

Physical Inactivity is Associated with Job Burnout in Health Professionals During the COVID-19 Pandemic

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Background: The pandemic has drastically impacted lifestyles, including the frequency, duration, and intensity of physical activity, which, in turn, leads to negative effects on job burnout among healthcare workers.

Objective: This study evaluated the association between the level of physical activity and job burnout in a sample of health professionals during health emergency.

Methods: In this cross-sectional study, 300 workers working in a public hospital, located in the city of Rioja, Department of San Martín, Peru, were considered. Data were collected through an online and face-to-face survey. Job burnout was assessed using a validated questionnaire adapted to the Peruvian population and physical activity was assessed based on a single item. Crude and adjusted linear regression models were created to assess the association between the frequency of physical activity performed weekly and the level of job burnout.

Results: In the crude models, it was observed that participants who performed physical activity 1–2 times, 3–4 times, or more than 4 times per week had, respectively, 6.29 (95% CI, 11.00–1.59), 14.28 (95% CI, 21.70–6.85), and 14.95 (95% CI, 25.17–4.72) lower job burnout points compared to those who never performed physical activity. In the model adjusted for confounding variables, the association of this result was maintained, showing a dose-response effect.

Conclusion: These findings suggest the need for the implementation of health education programs that include physical activity to minimize the negative effects of job burnout and ensure better medical care by health professionals for the benefit of patients.

Keywords: health care workers, physical activity, COVID-19, occupational stress, job burnout, Peru

Introduction

It has been more than two years since COVID-19 spread throughout the world, becoming the first major pandemic of the 21st century and has not only brought with it confinement, despair, and death,¹ but has also negatively impacted the social and economic life of most countries.² Moreover, the negative effect of the pandemic is evident in the functioning of health systems and in the work of health professionals, who have had to face the reality of carrying out medical tasks and procedures under completely challenging conditions. As an example, at the Ibero-American level, Peru has the third highest number of physicians who have died due to COVID-19.³ These changes have led to stressful situations and lifestyle changes that include a lack of physical activity among healthcare personnel.⁴ These conditions can have a negative impact on the quality of medical care provided by health professionals to the population.

Job burnout is defined as a psychological state that affects people's emotions, thought processes, and decision-making power.⁵ Non-existent labor resources together with the demands of the job, from an occupational health point of view,

cause job burnout.⁶ Job burnout is a detrimental physical or emotional response that is primarily due to the fact that workers' skills, abilities, creativity, and needs do not match the current requirements of the job, leading to signs of strain such as physical and mental fatigue, when there is little capacity to cope.^{2,7,8} During the pandemic, healthcare personnel are under a great deal of stress during the care process and may be compounded by a number of factors, such as the continued spread of the virus, dealing with family concerns, additional workload, and the need to continue to maintain heightened security measures to avoid becoming infected.² On the other hand, other causes of job burnout in front-line health professionals in the face of the pandemic are the lack of adequate knowledge about the disease, the lack of effective drugs for treatment, and the lack of vaccines. All this is in addition to the serious effects of the disease in some patients, which caused a wave of stress and emotional reactions in health professionals.⁹

Previous studies have exposed multiple risk factors in healthcare professionals such as high rates of job burnout.¹⁰ In fact, a study carried out on 294 health professionals working in public health centers reported that 48.6% of the respondents presented occupational stress.¹¹ Similarly, a study conducted during the COVID-19 pandemic among healthcare personnel found an increase in the level of job burnout.² More specifically, there was evidence that women who were active in the health care system during the pandemic reported higher levels of stress than men.² Moreover, in a cross-sectional survey in which 290 medical staff members from different hospitals were evaluated, it was reported that the mean stress scores were between high and moderate levels.¹² Therefore, it is important that health care personnel receive support including workload reduction and improvement of the work environment from health care managers. This may help to reduce the stress level of staff in hospitals during the ongoing pandemic.

