

# Prevalence and Factors Associated with Burnout Syndrome in Colombian Anesthesiologists

## Abstract

**Background:** Burnout is characterized by the presence of emotional exhaustion, depersonalization, and low personal accomplishment, and manifests itself in difficulties in the handling of the psychological aspects of personal relationships with patients, by taking a negative attitude toward them. The objective was to evaluate the associated factors and describe the prevalence of burnout in Colombian anesthesiologists. **Methods:** A cross-sectional observational study. The classification of burnout was carried out using two criteria: the first related to high emotional exhaustion, accompanied by either high depersonalization or low personal accomplishment; the second associated with high emotional exhaustion in conjunction with both high depersonalization and low personal accomplishment. The prevalence and the variables associated with the presence of Burnout were described according to each criterion. **Results:** 19.2% of the respondents were categorized as having burnout according to the first criterion and 9.2% according to the second criterion. The results are consistent regardless of the criterion used to define burnout; the associated factors were the presence of depression, anxiety, the degree of satisfaction with the profession, more than 200 hours worked per month and being an at-risk drinker. Anxiety was found to be associated with increased risk of both criteria 1 and 2 burnout. **Conclusions:** In line with other studies, the prevalence of burnout among Colombian anesthesiologists varies depending on the burnout criteria. However, a strong correlation was noted with depression, anxiety, low satisfaction with professional career and high number of working hours per month.

**Keywords:** Anesthesiologists, associated factors, burnout syndrome, Maslach, prevalence

## Introduction

Burnout is described in some studies as professional exhaustion syndrome.<sup>[1-4]</sup> It occurs in people who work in professions in which they are in frequent and close contact with other people. The syndrome is related to the way the individual addresses this contact, which can become chronically inappropriate for their profession.<sup>[5]</sup> Burnout is characterized by the presence of emotional exhaustion, depersonalization, and low personal accomplishment, which in turn constitute the diagnostic domains, and manifests itself in difficulties in handling the psychological aspects of personal relationships with patients, by taking a negative attitude toward them and also by evaluating them negatively in this aspect.<sup>[5,6]</sup> This situation results in the affected professional requiring the use of additional energy resources to deal with the situation and inhibits traditional one-on-one

interactions.<sup>[7]</sup> It has a prevalence of about 27% in medical professionals,<sup>[8-10]</sup> however, a higher percentage has been reported in anesthesiologists, ranging from 50% to 70%, compared with a prevalence of 16% in school teachers or 15.6% in other professions not related to health.<sup>[11-17]</sup> Similarly, various studies have identified a wide range of prevalence of burnout, which range from 0% to 70.1% among health professionals who work in intensive care or between 1% and 23% severe burnout in French doctors.<sup>[18,19]</sup> These variations are due to the different cutoff points and the measuring instruments used.

Various factors have been associated with the presence of burnout depending on the type of health profession. These include a higher number of extended working hours, being a woman, consuming tobacco or psychoactive substances, or having more than five alcoholic drinks per week, lower job satisfaction, less time in clinical practice and time off from work due to disability or

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retirement.<sup>[8,15,20-24]</sup> These factors vary according to the type of methodological designs from which this information is derived, which do not allow the temporary nature of these factors to be defined.

There is a lack of information regarding the prevalence and risk factors of burnout among Colombian anesthesiologists. Understanding the working conditions that affect the medical practice of anesthesiologists, and the extent to which their presence affects the personal, family, and social well-being of the subjects is of critical importance to design interventions to improve the contributing factors. The objective of this study was to evaluate the associated factors and describe the prevalence of burnout in Colombian anesthesiologists. Because of the different descriptions of burnout in the literature, which can result in the prevalence being overestimated or underestimated,<sup>[25]</sup> this study uses two criteria to define burnout, in order to be able to make a better comparison with other studies.

## Methods

A cross-sectional observational study was carried out in which each participant was either an anesthesiologist who had graduated from a Colombian institution or a foreigner working in Colombia. The anesthesiologists were surveyed to evaluate professional burnout syndrome and its associated factors. A nonprobabilistic convenience sampling was conducted for anesthesiologists registered in the database of the Colombian Society of Anesthesiology and Resuscitation (S.C.A.R.E.) during 2015. However, nonaffiliated anesthesiologists were also included, who were recruited for the survey through other sources.

