Revista Colombiana de Cardiología
Órgano oficial de la Asociación Sociedad Colombiana de Cardiología & Cirugía Cardiovascular
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ORIGINAL ARTICLE

Burnout syndrome in cardiology students and cardiologists in Colombia

Síndrome de burnout en estudiantes de cardiología y cardiólogos en Colombia

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Abstract

Introduction: *Burnout syndrome is a social and occupational phenomenon recognized by the WHO, and common in healthcare. It is characterized by low personal accomplishment, emotional exhaustion, and depersonalization, affecting professional performance and coping strategies. Despite the relevance of the topic, there is insufficient available information to visualize the magnitude of the problem with real figures in Colombia, especially in the field of cardiology.* **Objective:** *To determine the prevalence of burnout syndrome and the sociodemographic characteristics of cardiology students and cardiologists in Colombia.* **Materials and method:** *A cross-sectional, analytical, observational study conducted in Colombia using a self-administered virtual survey aimed at cardiology students and cardiologists in Colombia. The first part of the survey collected sociodemographic and financial data; the second part applied the Maslach Burnout Inventory (MBI) questionnaire.* **Results:** *A total of 207 surveys were conducted; 145 physicians answered the first part, 67.59% of whom were men. The mean age was 40.8 years, and 64% of the cardiologists and 79% of the students considered that they did not have enough time to engage in activities unrelated to medicine (p = 0.18). On the MBI, the most affected dimension in the physicians surveyed was emotional exhaustion, followed by low personal accomplishment and, finally, depersonalization. Comparing cardiologists and cardiology students, students had the highest proportion of involvement in all three dimensions. Taking into account the two most affected dimensions, 61.72% of the cardiologists and 81.57% of the cardiology students had a high score of symptoms suggestive of burnout syndrome.* **Conclusion:** *The prevalence of burnout syndrome in the cardiology students and cardiologists included in the described survey was high, warranting early implementation of strategies to remove or mitigate factors associated with a higher risk of developing this condition, which directly impacts the professional performance and quality of life of healthcare professionals.*

Keywords: *Prevalence. Burnout syndrome. Emotional distress. Depersonalization. Cardiology.*

Resumen

Introducción: *El síndrome de burnout es un fenómeno social y ocupacional reconocido por la OMS, frecuente en el área de la salud. Se caracteriza por baja realización personal, agotamiento emocional y despersonalización, afectando el desempeño profesional y estrategias de afrontamiento. A pesar de la relevancia del tema, es insuficiente la información disponible que permita visualizar la magnitud del problema con cifras reales en Colombia y, en especial, en el área de cardiología.*

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Date of reception: 18-01-2024
Date of acceptance: 19-07-2024
DOI: 10.24875/RCCARE.M24000111
Available online: 20-11-2024
Rev Colomb Cardiol. 2024;31(4):215-225
www.rccardiologia.com

Objetivo: *Determinar la prevalencia del síndrome de burnout y las características sociodemográficas de médicos que realizan especialización en cardiología y cardiólogos en Colombia.* **Materiales y método:** *Estudio observacional, analítico, de corte transversal, realizado en Colombia mediante la aplicación de una encuesta virtual autodiligenciada dirigida a médicos que cursan especialización en cardiología y a cardiólogos. La primera parte de la encuesta obtuvo datos sociodemográficos-económicos y la segunda parte aplicó el cuestionario de Maslach Burnout Inventory (MBI), herramienta validada para evaluar síndrome de burnout.* **Resultados:** *En total se realizaron 207 encuestas; 145 médicos contestaron la primera parte, 67.59% eran hombres, la edad media fue 40.8 años, 64% de los cardiólogos y 79% de los estudiantes consideran que no tienen tiempo suficiente para realizar otras actividades diferentes a la medicina (p = 0.18). Al aplicar MBI, las dimensiones más afectadas son agotamiento emocional, baja realización personal y despersonalización. Al comparar cardiólogos y estudiantes, los segundos tienen mayor proporción de compromiso en las tres dimensiones. Teniendo en cuenta las dos dimensiones más afectadas, 61.72% de los cardiólogos y 81.57% de los estudiantes de cardiología tienen alta puntuación de síntomas sugestivos de síndrome de burnout.* **Conclusión:** *La prevalencia del síndrome de burnout en estudiantes de cardiología y cardiólogos incluidos en la encuesta descrita, es alta y amerita la realización pronta de estrategias que busquen retirar o mitigar factores que se asocien a mayor riesgo de presentar esta condición, que impacta directamente en el desempeño profesional y la calidad de vida de los médicos.*

Palabras clave: *Prevalencia. Síndrome burnout. Agotamiento emocional. Despersonalización. Cardiología.*

Introduction

Burnout syndrome is considered to be a social phenomenon today[1], increasingly common in people who work in health care, and recognized by the World Health Organization (WHO) as an "occupational phenomenon." It occurs at any point from college training through professional practice and is characterized by low personal accomplishment, emotional exhaustion and depersonalization, affecting professional performance[2] and coping strategies for different situations in daily life. This goes beyond the physical-work environment to the psychosocial environment, highlighting its multifactorial etiology which is not limited to the work and academic load, but also includes emotional burden, decreased self-care, chronic fatigue, lack of financial resources, and social-familial support, among other factors[3,4].