Since before the pandemic, the benefits of physical activity on mental health have been evidenced in both clinical and non-clinical populations.^{13–15} Particularly among healthcare workers, a longitudinal study of 3717 participants found that changes in physical activity were inversely and significantly correlated with depression, anxiety, and burnout.¹⁶ During the COVID-19 pandemic, several studies have reported regular physical inactivity in the general population and health care personnel due to restrictions put in place by the authorities to contain the spread of the virus.¹⁷ In a cross-sectional survey of 2381 participants during quarantine examining the effects of the pandemic on lifestyle changes, a more than 40% reduction in physical activity was reported.¹⁸ Additionally, a survey of 310 hospital employees in Istanbul reported that the pandemic has led to a significant decrease in physical activity.¹⁹ Furthermore, another cross-sectional study using 707 health care workers found that the frequency, duration and intensity of exercise in health care workers were significantly reduced; furthermore, it was reported that reduced exercise duration represented a significant risk factor for mild stress and moderate to severe depression.²⁰

The role of physical activity is essential in the maintenance of mental health, particularly in the prevention of job burnout, and has been consistently demonstrated in several studies. According to the International Society of Sport Psychology, a consensus statement linking physical activity and psychological benefits concluded that long-term exercise is associated with self-esteem and positive emotions.²¹ Therefore, in addition to social support and adequate sleep, physical activity has been recommended as a preventive measure against job burnout produced by COVID-19 in healthcare workers.²² However, due to the pandemic, health care personnel may have limited time and access to physical activity and self-care.

Several investigations have evaluated the impact of confinement on lifestyle changes and psychological well-being of the general population and health care workers during confinement.^{17–20} However, there is a need for the evaluation of physical activity and its association with job burnout in health professionals in the country with the highest mortality rate due to COVID-19 and one of the most precarious health systems. Therefore, this study aimed to determine the association between the level of physical activity and job burnout in a population of health professionals during the COVID-19 pandemic.

Materials and Methods

Design, Type of Research and Participants

A cross-sectional and descriptive correlational study was carried out. To select the participants, we contacted the management of the public sector hospital located in the city of Rioja, Department of San Martín, Peru. The sample

was selected by non-probability convenience sampling.²³ We considered surveying 300 workers (doctor, nurse, dietician, and technical staff). Data were collected in person and through an online survey during the months of October and December 2021. The survey was administered through a Google form and was shared through the use of the instant messaging platform WhatsApp and using the participants' email. Internet-based methodology was considered.²⁴ The following information was collected: (a) sociodemographic data including age, years of experience, level of weekly physical activity, among others, (b) anthropometric data, such as weight and height, (c) and a questionnaire to assess job burnout. Part-time and full-time health personnel were included, and those who had at least 3 months working in the institution. Those who did not sign the informed consent form were excluded.

Ethical Aspects

Before starting data collection, the study was explained to the participants; then, the participation of each participant was requested on a voluntary basis; subsequently, informed consent was obtained. The project was approved by the Research Ethics Committee of the Hospital II-1 de Rioja (approval number: CEP-080616). Finally, all procedures that contributed to the development of the study were carried out following the ethical criteria of the 1975 Declaration of Helsinki and its subsequent modifications.

Sociodemographic and Anthropometric Data Registration Form

A registration form was used to collect sociodemographic information, such as age, sex, origin, physical activity, hours of sleep, work service, time worked in the service, weekly working hours, profession and anthropometric factors such as weight, height and body mass index (BMI). BMI was classified according to World Health Organization (WHO) recommendations, as described below: <18.5, lean; 18.5 to 25, normal; 25 to <30, overweight; and ≥ 30 , obese.²⁵

Evaluation of Physical Activity

To assess physical activity, participants were asked: How many times a week do you engage in physical activity? The response items were; 1) never; 2) 1 to 2 times per week; 3) 3 to 4 times per week, and 4) > or equal to 5 times per week.²⁶