A questionnaire was designed using specialized software. Before the study, several activities were carried out to promote participation (sending emails notifying participants of the study and emphasizing its importance, and an announcement on the S.C.A.R.E. website) in preparation for sending the questionnaires and increasing the possibilities of uptake. The access link for the questionnaire was sent to the professionals for them to complete the survey, and was available between June and November 2015. Finally, reminders were sent to the departments of S.C.A.R.E. and to different anesthesiology programs in the country's universities to ask for their help in disseminating the questionnaire and providing a financial incentive. The professionals approved their participation through a virtual application of informed consent, in which a guarantee of full anonymity was provided at the start of the questionnaire so that the information was not linked to the authentication data.

The instrument used to assess burnout was the Maslach Burnout Inventory (MBI), one of the most commonly used instruments to measure burnout.<sup>[25]</sup> The Mind Garden gave permission and the remote Online Survey License for S.C.A.R.E. to reproduce and translate the copies. It consists of 22 questions that evaluate three domains:

emotional exhaustion (related to the depletion of the ability to connect emotionally, producing a decrease in interest and satisfaction with the job), depersonalization (related to the lack of sympathy in dealing with people within their service, referred to as apathy), and personal accomplishment (related to dissatisfaction at a professional level with the work carried out).<sup>[5]</sup> The items of this instrument are detailed in Appendix 1. The instrument for each domain displayed an internal consistency identified in the literature with alpha coefficients of 0.88, 0.71, y 0.78 for emotional exhaustion, depersonalization, and personal accomplishment, respectively.<sup>[26]</sup> Each of the scores of the evaluated domains was interpreted as follows: "high grade" scores greater than or equal to the 75<sup>th</sup> percentile; "middle grade" scores between the 25<sup>th</sup> and 75<sup>th</sup> percentile; and "low grade" scores below or equal to the 25<sup>th</sup> percentile.<sup>[27]</sup> To identify the professionals that were diagnosed with burnout, two criteria were used: the first related to high emotional exhaustion, accompanied by either high depersonalization or low personal accomplishment (criterion 1); and the second, associated with high emotional exhaustion, accompanied by both high depersonalization and low personal accomplishment (criterion 2). As this is the pioneering study in Colombia and validation of the burnout criteria has not been previously reported, reporting both criteria for burnout categorization analysis is of interest.<sup>[16,28]</sup> However, the presence of the associated conditions such as quality of life, depression, alcohol consumption, anxiety, and perception of the current state of health were evaluated using the WHOQOL-BREF instrument, Montgomery-Asberg Depression Scale (MADRS), AUDIT-C and AUDIT tests, Goldberg test, and EQ5D test, respectively.<sup>[29-33]</sup> The interpretation of the instruments was based strictly on the recommendations of the authors of each test, which were chosen because of their excellent discriminative capabilities (sensitivity and specificity). In addition, questions were asked regarding personal, work and family characteristics; the conception, planning, and attempts at suicide (grouped into suicidal behavior); and consumption of psychoactive substances, grouped into legal (cigarette and energy drinks) and illegal (illicit drugs) for the evaluation of other associated factors.

Permits and the corresponding licenses were obtained for the instruments that required them. The study was endorsed by the ethics committee of the Faculty of Medicine of the National University of Colombia, approved by the evaluation report No. 005-032-15 of March 26, 2015.

## Statistical analysis

First, a descriptive analysis was carried out, using measures of central tendency and dispersion for continuous variables, depending on their distribution (Shapiro-Wilk test), and the frequencies and percentages for categorical variables.

To determine the variables associated with the presence of burnout (criteria 1 and 2), univariate (crude) and

multivariate (adjusted) models were analyzed using a robust Poisson regression. This model was used to adjust the parameter estimates and confidence intervals, mainly because of common burnout within the study population (>10%), low frequency of the event among some covariables, and the type of study design (cross-sectional).<sup>[34-36]</sup> An analysis of confounding and interaction between the variables was carried out, as well as a statistical collinearity assessment. The interactions that had statistical significance were included in the final model. In the multivariate model, the WHOQOL-BREF domains (physical, psychological, social, and environmental relationships), family satisfaction, pension and night shifts were not included because they displayed collinearity with other model variables. The visual analog scale (VAS) of the EQ5D was evaluated using a dummy variable where the scores were categorized as (0–40, 41–60, 61–80, and 81–100). A  $P < 0.05$  was defined for statistical significance. The analyses were performed on STATA 13® (StataCorp, 2013. Stata Statistical Software: Release 13. College Station, TX: StataCorp LP).