Prevalence varies depending on the population studied and the healthcare area in which they function, reaching 45.8% in residents (students who are specializing), 42.5% in general practitioners, and 35.6% in specialists[2]. However, in other studies, specialists have a prevalence of up to 45.9%[5,6]. In 2019, the American College of Cardiology (ACC) published a survey on burnout and professional satisfaction among United States cardiologists which showed that one out of four cardiologists reported symptoms of the syndrome[7]. While this is an alarming figure, the figures in Latin America are even higher. Recently, the Sociedad Argentina de Cardiología (SAC) [Argentinian Society of Cardiology] published partial results of a survey on burnout in which 75% of the cardiologists had this syndrome.

This constitutes a social paradox: Who cares for and ensures the physical and psychological health of those who provide health care to the general public? Despite the relevance of the topic, there is insufficient information available to visualize the magnitude of the problem with actual figures in Colombia and, especially, in the field of cardiology, and we do not know whether there are significant differences in the prevalence of this phenomenon between staff in training and specialists in professional practice.

The objective of this study was to determine the prevalence of burnout syndrome, possible associated factors, and the sociodemographic characteristics of physicians who are specializing in cardiology and practicing cardiologists in Colombia, in order to create strategies to minimize the factors that trigger this syndrome and thus facilitate interventions to impact their quality of life and professional performance.

Materials and method

This was an analytical, cross-sectional observational study in Colombia using a virtual survey from the second semester of 2022 and the first quarter of 2023. Physicians who were specializing in cardiology and professionally active cardiologists were included. Cardiology students who for various reasons were in a deferment period for their specialization were excluded. This study was approved by the institutional ethics and research committee (188-2022).

Data source and data collection

A self-administered virtual survey was applied using the RedCap® application hosted on the Pontificia Universidad Javeriana (PUJ) and Hospital Universitario San Ignacio (HUSI) servers. This survey meets the standards of quality and data protection stipulated in the current Colombian regulations, with set fields and dropdown menus to minimize typing errors.

Recruitment strategy

The survey was disseminated using a multimodal strategy which included electronic media, via an invitation issued by the principal authors through the institutional mail service to the users registered in the Sociedad Colombiana de Cardiología y Cirugía Cardiovascular (SCC) [Colombian Society of Cardiology and Cardiovascular Surgery]. An invitation was also issued from the PUJ-HUSI cardiology program to the different cardiology programs throughout Colombia, as well as through academic chats and participants in on-site academic events carried out during the described period, to encourage the participation of both students and professors.

Characteristics of the questionnaire

The survey was divided in two parts: the first gathered sociodemographic and financial information, with differential questionnaires according to the profile (specialization students, specialists). The second was the same for all participants and was the application of the Maslach Burnout Inventory (MBI)[8], one of the tools for measuring burnout syndrome validated in this country, which evaluates three basic dimensions of burnout syndrome: emotional exhaustion, depersonalization and personal accomplishment. Authorization to use the data was requested and the objective of the study was clearly explained at the beginning of the survey. Not all those surveyed answered the first part of the survey completely (this is listed in the results tables as "No response"); all the available data was included. It is important to point out that cardiovascular surgeons and students specializing in cardiovascular surgery were under-represented in this study.

Statistical analysis

After collecting the data through RedCap®, descriptive statistics were used to report the variables. The Shapiro-Wilk test was run to evaluate the assumption of normality. Continuous variables were reported as means and standard deviation if they were normally distributed or as medians and interquartile range if they were non-normally distributed.

The groups (cardiology students and cardiologists) were compared using Student's t-test for continuous variables with a normal distribution, and the Mann-Whitney U test for continuous variables with a non-normal distribution. The Chi-square test was used for categorical variables. Data processing was done using Stata version 14.0 software.

Results

A total of 207 surveys were completed; one person did not accept the initial consent. Of the remaining 206 surveys, the first part, dealing with the sociodemographic variables, was completed by 145 physicians: 93 cardiologists, 44 cardiology students, 4 cardiovascular surgeons, 2 cardiovascular surgery students and 2 physicians who did not specify their academic category but whose demographic data was included. Of these, 67.59% were males, with a mean age of 40.8 years; 49.6% were married and 71.7% lived in socioeconomic strata 5 and 6. Most of the surveyed physicians (73.5%) practiced in the cities of Bogotá, Medellín and Bucaramanga, and 77.2% were from private universities (Table 1).

In the cardiologists' surveys, most had additional studies, mainly in the fields of university teaching, heart failure, heart transplantation and pulmonary hypertension (PHTN). A total of 84.94% had only one type of contract, predominantly as independent contractors. Those working mainly as independent contractors had the highest monthly income; cardiologists with an average monthly income of 21-30 current monthly minimum wages made up the highest percentage (36.55%). Overall, these professionals had more than 10 years of experience as cardiology subspecialists (38.46%) (Table 2).