Evaluation of Job Burnout

The questionnaire was adapted and validated in a study conducted in the Peruvian population.²⁷ After validation, a reliability value of 0.95 was obtained according to Cronbach's alpha. The questionnaire is made up of 22 items, with a seven-level response scale (0=never, 1= a few times a year or less, 2= once a month or less, 3= a few times a month, 4= once a week, 5= a few times a week, 6= every day). Moreover, it is composed of 3 dimensions: emotional exhaustion (9 items), depersonalization (5 items), personal fulfillment (8 items), the minimum score is 0 and the maximum is 132, the higher the score, the higher the level of job burnout. The scale was validated by expert judgment, while the internal, external, content, and structural validity was validated under the Aiken format. The instrument achieved a concordance coefficient of more than 90%. Reliability was obtained through the application of a pilot test achieving a Cronbach's Alpha of 0.95, reaching moderate to high correlations.

Statistical Analysis

The descriptive analysis consisted of tabulating the characteristics of the participants. We used absolute and relative frequencies for categorical variables and measures of central tendency and dispersion for numerical variables. We used Wilcoxon rank sum test, Pearson's Chi-squared test, and Fisher's exact test to explore statistical differences between sexes. In addition, we used the Wilcoxon rank sum test to assess whether the job burnout score differed by weekly exercise frequency. Finally, we created single and multivariable linear regression models to assess the association between the frequency of physical activity performed weekly and the level of job burnout. The confounding variables included in the adjusted analysis were determined by a directed acyclic graph. It is also worth mentioning that the sample analyzed has a non-normal distribution. The analysis was performed with the statistical program RStudio version 4. We consider a p value less than 0.05 as statistically significant.

Results

We analyzed data from 300 participants. Approximately, 55% were male and the median age was 34 years. On the other hand, 45% of the population came from the Amazon. Most of the participants reported sleeping less than 7 hours a day. 44% reported physical activity 1–2 times a week. Approximately, 58% had a normal nutritional status, while 41% had excess body weight (Table 1).

Considering all participants and stratifying by sex, we observed that the highest level of job burnout was reported by those who never exercised compared to those who were physically active at least once a week (<0.001). On average, participants who exercised at least once a week scored approximately 10 and 16 points lower on the job burnout scale compared to those who reported never exercising or 1–2 times a week, respectively. Among male workers, the greatest difference was observed between those who never exercised and those who exercised 1–2 times a week (8.2 points) (0.006). Among female workers, the greatest difference was observed between those who exercised 1–2 times a week and those who exercised 3–4 times a week (7.3 points) (0.076) (Table 2).

Table 1 Characteristics of the Study Participants

Characteristics	Overall N = 300 ^a	Female, N = 135 ^a (45%)	Male, N = 165 ^a (55%)	p ^b
Age, years	34 (29, 40)	35 (29, 42)	33 (29, 40)	0.346 ^b
Weight, kg	64 (56, 70)	64 (56, 70)	65 (56, 70)	0.974 ^b
Height, m	1.60 (1.55, 1.65)	1.59 (1.55, 1.65)	1.60 (1.55, 1.66)	0.319 ^b
BMI, m/kg ²	24.52 (22.66, 25.95)	24.61 (22.72, 26.26)	24.45 (22.66, 25.82)	0.461 ^b
Fat scale score	17 (9, 26)	17 (9, 29)	17 (9, 24)	0.274 ^b
Origin				0.707 ^c
Coast	102 (34%)	47 (46%)	55 (54%)	
Highlands	62 (21%)	25 (40%)	37 (60%)	
Jungle	136 (45%)	63 (46%)	73 (54%)	
Sleeping hours				0.574 ^d
< 7 h	184 (61%)	87 (47%)	97 (53%)	
7–9 hours	112 (37%)	46 (41%)	66 (59%)	
> 9	4 (1.3%)	2 (50%)	2 (50%)	
Physical activity				0.110 ^c
Never	122 (41%)	62 (51%)	60 (49%)	
1–2 times	131 (44%)	56 (43%)	75 (57%)	
3–4 times	32 (11%)	9 (28%)	23 (72%)	
> 5 times	15 (5.0%)	8 (53%)	7 (47%)	
Diet				0.358 ^c
Vegetarian	44 (15%)	17 (39%)	27 (61%)	
Non-vegetarian	256 (85%)	118 (46%)	138 (54%)	
Nutritional status				0.729 ^d
Underweight	2 (0.7%)	0 (0%)	2 (100%)	
Normal	175 (58%)	78 (45%)	97 (55%)	
Obese	12 (4.0%)	5 (42%)	7 (58%)	
Overweight	111 (37%)	52 (47%)	59 (53%)	
Profession				0.013 ^c
Physician	92 (31%)	43 (47%)	49 (53%)	
Nurse	98 (33%)	50 (51%)	48 (49%)	
Nutritionist	33 (11%)	19 (58%)	14 (42%)	
Technical personnel	77 (26%)	23 (30%)	54 (70%)	
Job burnout				0.030 ^c
Low	51 (17%)	18 (35%)	33 (65%)	
Medium	186 (62%)	80 (43%)	106 (57%)	
High	63 (21%)	37 (59%)	26 (41%)	