## Results

The sociodemographic characteristics of all the respondents ( $n = 702$ ) are detailed in Table 1. 98.8% of the subjects (694 respondents) answered the questions regarding professional exhaustion syndrome, which was evaluated using the three domains categorized as high, medium, and low, as detailed in Table 2.

Overall, 19.2% and 9.2% of the respondents were categorized as having burnout according to the first and the second criteria, respectively. Within the first categorization criterion, 66.1% had depression and 66.9% anxiety, with 81.2% of the latter also displaying depression. In addition, 66.7% reported working days of longer than 12 continuous hours, 70.6% worked night shifts, and 80.8% worked after their shift. Table 1 shows the characteristics of anesthesiologists with burnout according to both the two criteria.

The associated factors for the first burnout criterion [Table 3] in the univariate analysis were the presence of anxiety, depression, lower age, medium to low degree of professional satisfaction, low levels of satisfaction and dissatisfaction with family relationships, not in receipt of a retirement pension, the number of vacation days per year, working more than 20 years since graduation, more than 200 hours of work on average per month, a worse perception of quality of life (according to the lowest percentile in all WHOQOL-BREF domains), the presence of some degree of suicidal behavior, and consumption of alcohol. These same factors were observed with the second criterion [Table 4] with the exception of not yet receiving a retirement pension and the presence of some suicidal behaviors.

The multivariate analysis revealed that after adjusting for confounders the association between burnout and the decrease in the magnitude of the association is maintained in most variables, with the exception of factors such as marital status and time since graduation for the two criteria [Tables 3 and 4]. The factors associated with increased burnout risk in criterion 1 were the presence of anxiety, depression, being female, being married or living with a partner, medium and low degree of satisfaction with the profession, more than 200 working hours per month, and being an at-risk drinker [Table 3]. The only factor that had a mitigating effect of burnout was age [Table 3]. For the multivariate analysis with criterion 2, burnout was shown to be affected by anxiety, depression, medium and low degree of satisfaction with the profession, more than 200 hours worked per month, and being an at-risk drinker. The mitigating effect of age was also observed and, additionally, it was evident that in this case being married lowered the risk of being affected by burnout by a factor of 4.5, when the person has a high emotional exhaustion, accompanied by a high level of depersonalization and low personal accomplishment [Table 4].

## Discussion

In this cross-sectional study on anesthesiologists working in Colombia, we have identified that both personal factors and adverse working conditions factors are independently associated with increased risk for burnout. The results are consistent regardless of the criterion used to define burnout; the associated factors were depression, anxiety, degree of satisfaction with the profession, more than 200 working hours per month, and being an at-risk drinker.

In a study carried out among French anesthesiologists, using the second classification criterion, burnout was associated with factors such as quality of life, personal life, fatigue, depression, and conflicts with colleagues and patients.<sup>[37]</sup> When performing the analysis for each domain, there were associated factors such as assessment of the work and family environment and work fatigue in the anesthesiology population.<sup>[38]</sup> In a 2012 study of Brazilian anesthesiologists, it was observed that in each domain high levels of emotional exhaustion and depersonalization were associated with age, difficulties in the family and work environment, low self-esteem and symptoms of depression, and low personal achievement was associated with age, poor perception of the work environment, low self-esteem, and consumption of psychoactive substances.<sup>[39]</sup>

In spite of the different criteria, common factors such as aspects related to family and work environment, depressive symptoms and quality of life were noted, factors that were also identified in the present study. However, the analysis of the majority of published studies is bivariate, and therefore the combined effect between each of the variables cannot be evaluated, apart from the difference in the criteria and description of burnout by the domains,<sup>[15,22,40]</sup> which could