As for the cardiology students, 44 answered the survey, 59.09% of whom were in their first year of study, and most had five to ten years of professional practice experience prior to beginning the specialization.

The main sources of funding for their education and living expenses were their own resources and financial help from their parents, with 68.18 and 47.71%, respectively, keeping in mind that more than half of the specialty students had more than one source of financial support (54.5%), 36.3% had needed student loans to

Table 1. Sociodemographic characteristics of the surveyed physicians (cardiology students, cardiologists, cardiovascular surgery students and cardiovascular surgeons)

Variables	n (%)	Mean (SD)
Males	98 (67.59%)	
Age (years)		40.8 (11.16)
Age categories	61 (42.06%)	
25-35 years	41 (28.27%)	
36-45 years	23 (15.86%)	
46-55 years	20 (13.79%)	
56-72 years		
Age according to academic status		
Cardiologists		45.2
Cardiology students		31.8
Surgeons		47.0
Cardiovascular surgery students		31.5
Marital status		
Married	72 (49.65%)	
Single	47 (32.41%)	
Cohabiting	17 (11.72%)	
Divorced	5 (3.44%)	
A couple not cohabiting	3 (2.06%)	
No answer	1 (0.68%)	
Widowed	0 (0%)	
Socioeconomic level		
Strata 1 and 2	2 (1.38%)	
Strata 3 and 4	39 (26.89%)	
Strata 5 and 6	104 (71.72%)	
Main professional practice city		
Bogotá	66 (48.53%)	
Medellín	17 (12.50%)	
Bucaramanga	17 (12.50%)	
Cali	12 (8.82%)	
Barranquilla	5 (3.68%)	
Cartagena	3 (2.21%)	
Pereira	3 (2.21%)	
Ibagué	2 (1.47%)	
Manizales	2 (1.47%)	
Other cities	7 (4.82%)	
No answer	9 (6.20%)	
Type of university		
Private	112 (77.24%)	
Academic status		
Cardiologist	93 (64.13%)	
Cardiology student	44 (30.34%)	
Cardiovascular surgeon	4 (2.75%)	
Cardiovascular surgery student	2 (1.37%)	
No answer/status not specified	2 (1.37%)	

Table 2. Sociodemographic characteristics of the cardiologists (n = 93)

Variables	n (%)
Additional studies after graduating as a cardiologist*	
University teaching	29 (31.18%)
Heart failure, transplants and PHTN	25 (26.88%)
Echocardiography and diagnostic imaging	23 (24.73%)
Not applicable	19 (20.43%)
Pediatric cardiology	9 (9.67%)
Epidemiology	9 (9.67%)
Electrophysiology	8 (8.60%)
Hemodynamics	7 (7.29%)
Other	7 (7.29%)
Administration	5 (5.37%)
Congenital heart disease	5 (5.37%)
Cardio-oncology	4 (4.30%)
Lipids and metabolism	4 (4.30%)
Geriatric cardiology	3 (3.22%)
Type of contract*	
Independent contractor	52 (55.91%)
Open-ended	26 (27.95%)
Fixed term	15 (16.12%)
Self-employed/entrepeneur	11 (11.82%)
Work done	7 (7.52%)
Monthly income	
0-10 minimum monthly wages (MMWs)	6 (6.45%)
11-20 MMWs	24 (25.80%)
21-30 MMWs	34 (36.55%)
31-40 MMWs	17 (18.27%)
More than 40 MMWs	12 (12.90%)
Length of time practicing as a subspecialist**	
Less than 5 years	27 (29.03%)
Between 5-10 years	24 (25.80%)
More than 10 years	39 (41.93%)
No answer	3 (3.22%)

*Question with a multiple response option; the percentage of all cardiologists with this subspecialty and/or type of contract; each cardiologist had the option of selecting more than one additional study and more than one type of contract at the same time.
**Length of time practicing as a cardiologist.

fund their studies, and 77.2% were self-employed while they did their specialization. The main sources of financial support for study and living expenses for the students who did not work during their specialization were their family and their own resources.

Regarding the academic/clinical load for cardiology students, 50.0% dedicated 40-60 hours a week and 52.27% dedicated an average of 15-30 hours a week to independent study, not counting the time devoted to independent contractor work (Fig. 1).

As far as wellbeing and health conditions, while there was a statistically significant difference between cardiologists and cardiology students in the average hours of sleep/day, there was no difference between the two groups in the perception of whether it was enough rest time. Likewise, around half considered that they had enough time to eat, with no difference between the two groups. However, 64% of the cardiologists and 79% of the cardiology students felt that they did not have enough time to engage in other activities unrelated to medicine, with no statistically significant difference between the groups (Fig. 2).