Notes: ^an (%); Median (interquartile range), BMI; body mass index. ^bWilcoxon rank sum test. ^cPearson's Chi-squared test. ^dFisher's exact test.

Table 2 Level of Job Burnout According to Weekly Physical Activity in the Overall Sample and by Gender

Job Burnout	Frequency of Physical Activity per Week				p ^a
	Never	1–2 Times	3–4 Times	> 4 Times	
Overall	66.3 (20.5)	60.0 (17.5)	52.0 (18.9)	51.3 (19.4)	<0.001
Male workers	69.8 (20.8)	61.6 (18.0)	53.3 (19.4)	49.6 (23.3)	0.006
Female workers	62.7 (19.6)	58.8 (17.2)	51.5 (19.1)	53.3 (15.2)	0.076

Note: ^aWilcoxon rank sum test.

Table 3 Single and Multivariable Linear Regression Models Between Physical Activity Level and Job Burnout

Frequency of Physical Activity per Week	Job Burnout					
	Single Regression			Multivariable Regression ^a		
	B	95% CI	p	B	95% CI	p
Overall						
Never	1.00			1.00		
1–2 times	–6.29	–11.00–1.59	0.009	–3.99	–8.50–0.53	0.083
3–4 times	–14.28	–21.70–6.85	<0.001	–8.41	–15.72–1.09	0.024
> 4 times	–14.95	–25.17–4.72	0.004	–11.37	–21.21–1.53	0.024
Male workers						
Never	1.00			1.00		
1–2 times	–8.19	–15.39–0.99	0.026	–5.01	–12.07–2.05	0.163
3–4 times	–16.42	–30.35–2.50	0.021	–14.44	–28.07–0.82	0.038
> 4 times	–20.13	–34.80–5.46	0.008	–20.66	–34.87–6.45	0.005
Female workers						
Never	1.00			1.00		
1–2 times	–3.88	–10.14–2.37	0.222	–2.29	–8.75–4.17	0.484
3–4 times	–11.21	–20.07–2.34	0.014	–8.98	–18.22–0.27	0.057
> 4 times	–9.40	–23.83–5.03	0.200	–9.24	–23.90–5.43	0.215

Note: ^aModel adjusted for age, sex, origin, and profession.

In the single linear models, we observed that participants who performed physical activity 1–2 times, 3–4 times, or more than 4 times per week had, respectively, 6.29 (95% CI, 11.00–1.59), 14.28 (95% CI, 21.70–6.85), and 14.95 (95% CI, 25.17–4.72) lower job burnout points compared to those who never performed physical activity. In the models adjusted for confounding variables (age, origin, and profession), the association was maintained and even showed a dose-response effect. Participants who performed physical activity 3–4 times or more than 4 times per week had, respectively, 8.41 (95% CI, –15.72–1.09) and 11.37 (95% CI, –21.21–1.53) fewer job burnout points compared to those who never performed physical activity. Participants who practiced physical activity 1–2 times per week did not have lower job burnout compared to those who never practiced physical activity. However, when we stratified the analysis by sex, the association remained significant only among men, in whom the association was even stronger. Male participants who exercised 3–4 times a week or >4 times a week scored 14.44 and 20.66 lower than those who never exercised (Table 3).