**Table 1: Characteristics of anesthesiologists with Burnout syndrome by criterion**

Characteristics	Total n (%)	Burnout (criterion 1) n (%)	Burnout (criterion 2) n (%)
Total	702*	133 (19.2) *	65 (9.2) *
Age (years) - Median (IQR)	46 (36-54)	41 (35-50)	39 (32-48)
Marital status			
Single	150 (21.5)	31 (23.5)	18 (28.1)
Married or living with partner	510 (73.2)	94 (71.2)	42 (65.6)
Separated, divorced or widowed	37 (5.3)	7 (5.3)	4 (6.3)
Time passed since graduation			
≤ 5 years	216 (30.8)	44 (33.6)	26 (40.0)
6 a≤10 years	77 (11.0)	22 (16.8)	11 (16.9)
11 a≤20 years	218 (31.1)	42 (32.1)	19 (29.2)
> 20 years	190 (27.1)	23 (17.6)	9 (13.9)
Daily hours worked - Median (IQR)	12 (10-12)	12 (12-12)	12 (12-12)
Night shifts worked			
Yes	270 (38.6)	94 (70.6)	48 (73.9)
No	429 (61.4)	39 (29.4)	17 (26.1)
Number of night shifts per month			
1-3	122 (28.4)	28 (29.8)	14 (29.2)
4-6	192 (44.8)	39 (41.5)	20 (41.7)
7-9	74 (17.3)	16 (17.0)	9 (18.8)
10 or more	41 (9.6)	11 (11.7)	5 (10.3)
Quality of life WHOQOL-BREF			Median (IQR)
Physical activity	16 (14-18)	14 (12-15)	13 (12-15)
Psychology	16 (14-18)	13 (12-15)	13 (11-14)
Social relationships	15 (12-16)	12 (11-13)	12 (9-13)
Environmental	15 (13-17)	13 (12-14)	12 (11-14)
Visual analog scale (VAS) of EQ5D			
0-40	14 (2.1)	6 (4.7)	2 (3.2)
41-60	47 (6.9)	19 (14.8)	8 (12.9)
61-80	158 (23.2)	50 (39.1)	27 (43.5)
81-100	461 (67.8)	53 (41.4)	25 (40.3)
Suicidal behavior		n (%)	
Yes	657 (97.1)	10 (7.9)	4 (6.5)
No	20 (2.9)	117 (92.1)	58 (93.5)
Consumption of psychoactive substances			
Legal	167 (24.9)	34 (26.4)	11 (17.2)
Illegal	25 (3.8)	7 (5.5)	3 (4.8)
Alcohol consumption (AUDIT)			
No alcohol-related problems	601 (89.6)	101 (80.2)	45 (73.8)
At-risk drinking	1 (0.1)	24 (19.0)	15 (24.6)
Physiochemical problems with drinks	69 (10.3)	1 (0.8)	1 (1.6)
Depression			
Yes	155 (22.9)	84 (66.1)	43 (69.3)
Anxiety			
Probable	187 (27.7)	85 (66.9)	43 (69.3)
Normal	498 (72.3)	42 (33.1)	19 (30.7)

\*Data is missing from some of the evaluated variables because it was not mandatory for respondents to answer all of the questions

**Table 2: Distribution of the 694 responders by domain of Burnout syndrome (Maslach)**

	Emotional exhaustion		Depersonalization		Personal accomplishment	
	Score*	n (%)	Score*	n (%)	Score*	n (%)
Low	≤7	193 (27.8)	≤1	207 (29.8)	≤35	182 (26.2)
Medium	7-22	327 (47.1)	1-4	288 (41.5)	35-44	312 (45.0)
High	≥22	174 (25.1)	≥7	199 (28.7)	≥44	200 (28.8)

\*Low: ≤25<sup>th</sup> percentile, medium: 25<sup>th</sup>-75<sup>th</sup> percentile, high: ≥75<sup>th</sup> percentile