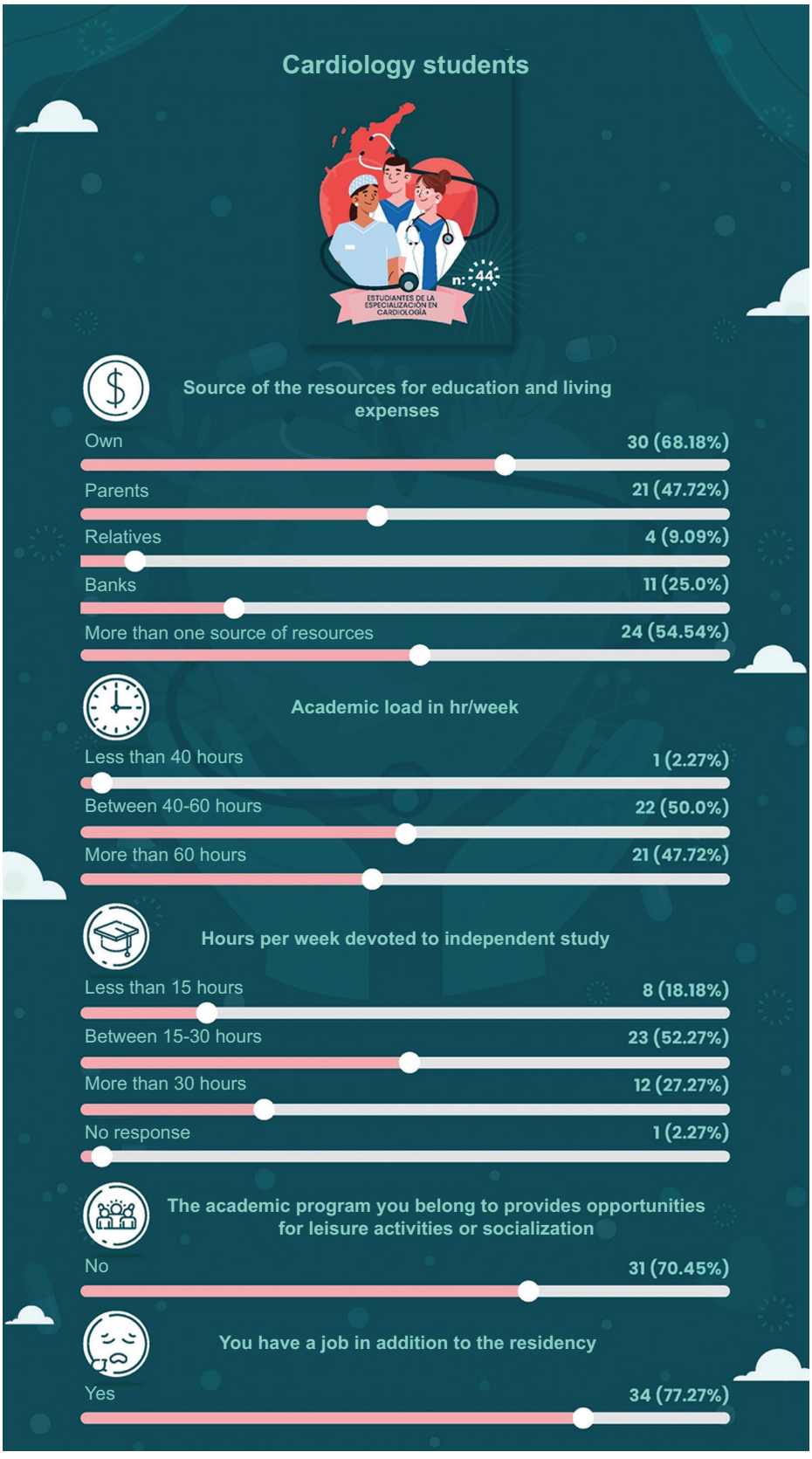

Figure 1. Cardiology students' source of resources and hours devoted to academic and clinical activities.

Regarding the prevalence of both psychiatric and non-psychiatric diseases, there was no significant difference between the groups. It is noteworthy that there was a higher proportion of physicians, both cardiologists as well as cardiology students, who were being treated with antidepressants or mood stabilizers than those reported to have psychiatric illnesses. That is, we could point out that there are professionals without a confirmed psychiatric diagnosis who are receiving pharmacological treatment. While the proportion of physicians with psychiatric illnesses was low, 41% of both cardiologists and cardiology students had needed psychotherapy or psychiatric support at some time during their training, and more than 90% of the cardiologists and cardiology students felt that cardiology programs needed to have strategies for preventing and diagnosing burnout syndrome (Fig. 2).

The second part of the survey involved completing the MBI tool, which was not answered in its entirety by all those surveyed. Of the 93 cardiologists, only 81 completed it, as did 38 of the 44 cardiology students. While the diagnosis of burnout syndrome is multidimensional (and this is why the MBI score involves the three basic dimensions for diagnosis), each dimension is evaluated separately and has a score which is interpreted using different cut-off points.

This survey showed that, in the three aforementioned academic categories, the most affected dimension was emotional exhaustion, followed by personal accomplishment and, finally, depersonalization. Comparing cardiologists and cardiology students, the students were most affected in the three dimensions (Fig. 3).

If the two most affected dimensions are considered, in both cardiologists and cardiology students (emotional exhaustion and personal accomplishment), 61.72 and 81.57%, respectively, had a high score of symptoms suggesting burnout syndrome, according to the MBI screening scale.

