights and cycling (4.9%) each, walking and arts martial (3.1%) each, 16.7% do not report scheduled physical activity. The levels of stress perceived by the students, it was found that 16.7% do not present stress, 15.5% have mild stress, 65.4% said they have moderate stress and only 2.4% severe stress. The average hours of inactivity sitting in front of the television or computer is 7.1 hours; 8.6% less than 2 hours, 21.6% from 2 to 5 hours, 59.3% from 5 to 10 hours and 10.5% more than 10 hours a day.

The main stressors referred to are limited time to complete tasks, pressure for exams, task overload, unclear instructions, demands from teachers and the type of jobs requested, influence by theoretical teachers and the personality of the same, boredom in classes and the obligation to present topics in front of the group, poor preparation of teachers and affectation by competition among classmates. The main symptoms that show stress are inability to relax, anxiety and chronic fatigue; headache, drowsiness and depression; concentration problems and relieve their discomfort by biting their nails, pulling hair; sleep disorders and social isolation; reluctance for chores and intestinal problems. The main stress buffers are listening to music or watching television programs that you like; deal with conflict; praise yourself, seek a solution based on past experiences, develop a solution plan, get the positive from the situation; maintain emotional control; seek support with family or acquaintances. By relating exercise practice with the presence of stress, it can be established that in the general population: 67.3% exercise and experience stress, 16.7% exercise and do not have stress, 14.8% do not exercise and present stress, and 1.2% they neither exercise nor report stress. When analyzing the phenomenon in men, those who exercise present stress in 49% of cases and without stress in 37.7%; those who do not exercise present stress in 13.1%. Finally, in women 78.2% exercise and present stress, 4% exercise without presenting stress, 15.8% do not exercise and present stress and 2% do not exercise and have no stress.



Discussions and Conclusions

The pandemic forced the population to adopt alternative measures, for biosecurity purposes, the measures of healthy distance and confinement and the so-called “home office”, were the reason for worldwide adoption, this involved bringing work and education home in all countries. levels: education had to undergo core adaptation processes and the distance modality took on the importance it had never had. Some conditions were evidenced: the difference in technology management between educators and students, the deficiency of internet and telephone services, and family conflicts due to prolonged confinement. The stress that comes from a new way of education is obvious, and the need to find ways to mitigate it even more. The percentage of students without academic concern is 18%, it could be considered two aspects, on the one hand, students who do not have a problem because they are adapted to this new lifestyle and on the other those who have not yet found a vocation or defined the importance of education in your college life. Students are perceived to be mostly moderately stressed, fortunately, very few have severe stress, perhaps deriving from individual personalities and levels of self-demand. Regarding the main stressors, it should be emphasized that those situations related to work and their characteristics occupy the first places, because unlike online education in graduate and master's degrees where individual modules are studied, in the current situation the student takes 8 to 10 subjects, each of which is saturated with reading and homework. The intermediate part of stressors is related to the characteristics of the teacher and finally the competition between students has passed to the last term, it is really a priority to save the course and the difficulties it implies. The manifestations of stress are varied and surely depend on each personality and adaptation mechanisms, the most common being chronic fatigue, anxiety and headache; Eating disorders and digestive disorders are also present, in few cases social isolation and aggressive behaviors are present. Music and television are the main buffer mechanisms, but it is worth mentioning that almost one in 4 students knows how to deal with conflicts, on the other hand, developing an action plan would perhaps be the best way to overcome academic conflicts, only 7 out of 10 students do so; performing exercises occupies a midpoint of shock absorbing mechanisms and finally it seems that students are not used to asking for help⁽¹⁶⁻²¹⁾.

In conclusion, we can say that sport and physical activity are tools that benefit both physical and mental health. Participations based on physical activity are proven effective and positively associated with mental health interventions. Noting in this way that there is a positive relationship between high levels of physical activity and a lower risk of suffering from physical



and/or mental diseases. The aim of this study is not aimed at explaining the mechanisms through which physical activity influences stress levels and the frequency and intensity of symptoms, and on the other, taking into account that: (a) symptoms of discomfort evaluated in this study are health indicators especially reactive to stress; and, (b) there is evidence that stress may be involved in the development or exacerbation of physical and psychological health problems, some studies have shown that small everyday problems in life can perhaps more accurately predict discomfort health or psychological distress than vital stressors, it could therefore be hypothesized that the changes observed in the frequency and intensity of symptoms of physical distress are conditioned to the reduction of the stress level of individuals. In other words, physical activity could act as a buffer variable for the effects of stress on the experience of physical discomfort symptoms. The results of this study indicate and confirm that the practice of regular physical activity is related to greater physical and psychological well-being (stress) in a non-clinical sample of individuals. Specifically, individuals with a physically active lifestyle have presented less stress and frequency of symptoms of physical discomfort, linked to a lower intensity of these symptoms.