**Table 3: Factors associated with Burnout syndrome (criterion 1) in anesthesiologists**

Variable	Burnout (criterion 1)		
	n (%)**	Unadjusted IRR (IC 95%) <sup>1</sup>	Adjusted IRR (IC 95%) <sup>2</sup>
Anxiety <sup>±</sup>	85 (66.9)	5.29 (3.80-7.35) *	2.44 (1.61-3.70) *
Depression <sup>±</sup>	84 (66.1)	6.56 (4.77-9.06) *	3.25 (2.10-5.02) *
Age (years)	132	0.97 (0.96-0.98) *	0.95 (0.91-0.98) *
Gender <sup>±</sup>			
Male	88 (66.7)		1 (base)
Female	44 (33.3)	1.18 (0.85-1.64)	2.10 (1.14-3.85) *
Marital status <sup>±</sup>			
Single	31 (23.5)		1 (base)
Married or living with partner	94 (71.2)	0.87 (0.60-1.25)	2.92 (1.42-6.02) *
Separated, divorced or widowed	7 (5.3)	0.88 (0.42-1.84)	3.05 (0.71-13.00)
Level of professional satisfaction <sup>±</sup>			
High	61 (45.9)		1 (base)
Medium	59 (44.4)	3.04 (2.22-4.14) *	1.85 (1.00-3.43) *
Low	13 (9.7)	3.97 (2.51-6.27) *	10.22 (5.23-19.94) *
Satisfaction with family relationships			
Satisfied	107 (82)		1 (base)
Low satisfaction	19 (15)	2.55 (1.75-3.74) *	-
Dissatisfied	4 (3)	3.38 (1.73-6.57) *	-
Retirement Pension			
Yes	4 (3.0)		1 (base)
No	128 (97.0)	3.26 (1.24-8.53) *	-
Vacation days per year	130	0.97 (0.95-0.99) *	-
Time passed since graduation			
≤5 years	44 (33.6)		1 (base)
6-≤10 years	22 (16.8)	1.35 (0.86-2.09)	1.27 (0.78-2.06)
11-≤20 years	42 (32.1)	0.91 (0.62-1.33)	1.08 (0.61-1.88)
>20 years	23 (17.6)	0.57 (0.36-0.91) *	1.75 (0.69-4.40)
Number of night shifts per month			
1-3	28 (29.8)		1 (base)
4-6	39 (41.5)	0.89 (0.58-1.36)	-
7-9	16 (17.0)	0.93 (0.54-1.60)	-
10 or more	11 (11.7)	1.15 (0.63-2.11)	-
Number of working hours per month			
<200	19 (14.4)		1 (base)
201-300	75 (56.8)	1.93 (1.20-3.08) *	2.14 (1.27-3.62) *
>300	38 (28.8)	1.88 (1.13-3.14) *	2.05 (1.21-3.46) *
Visual analog scale (VAS) of EQ5D			
0-40	6 (4.7)	3.72 (1.93-7.18) *	1.04 (0.48-2.23)
41-60	19 (14.8)	3.51 (2.28-5.40) *	1.33 (0.88-1.99)
61-80	50 (39.1)	2.75 (1.95-3.87) *	1.23 (0.87-1.75)
81-100	53 (41.4)		1 (base)
Suicidal behavior			
No	117 (92.1)		1 (base)
Yes	10 (7.9)	2.80 (1.75-4.48) *	0.80 (0.49-1.30)
Consumption of legal substances, with potential for abuse			
No	95 (73.6)		1 (base)
Yes	34 (26.4)	1.07 (0.75-1.52)	1.12 (0.79-1.57)
Consumption of illegal psychoactive substances			
No	120 (94.5)		1 (base)
Yes	7 (5.5)	1.52 (0.80-2.90)	1.27 (0.79-2.04)
Alcohol consumption (AUDIT)			
No problems related to alcohol	101 (80.2)		1 (base)

Contd...

**Table 3: Contd...**

Variable	Burnout (criterion 1)		
	n (%)**	Unadjusted IRR (IC 95%) <sup>1</sup>	Adjusted IRR (IC 95%) <sup>2</sup>
At-risk drinker <sup>‡</sup>	24 (19.8)	2.12 (1.48-3.05) *	1.49 (1.01-2.19) *
WHOQOL-BREF <sup>3</sup> Physical			
P25	61 (45.9)	9.58 (3.98-23.05) *	-
P25 A P75	67 (50.4)	3.31 (1.37-8.04) *	-
P75	5 (3.7)	1 (base)	-
WHOQOL-BREF <sup>3</sup> Psychological			
P25	72 (54.1)	12.98 (5.41-31.13) *	-
P25 A P75	56 (42.1)	3.38 (1.38-8.26) *	-
P75	5 (3.8)	1 (base)	-
WHOQOL-BREF <sup>3</sup> Social relationships			
P25	49 (36.8)	14.83 (6.10-36.06) *	-
P25 A P75	79 (59.4)	6.20 (2.55-15.06) *	-
P75	5 (3.8)	1 (base)	-
WHOQOL-BREF <sup>3</sup> Environmental			
P25	60 (45.1)	8.17 (3.41-19.59) *	-
P25 A P75	68 (51.1)	2.67 (1.11-6.46) *	-
P75	5 (3.8)	1 (base)	-