The prevalence of burnout syndrome involving all three of its characteristic dimensions was 12.3% for cardiologists and 15.7% for cardiology students. Although the sample of cardiovascular surgeons and students was very small, of the six who answered the survey, one had burnout syndrome with all three dimensions affected, according to the MBI.

Regarding the application of the MBI scale and desegregation of the results by sex, male cardiologists were more affected in the three evaluated dimensions than female cardiologists. This same behavior was found in cardiology students (Fig. 4).

Discussion

This study sought to evaluate the prevalence of burnout syndrome in cardiologists and cardiology students in Colombia through a virtual self-administered survey. In this study, the prevalence of the syndrome, with involvement of its three characteristic dimensions, was 12.3% in cardiologists and 15.7% in cardiology students. However, the proportion was higher if involvement of at least two of the three basic dimensions that define this syndrome (MBI) was considered, with 61.72% of the cardiologists and 81.57% of the cardiology students having a high symptom score suggestive of the syndrome, mainly due to high levels of emotional exhaustion and low personal accomplishment.

Although the survey participants only represent approximately 10 to 15% of the population registered in the SCC as active cardiologists and cardiology students in the country, it is not insignificant that more than half of the surveyed professionals had some degree of involvement, whether in the personal accomplishment, depersonalization or emotional exhaustion component. This reflects the public health problem posed by burnout syndrome in the field of cardiology, as it directly affects the performance and quality of life of the professionals in this field and ends up negatively affecting their work and the health care they provide to their patients, since it fosters a higher likelihood of medical errors, work absenteeism, and professional dissatisfaction and attrition[9].

Cardiology is a socially and culturally prestigious profession in this country, with the standards of living described in this study allowing us to infer a high monthly income and above average socioeconomic levels. However, it is also a demanding medical specialty, with a high workload, great social responsibility and grueling shifts, as well as work contract modalities that are not necessarily stable, which require more hours of work per week to earn the average monthly income and take up free time that could be used for nonmedical and wellness activities. Although cardiologists have favorable socioeconomic conditions when they reach the subspecialty practice level, they must study a minimum of 11 years, between undergraduate studies and the respective specializations (internal medicine-cardiology), to practice this profession in our country, and make a significant financial investment in their studies. Cardiology studies usually require a full-time commitment and are generally expensive, considering that this specialty is only offered at 11 universities, eight of which are private and charge higher tuition fees.