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Conflict of interests

None.

References

1. Wang, D., Hu, B., Hu, C., Zhu, F., Liu, X., Zhang, J., et al. 2020. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. *JAMA*. 323 (11), 1061-9.



2. Shanmugaraj, B., Siriwattananon, K., Wangkanont, K., Phoolcharoen, W. 2020. Perspectives on monoclonal antibody therapy as potential therapeutic intervention for Coronavirus disease-19 (COVID-19). *Asian. Pac. J. Allergy. Immunol.* 38, 10-8.
3. Li, Q., Guan, X., Wu, P., Wang, X., Zhou, L., Tong, Y., et al. 2020. Early transmission dynamics in Wuhan, China, of novel coronavirus–infected pneumonia. *N. Engl. J. Med.* 382 (13), 1199-207.
4. Gralinski, L., Menachery, V. 2020. Return of the coronavirus: 2019-nCoV. *Viruses.* 12 (2), 135.
5. WHO. 2020. World Health Organization [Internet]. Situation reports 2020 [cited Sep 14, 2020]. p. 1. Available in: <https://covid19.who.int/>
6. Xu, Z., Shi, L., Wang, Y., Zhang, J., Huang, L., Zhang, C., et al. 2020. Pathological findings of COVID-19 associated with acute respiratory distress syndrome. *Lancet. Respir. Med.* 2600 (20), 19-21.
7. Lauer, S., Grantz, K., Bi, Q., Jones, F., Zheng, Q., Meredith, H., et al. 2020. The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application. *Ann. Intern. Med.* 172 (9), 577-82.
8. Wong, T., Tam, W. 2004. Estimating SARS incubation period. *Emerg. Infect. Dis.* 10 (8), 1503-4.
9. Yang, Y., Sugimoto, J., Halloran, M., Basta, N., Chao, D., Matrajt, L., et al. 2009. The transmissibility and control of pandemic influenza A (H1N1) virus. *Science.* 326 (5953), 729-33.
10. Ordorika, I. 2020. Pandemia y educación superior. *Rev. Educ. Super.* 194(49), 1-8.
11. Lloyd, M. 2020. Desigualdades educativas en tiempos de la pandemia (Parte 1). *Campus Milenio.* 849, 6.
12. Cracco, M. 2015. Stressors and coping strategies of families in the early stages of the life cycle and socioeconomic context. *Cien. psicol.* 9, 129-40.



13. Arimi, M., Lau, H., Suhaniza, S., Mahadir, A. 2015. Effects of High Intensity Progressive Resistance Training on Psychological Stress and Biochemicals Parameters. *J. S. K. M.* 13 (2), 53-60.
14. Díaz, Y. 2012. Overview on promotion and health education. *R. C. M. G. I.* 28 (3), 299-308.
15. Sánchez, J., Escobar, G., Vega, S., Porras, J. 2015. Actitudes hacia el ejercicio físico y práctica de actividad física en profesionales de la salud: estudio de corte transversal. *Arch. Med.* 16 (2), 237-45.
16. Vicente, G., Pedro, J., Casajús, J. 2016. Actividad física, ejercicio y deporte en la lucha contra la obesidad infantil y juvenil. *Nutr. Hosp.* 33 (9), 1-21.
17. Martínez, J., García, A., Aldebarán, A. 2020. Estrategias para el control del estrés empresarial. Un estudio longitudinal en una empresa mediana. *Horiz. sanitario.* 16 (1), 9-23.
18. Gerber, M., Brand, S., Herrmann, C., Colledge, F. 2014. Increased objectively assessed vigorous-intensity exercise is associated with reduced stress, increased mental health and Good objective and subjective sleep in young adults. *Physiol. Behav.* 135, 17-24.
19. Habibzadeh, N. 2015. The physiological impact of physical activity on psychological stress. *Progr. Healt. Scien.* 5 (2), 245-8.
20. Salmon, P. 2001. Effects of physical exercise on anxiety, depression, and sensitivity to stress: A unifying theory. *Clin. Psychol. Rev.* 21 (1), 33-61.
21. Arias, P. 2015. Ejercicio en prevención cardiovascular primaria. *Rev. Mex. Med. Fis. Rehab.* 25 (2), 63-72.