Discussion

This study evaluated the association between weekly physical activity frequency and job burnout in a population of health care professionals during the pandemic. The main findings of the current study were: (a) Approximately 41% of health personnel reported that they never engaged in physical activity, (b) physical activity is associated with lower job burnout in health personnel, and (c) health professionals who reported higher job burnout levels were those who never

engaged in physical activity compared to those who engaged in physical activity at least once a week. These results were observed in the single linear regression model. In the model adjusted for confounding variables, the association was maintained and even showed a dose-response effect.

Job burnout is the negative psychological and physical responses that workers experience when their skills and creativity do not meet current job requirements, demonstrating little ability to cope.^{7,28} Due to the COVID-19 pandemic, job burnout in healthcare personnel may be increased by a number of factors, including the continued spread of the virus, additional and complex work tasks associated with increased medical interventions, and the need to continue to maintain stricter security measures to avoid becoming infected.² Job burnout is an occupational health problem that has generated much concern due to its impact on the physical (risk of arrhythmias) and mental (suicide, in extreme cases) well-being of healthcare workers.²⁹

According to the WHO, physical activity is considered any bodily movement produced by skeletal muscles, with the consequent consumption of energy.³⁰ New guidelines established by WHO recommend at least 150–300 minutes of moderate- to vigorous-intensity aerobic physical activity per week for the entire adult population, including people with certain chronic conditions or disabilities, and an average of 60 minutes per day for children and adolescents.³¹ During the pandemic, studies have reported a decrease in physical activity in healthcare workers, which affects health.^{17,19,20} Our results indicated that about 41% of health care workers reported that they never engaged in physical activity. The findings of our study are consistent with the results reported in a study of Singapore health care workers, where about 40% did not engage in physical activity during the pandemic.²⁰ Another study using a cross-sectional online survey reported similar results finding a decrease in physical activity in 310 employees of a hospital in Istanbul due to the pandemic.¹⁹ These findings show that the pandemic, precisely, confinement implemented by state authorities, has significantly disrupted the exercise routines of health care personnel. Due to the pandemic, healthcare workers may have limited time and access to physical activity and self-care. The reduction in physical activity during the pandemic in the general population and health care personnel is evident, and the health risks posed by sedentary behaviors are well known,³² the most prominent of these including serious psychological and physiological problems, such as poorer body satisfaction and self-esteem and an increased risk of metabolic syndrome, different types of cancer, cardiovascular problems, and obesity.^{32,33} In fact, in the current study, 41% of respondents reported excess body weight. Therefore, it is important to identify the factors that influence the frequency, duration, and intensity of physical activity to counteract the negative consequences that can be physical and mental, such as chronic noncommunicable diseases and job burnout.

The role of weekly physical activity in the prevention of job burnout is important and has been consistently demonstrated in several studies conducted during the COVID-19 pandemic in healthcare professionals.^{17,20} In our study, the results showed that physical activity is associated with lower job burnout in healthcare personnel. These findings are similar to those reported in a study that evaluated the relationship between physical activity and mental health, finding that health care workers who had reduced duration of weekly physical activity had a significantly increased risk of developing depression and moderate and severe job burnout.²⁰ These results have been observed in other studies conducted in various population groups since before the pandemic, which showed that higher levels of physical activity were associated with less job burnout.^{34,35} More specifically, these studies reported that performing physical activity on a regular basis positively impacts job burnout. That is, participation in regular sports activities can lead to low job burnout and high job satisfaction; however, the absence of regular exercise can lead to high job burnout. It is important to mention that a similar study conducted by Yook in another group of professions showed no significant relationship between job burnout and physical activity.³⁶ These discrepancies could be explained by the different methods used to assess physical activity and job burnout in both studies. Yook used the IPAQ questionnaire and a questionnaire that considered several subcategories, such as physical environment, job demand, insufficient job control, interpersonal conflict, job insecurity, organizational system, lack of reward, and occupational climate, to assess physical activity and job burnout, respectively, whereas in our study weekly physical activity was assessed by a single item and job burnout by a questionnaire with three dimensions (emotional exhaustion, depersonalization, and personal fulfillment).