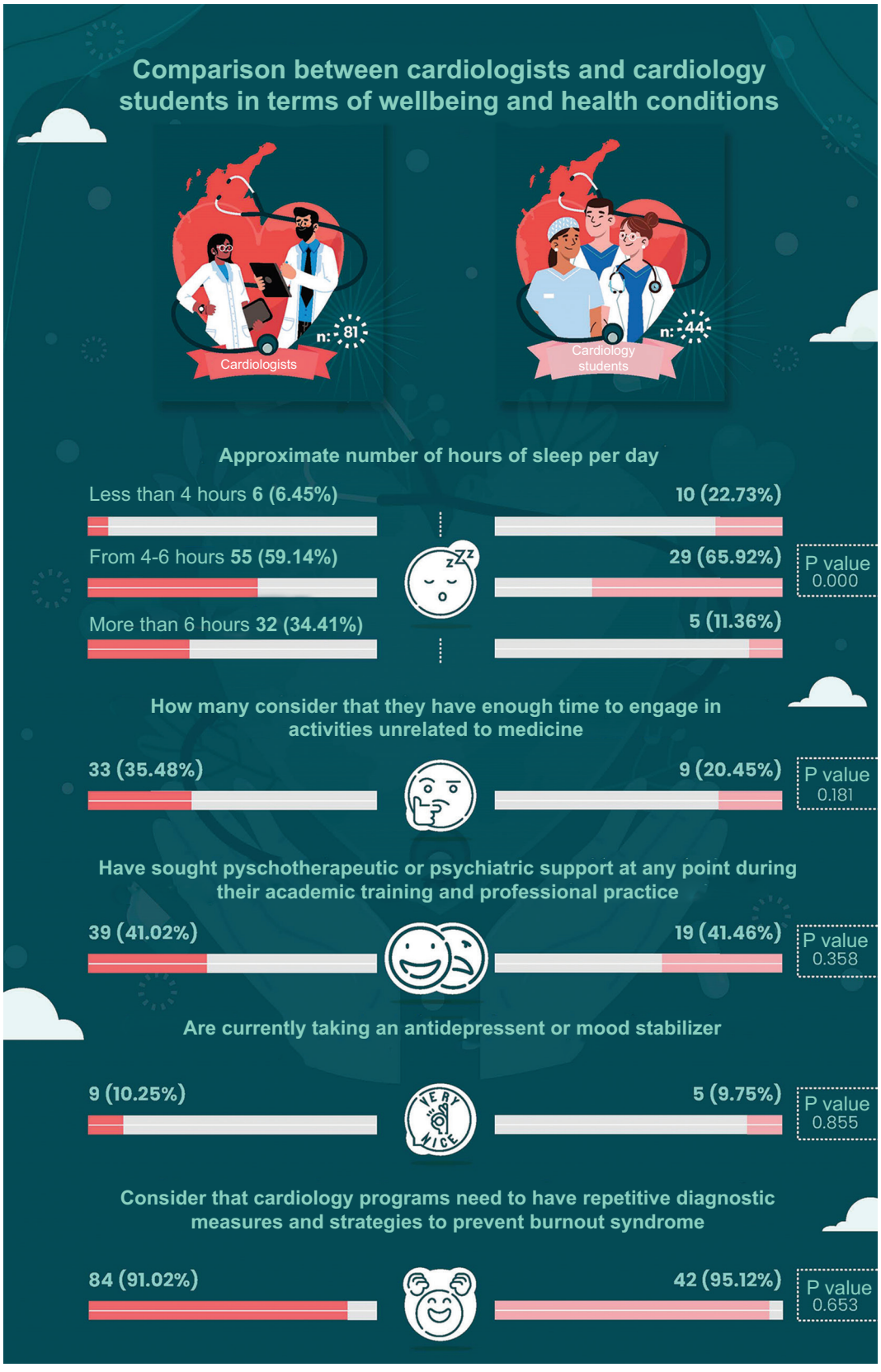

Figure 2. Comparison between cardiologists and cardiology students in terms of wellbeing and health conditions.

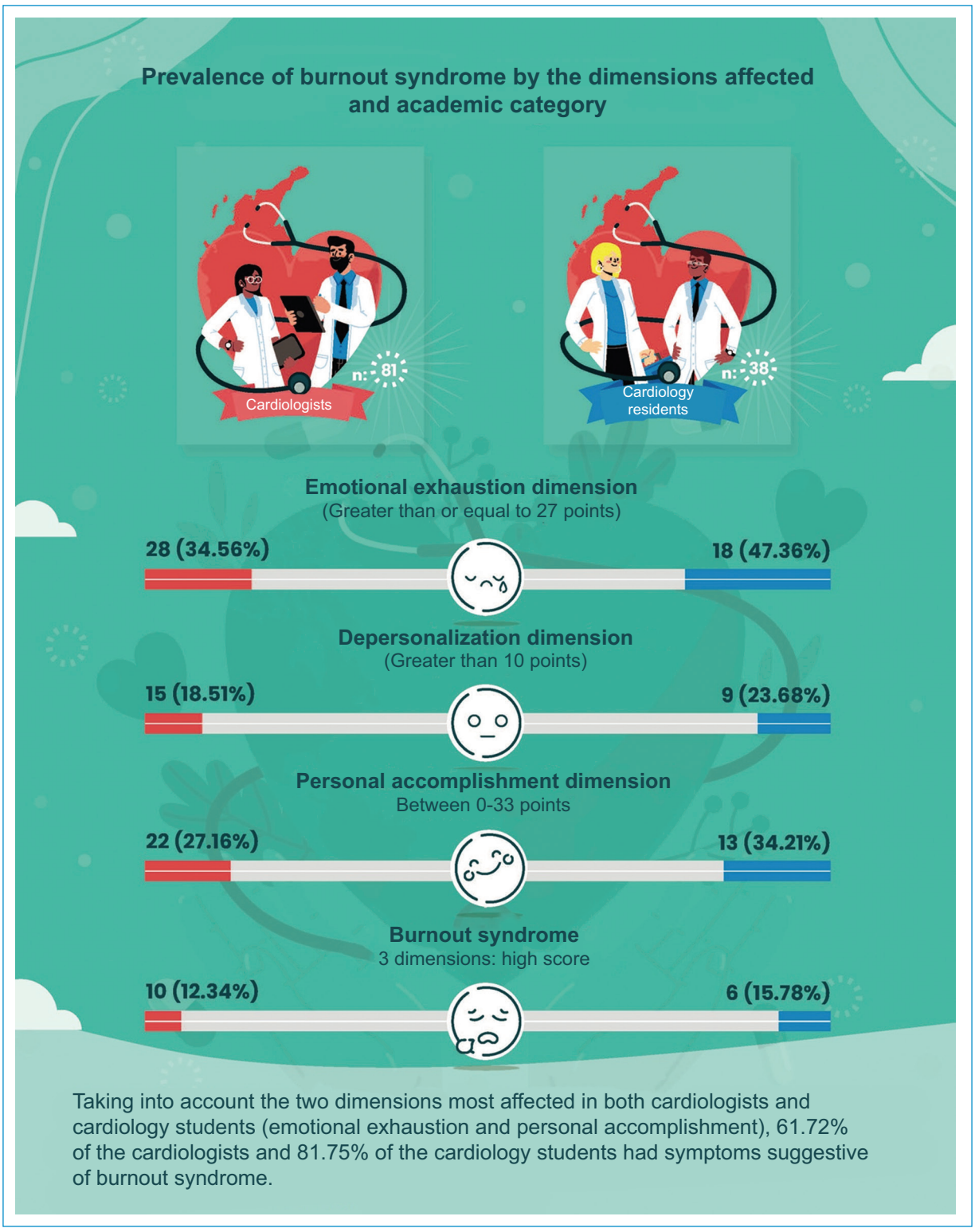

Figure 3. Prevalence of burnout syndrome by dimensions and academic category.