<sup>1</sup>Univariate Poisson regression model (robust variance estimator). <sup>2</sup>Multivariate Poisson regression model (robust variance estimator), with the inclusion of all the variables described in the table except the following variables by collinearity: WHOQOL-BREF with the variable VAS; family satisfaction with professional satisfaction and marital status; pension with marital status; and the variable number of night shifts with working hours. <sup>3</sup>Grouped in percentiles±Evaluation of interaction within the model between depression and anxiety  $P=0.45$ ; marital status and gender ( $P<0.05$  in the two categories); marital status and professional satisfaction ( $P=0.000$  in the categories of “married or living with partner” with low satisfaction, and “separated/divorced/widowed” with low satisfaction). Significant interactions were included within the model. <sup>‡</sup>The category of physical-chemical problems with drinking was grouped with at-risk drinker for the models, due to the low frequency. \* $P<0,05$ , \*\*Data is missing for some of the evaluated variables because it was not mandatory for respondents to answer all the questions

**Table 4: Factors associated with Burnout syndrome (criterion 2) in anesthesiologists**

Variable	Burnout (criterion 2)		
	n (%)**	Unadjusted IRR (IC 95%) <sup>1</sup>	Adjusted IRR (IC 95%) <sup>2</sup>
Anxiety <sup>±</sup>	43 (69.3)	5.91 (3.54-9.88) *	2.79 (1.57-4.96) *
Depression <sup>±</sup>	43 (69.3)	7.62 (4.57-12.68) *	4.05 (2.29-7.16) *
Age (years)	64	0.95 (0.93-0.98) *	0.90 (0.84-0.96) *
Gender <sup>±</sup>			
Male	40 (62.5)		1 (base)
Female	24 (37.5)	1.42 (0.88-2.30)	1.32 (0.75-2.29)
Marital status <sup>±</sup>			
Single	18 (28.1)		1 (base)
Married or cohabiting	42 (65.6)	0.68 (0.40-1.15)	0.22 (0.07-0.73) *
Separated, divorced or widowed	4 (6.25)	0.90 (0.32-2.50)	4.41 (1.56-12.48) *
Level of satisfaction with profession <sup>±</sup>			
High	24 (36.9)		1 (base)
Medium	34 (52.3)	4.44 (2.71-7.26) *	2.04 (1.18-3.53) *
Low	7 (10.8)	5.48 (2.59-11.59) *	10.37 (3.95-27.20) *
Satisfaction with family relationships			
Satisfied	50 (78.1)		1 (base)
Low satisfaction	11 (17.2)	5.5 (2.24-13.48) *	-
Unsatisfied	3 (4.7)	3.13 (1.75-5.59) *	-
Pension			
Yes	1 (1.56)		1 (base)
No	63 (98.4)	6.33 (0.89-45.01)	-
Vacation days per year	64	0.97 (0.94-1.00)	1.01 (0.98-1.04)
Time passed since graduation			
≤5 years	26 (40.0)		1 (base)

Contd...

Table 4: Contd...

Variable	Burnout (criterion 2)		
	n (%)**	Unadjusted IRR (IC 95%) <sup>1</sup>	Adjusted IRR (IC 95%) <sup>2</sup>
6 to ≤10 years	11 (16.9)	1.18 (0.61-2.28)	0.76 (0.34-1.66)
11 to ≤20 years	19 (29.2)	0.72 (0.41-1.26)	1.31 (0.49-3.45)
> 20 years	9 (13.9)	0.39 (0.18-0.81) *	3.88 (0.78-19.34)
Number of night shifts per month			
1-3	14 (29.2)		1 (base)
4-6	20 (41.6)	0.90 (0.47-1.73)	-
7-9	9 (18.8)	1.05 (0.48-2.32)	-
10 or more	5 (10.4)	1.06 (0.40-2.77)	-
Number of hours worked per month			
<200	7 (10.7)		1 (base)
201-300	38 (58.5)	2.65 (1.20-5.81) *	6.36 (2.21-18.30) *
>300	20 (30.8)	2.71 (1.17-6.25) *	5.56 (1.87-16.49) *
Visual analog scale (VAS) of EQ5D			
0-40	2 (3.2)	2.63 (0.69-10.05)	0.98 (0.32-1.66)
41-60	8 (12.9)	3.13 (1.50-6.56) *	1.15 (0.56-2.39)
61-80	27 (43.6)	3.15 (1.88-5.26) *	1.49 (0.86-2.56)
81-100	25 (40.3)		1 (base)
Suicidal behavior			
No	58 (93.6)		1 (base)
Yes	4 (6.4)	2.26 (0.91-5.63)	0.71 (0.32-1.57)
Consumption of legal substances, with potential for abuse			
No	53 (82.8)		1 (base)
Yes	11 (17.2)	0.62 (0.33-1.16)	0.64 (0.90-1.70)
Consumption of illegal psychoactive substances			
No	60 (95.2)		
Yes	3 (4.8)	1.27 (0.42-3.78)	1.38 (0.54-3.54)
Alcohol consumption (AUDIT)			
No problems related to alcohol	45 (73.8)		1 (base)
At-risk drinker <sup>‡</sup>	16 (26.2)	3.05 (1.82-5.10) *	2.77 (1.64-4.68) *
WHOQOL-BREF <sup>3</sup> Physical			
P25	33 (50.7)	14.14 (3.46-57.77) *	-
P25 A P75	30 (46.2)	4.05 (0.98-16.74)	-
P75	2 (3.1)	1 (base)	-
WHOQOL-BREF <sup>3</sup> Psychological			
P25	44 (67.7)	42.76 (5.96-306.50) *	-
P25 A P75	20 (30.8)	6.50 (5.96-48.12)	-
P75	1 (1.5)	1 (base)	-
WHOQOL-BREF <sup>3</sup> Social relationships			
P25	23 (35.4)	36.92 (5.05-269.9) *	-
P25 A P75	41 (63.1)	17.08 (2.36-123.3) *	-
P75	1 (1.5)	1 (base)	-
WHOQOL-BREF <sup>3</sup> Environmental			
P25	36 (55.4)	9.06 (2.87-28.63) *	-
P25 A P75	26 (40.0)	1.89 (0.58-6.13)	-
P75	3 (4.6)	1 (base)	-