The results found in the study from the models adjusted for confounding variables, the association showed a dose-response effect. Other studies have claimed that physical activity and mental health have a dose-response relationship after adjusting for general confounding variables.^{37,38} The findings of our research prove to be important for expanding

existing knowledge on the beneficial effects of physical activity intensity on mental health. In addition, understanding the dose-response relationship between job burnout and activity is necessary considering that a quantified amount of physical activity can directly translate into public health recommendations. There are several potential mechanisms that could explain the positive impact of physical activity on mental health, particularly job burnout. It has been suggested that physical activity can reduce stress hormones in the body, such as cortisol and adrenaline,³⁹ and increase the levels of endorphins, dopamine, and serotonin, which allow people to feel happy, optimistic and relaxed,⁴⁰ which, in turn, thus increasing positive affect and decreasing negative affect.⁴¹ In addition, physical activity leads to a sense of self-efficacy and improves self-image and confidence, which allows for a sense of control over stressful situations.⁴² Moreover, engaging in physical activity provides a distraction from stressors to enjoy the moment in which the physical activity is performed, thus effectively reducing other psychological disorders, such as anxiety.⁴³

Limitations

Our study has some limitations that should be considered. First, for the assessment of physical activity, we did not use a validated questionnaire, but rather a single-item question that asked health care workers “how many times a week they were physically active?”. However, this question has been used in other studies to assess physical activity.^{26,44} Secondly, the assessment of job burnout was conducted using a self-reported questionnaire, therefore, the subjective assessment of participants’ job burnout cannot be accurately reflected, however, the fact that it is a validated questionnaire is a strength of the study. Thirdly, this is a cross-sectional study design, due to the health emergency context, it was not feasible to plan a longitudinal study. Therefore, it is not possible to confirm a causal relationship between the variables under study and it is recommended that longitudinal studies be carried out in the future. Finally, the sample was limited to health care workers in a public hospital located in a specific region of Peru; therefore, the results cannot be generalized. Future studies should consider providing evidence that can be generalized to workers in other countries.

Public Health Implications

Despite the limitations mentioned above, we believe that the results of this study are relevant to implement intervention and prevention programs for health personnel. Because a decrease in physical activity has been observed in health care workers during the pandemic, interventions that include encouraging weekly physical activity in health care workers could not only directly influence health behaviors in a positive way, but could also do so on long-term mental health outcomes, such as job burnout. These interventions, instead of encouraging intense physical activity, could include the promotion of more moderate physical activity, for example, the use of stairs instead of the elevator, which could be sufficient to reduce the level of job burnout in the short term and could be more easily integrated into the daily life of the staff. These actions should be part of the occupational health responsibilities and policies of health facilities and hospital resource managers. The physical and mental health care of healthcare personnel is of utmost importance because adequate medical care free of medical errors depends to a large extent on the emotional and physical health levels of the personnel.

Conclusion

This study observed that a higher frequency of weekly physical activity was associated with a lower level of job burnout in health professionals. According to the analyses of the single linear regression models, health personnel who reported higher job burnout levels were those who never performed physical activity compared to those who performed physical activity at least once a week. These results persisted after adjustment for confounding variables and even showed a dose-response effect. Our findings suggest the implementation of health education programs that include physical activity to minimize the negative effects of job burnout and ensure better medical care by health professionals for the benefit of patients.

Data Accessibility Statement

Data are available upon reasonable request to the corresponding authors.

Funding

Funding for Open Access charge: Universidad Peruana Unión (Grant 041- 2022/SA) and Universidad Señor de Sipán (DIRECTORY RESOLUTION N°015-2022/ PD-USS).

Disclosure

The authors declare that they have no potential conflicts of interest.

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