This is why a high percentage of cardiology students must resort to other resources and financial support to continue with their studies and, even with this, regardless of the long academic and clinical sessions, they devote the rest of their time to working to pay for their living expenses.

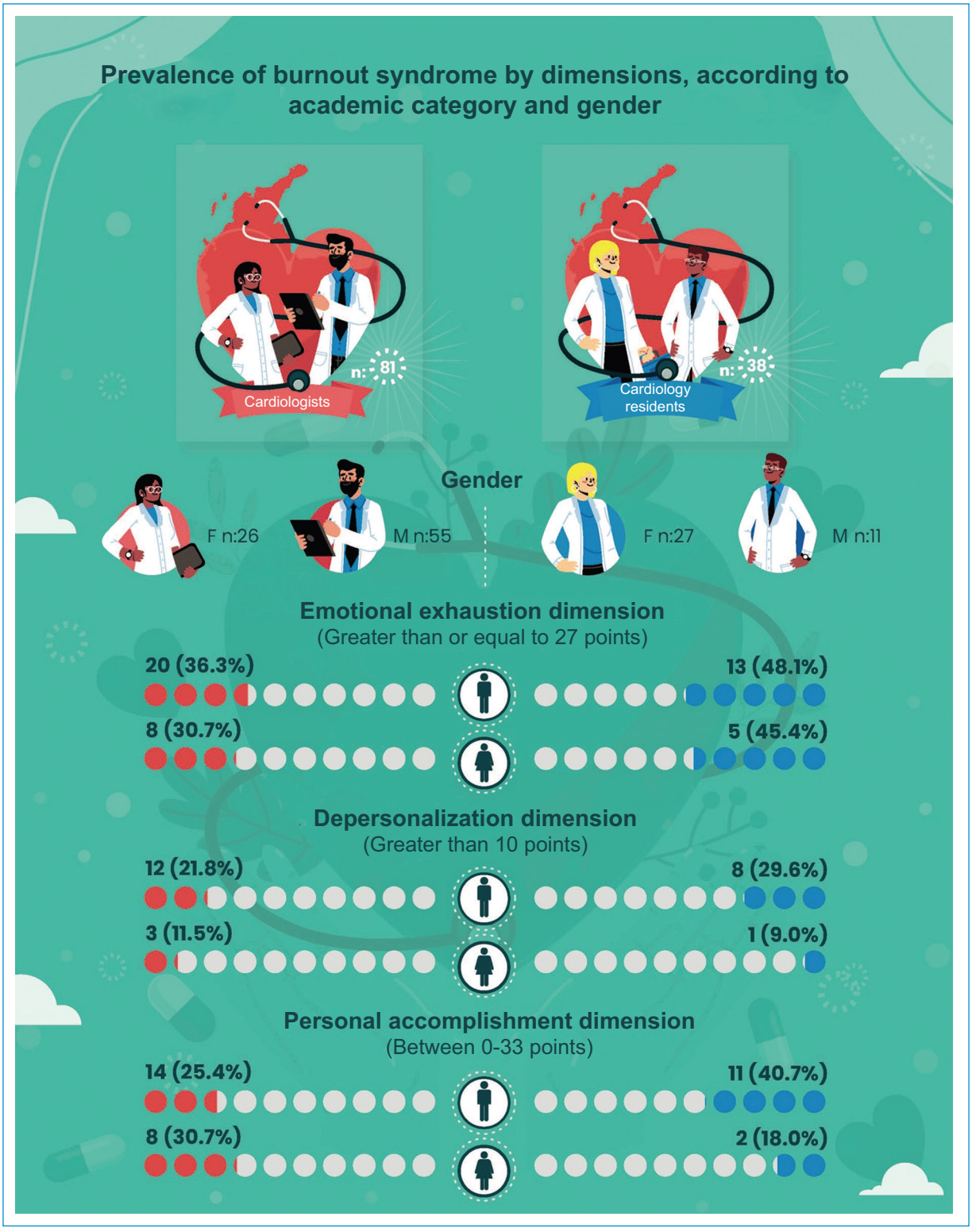

Figure 4. Prevalence of burnout syndrome by dimension and according to academic category and gender.

For several years we have been aware of the relevance of burnout syndrome and its high prevalence in medical staff; however, there is little information available in the field of cardiology, especially in Colombia. We have information from the 2019 survey[10] of 36 of the 48 cardiology students at that time, which showed

that 44% had high levels in at least one of the two subscales evaluated to determine burnout syndrome, and that the most affected component was emotional exhaustion, in 46% of the students. Nevertheless, the sociodemographic characteristics of this population are not available, and cardiologists were not included. In our study, there was a higher prevalence of burnout syndrome in both cardiologists as well as cardiology students, according to the dimension evaluated.