<sup>1</sup>Univariate Poisson regression model (robust variance estimator). <sup>2</sup>Multivariate Poisson regression model (robust variance estimator), with the inclusion of all the variables described in the table except the following variables for collinearity: WHOQOL-BREF with the variable VAS; family satisfaction with professional satisfaction; retired with time since graduation; and the variable number of night shifts with working hours. <sup>3</sup>Grouped in percentiles ± Evaluation of interaction within the model between depression and anxiety was carried out with  $P=0.41$ ; marital status and gender ( $P=0.316$  in the “married or living with partner” category for women,  $P=0.112$  in the “separated” category for women); marital status and professional satisfaction ( $P=0.001$  in the categories of “married or living with partner” with low satisfaction, and  $P=0.000$  for “separated/divorced/widowed” with average satisfaction). Significant interactions were included within the model. <sup>‡</sup>The category of physical-chemical problems with drinking was grouped with at-risk drinker for the models, due to the low frequency. \*  $P<0.05$ , \*\* Data missing in some of the variables evaluated because it was not mandatory for respondents to answer all the questions

be a source of differences in the results found. Additionally, there is an important variability in the characteristics which are used to adjust the models and which could affect the results, due to confounding and interaction of the variables related to psychological problems, which include personal and psychosocial characteristics of the job, the family, and environmental factors.<sup>[41,42]</sup>

With respect to the prevalence of burnout in anesthesiologists, it is essential to keep in mind the type of criterion used: for this study, the prevalence with criterion 1 was 19.2%, and with criterion 2 it was 9.2%. But, the associated factors and the magnitude of the calculations are in agreement with each other. Similar results are observed in the study of Brazilian anesthesiologists conducted in 2011 using the first criterion, where the prevalence was found to be 10.4%; 23.1% had high emotional exhaustion, 13.4% had high depersonalization, and 23.1% had low personal accomplishment.<sup>[43]</sup> Similarly, the prevalence of burnout among specialists in other areas using criterion 1 is 14.4%.<sup>[44]</sup> Another study has shown that the prevalence of burnout in Colombian surgeons using criterion 1 is 20%.<sup>[45]</sup> A reason for the inability to compare the prevalence in anesthesiologists and other healthcare workers are the cutoffs used to define the levels of change in each domain; while some use the points according to the distribution of the data, others use the points established by the authors of each study.