There is more information available at an international level; in the World Congress of Cardiology in 2020, the ACC presented a survey sent to 14,000 members, which was only completed by 14% (2,025), in which 35.4% had criteria for professional burnout[11]. This figure had increased compared to what was reported in 2015, when the prevalence was around 27%. The most common predictors were feeling constantly stressed, not having control over the workload, working in a hostile environment and having too little time for administrative tasks. It is important to note that this survey was conducted in a complex social context due to the COVID-19 pandemic, which confined the community to strict social distancing and healthcare staff to grueling work shifts, with a high biological risk that threatened their physical and emotional condition and limited contact with their families and people close to them, to the point that 58% of the cardiologists with burnout syndrome had considered giving up their clinical practice.

In another North American study on burnout syndrome in cardiology and career satisfaction, a virtual survey of 2,274 cardiologists and cardiology students was conducted, and more than 25% of the cardiologists reported being exhausted and 50% reported being under high levels of stress[12]. Different factors have been associated with the onset of burnout syndrome in cardiologists, such as a high workload, an imbalance between the job demand and clinical skills, as well as loss of control over their professional practice[9]. In 2017, the Medscape Cardiologist Lifestyle Report considered that the most common causes associated with burnout were the bureaucratic burden of United States cardiologists, work schedule, increase in computerized practices, loss of autonomy and high demands to achieve professional practice certifications. In 2019, a new report showed alarming prevalence rates of up to 43% in North American cardiologists[13].

In Latin America, Argentina leads the main studies published on burnout syndrome in different medical specialties, including cardiology, and has generated different proposals from medical societies to mitigate the effects of burnout on medical professionals. In one of the studies, the prevalence of this syndrome was associated with the level of resilience of healthcare professionals, through a questionnaire validated for both cardiology students as well as cardiologists doing another subspecialty. The study showed that a third of those surveyed had low resilience levels, which were correlated with positive criteria for burnout[14]. This year, the Argentine Society of Cardiology (SAC, in Spanish) and the SAC's council on psychosocial issues once again alerted to the critical situation faced by cardiologists in that country, with a 75% prevalence of the syndrome in a survey of 756 cardiologists performed in April 2023.

What this data shows regarding the high prevalence of burnout syndrome in surveys that, for the most part, are not completed by even half of the population to which they are addressed, represents just one part of the medical population in the field of cardiology, but reflects a clearly critical state of mental and emotional health in these healthcare professionals. Likewise, the data highlights the importance of this topic, requiring prompt measures to prioritize the physical, emotional and mental wellbeing of specialists and those in training (both for their own benefit as well as that of the healthcare system), in a Latin American society with substantially limited health conditions and guarantees. People who practice their medical profession and provide a service to the community should be targeted for public health protection, and their work conditions and welfare should be just as important as those of the population they care for. These professionals have basic needs, and require decent space and time for eating and rest, to share with their families, to have stable and decent work conditions, to practice their profession in an adequate work environment, and to have the opportunity to engage in activities that are not related to medical practice, allowing them to interact with their families and the community at large.

The most pertinent strength of this study is that it is the first in Colombia to address the prevalence of burnout syndrome with a demographic description of the population that included both cardiology students as well as cardiologists. The limitations include the low response rate. Although it was sent through various digital media and in different academic events to encourage participation, the response rate was low; despite this, it is the largest survey in the country on burnout syndrome in this population, to date. On the other hand, as it was a self-administered survey, it has

a self-report bias and deals with sensitive information, mainly financial (monthly income and types of contracts, among others) that may have led to not all participants answering the whole survey, even though it was anonymous.

Likewise, the responses may change over time, depending on the work and academic conditions at the time the survey was completed and the MBI taken. The causality between a positive MBI screening for burnout syndrome and the factors that favor its occurrence cannot be analyzed.

Conclusion

In this study, the prevalence of burnout syndrome with diagnostic criteria in the three dimensions using the MBI was 12.3% in cardiologists and 15.7% in cardiology students. However, the proportion was higher when involvement of at least two of the three basic dimensions that define this syndrome was considered, with 61.72% of cardiologists and 81.57% of cardiology students having high scores, mainly with high levels of emotional exhaustion and low personal accomplishment.

These results call for the implementation of strategies to remove or mitigate factors associated with a higher risk of burnout syndrome and improve the conditions in academic and clinical training for both cardiology students and cardiologists in this country.

Acknowledgements

We would like to thank Esteban Roa, graphic designer, for his help in designing the figures and results, and Daniela Patiño for her assistance in statistically processing the results.

Funding

The authors declare that they received no funding for this study.

Conflicts of interest

The authors declare no conflicts of interest.

Ethical considerations

Human and animal protection. The authors declare that no experiments were conducted on humans or animals in the course of this study.

Data confidentiality. The authors declare that no patient data appear in this article. Furthermore, the authors have recognized and followed the SAGER guidelines according to the type and nature of the study.

Right to privacy and informed consent. The authors declare that no patient data appear in this article.

Use of artificial intelligence to generate text. The authors declare that they have not used any type of generative artificial intelligence in drafting this manuscript or creating figures, graphs, tables or their respective captions or legends.

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