The result of the prevalence of criterion 2 burnout in the present study is within the range (1%–23%) of the prevalence of severe burnout of French doctors described in a meta-analysis and systematic review in 2019. Despite the high heterogeneity identified in the meta-analysis, emergency doctors were shown to have the highest prevalence of severe burnout (12%), who in turn were associated with a high prevalence of severe exhaustion and high depersonalization. In this study, the group of anesthesiologists displayed a low prevalence of high emotional exhaustion and, in general, the number of night shifts was associated with a high prevalence of low personal accomplishment.<sup>[19]</sup>

The results of this study reflect those of other studies which have evaluated burnout in other health professions. In 2013, a survey of Iranian nurses found a prevalence of 34.3% high emotional exhaustion, 28.8% high depersonalization, and 95.7% low personal worth.<sup>[46]</sup> Quattrin R *et al.* found that nursing professionals who worked in a specific health area (such as oncology) and who were more than 40 years old and who had worked more than 15 years in the same area displayed higher levels of emotional exhaustion.<sup>[47]</sup> A systematic review in 2017, aimed at examining the prevalence of burnout in health professionals (nurses, physicians, and social workers) who worked in palliative care, identified that this group of professionals displayed a prevalence of burnout of 17.3%. In general, the nurses' group displayed the highest levels of emotional exhaustion (19.5%) and

depersonalization (8.2%), and the doctors had the lowest levels of personal accomplishment (41.2%).<sup>[48]</sup>

It is essential to mention that there is little available research about the interaction between burnout and other psychological conditions as anxiety and depression.<sup>[49]</sup> The etiology of burnout whether this is the cause of anxiety and depression or if this is a consequence of anxiety and depressive symptoms is unclear.<sup>[50,51]</sup> In this study, the variables anxiety and depression were included as risk factors, but these could also be the resulting effect of burnout. Further studies are required to evaluate this last aspect. Despite this, in 2019 Koutsimani P *et al.* carried out a meta-analysis to analyze the relationship between burnout and depression and burnout and anxiety. They found them to be interconnected and presented a statistical relationship, but the authors were clear about the need for future studies which would allow these conclusions to be validated.<sup>[52]</sup>

One of the strengths of this study is that the analyses included characteristics related to work, personal life and mental disorders which show that burnout is a condition that has implications beyond just the work environment. Other strengths include a large survey population, geographically diverse sampling, and the quality of instruments used. One of the limitations of this study is the inability to use these results to generalize the Colombian anesthesiologists because the sample was not representative of the general population. Most of the anesthesiologists who were participants of the study lived in major cities, where the provision of health services is more frequent and stress and other factors that are detrimental to the quality of life exist. In addition, the type of study carried out (a survey) does not explicitly determine the way in which the evaluated mental health conditions are related to the characteristics found, because they do not allow an unambiguous identification of causality.

Finally, assessment of some sensitive aspects of personal life, such as the alcohol/drug consumption, may have been underestimated, creating bias within the study, and with limited options to avoid this bias. Importantly, the possibility of intervening in some of the factors associated with the presence of burnout stands out, which could offer a practical application of the results in favor of the well-being of Colombian anesthesiologists.

## Conclusions

This study demonstrated that the prevalence of burnout among Colombian anesthesiologists is about 9.2% to 19%, depending on the burnout criteria. The factors more strongly associated with burnout were depression, anxiety, the degree of satisfaction with the profession, more than 200 hours worked per month, and being an at-risk drinker. Burnout is a condition related to work that affects the ability to function not only within the job but also in personal life and is associated with mental disorders that



generate a significant burden of disease. It is therefore essential to evaluate the development of this condition, to provide interventions that improve the welfare of Colombian anesthesiologists who are affected by it, and by association the impact on the patients.

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### Conflicts of interest

There are no conflicts of interest.

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**Appendix 1: The Maslach Burnout Inventory**

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	0	1	2	3	4	5	6
<b>Emotional exhaustion</b>							
1. I feel emotionally drained from my work							
2. I feel used up at the end of the workday							
3. I feel fatigued when I get up in the morning and have to face another day on the job							
4. Working with people all day is really a strain for me							
5. I feel “burned out” from my job							
6. I feel frustrated by my job							
7. I feel I'm working too hard on my job							
8. Working with people directly puts too much stress on me							
9. I feel exhausted, as if I can't give any more							
<b>Depersonalization</b>							
1. I feel I treat some patients as if they were impersonal objects							
2. I've become more callous toward people since I took this job							
3. I worry that this job is hardening me emotionally							
4. I don't really care what happens to some patients							
5. I feel patients blame me for some of their problems							
<b>Personal accomplishment</b>							
1. I can easily understand how my patients feel about things							
2. I treat the patients' problems very efficiently							
3. I feel I'm positively influencing other people's lives through my work							
4. I feel very energetic							
5. I can easily create a relaxed atmosphere with my patients							
6. I feel exhilarated after working closely with my patients							
7. I have accomplished many worthwhile things in this job							
8. In my work, I deal with emotional problems very calmly							
<b>Convenciones:</b>							
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							

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