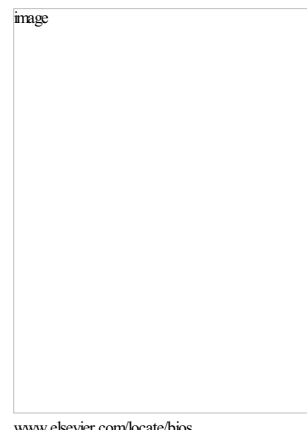


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**Burnout in cardiac anesthesiologist: results from a national survey in Italy.**

**Short title: Burnout in Cardiac Anesthesiology**

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## INTRODUCTION

Several medical specialties are at high risk of stress<sup>1</sup>, although this does not always impact negatively on physicians. Indeed, ability to cope with challenging situations may increase their self-confidence and enhance sense of general health<sup>2</sup>. On the other hand, too much stress may lead to decreased satisfaction and reduce physical and psychological health<sup>3-5</sup>. This may end up in a psychological condition defined as burnout<sup>6</sup>, which is reaching epidemic levels in the medical population. Indeed, its prevalence is reported around - or even over - 50%<sup>7</sup>. Burnout develops in response to chronic interpersonal stressors<sup>8</sup>, and support from healthcare organizations and managers is vital in order to reduce the risk of burnout<sup>9-11</sup>; in addition, burnout negatively affects patients' care<sup>12-14</sup> and physicians' professionalism<sup>15, 16</sup>.

The three main constituents of burnout are: high emotional exhaustion (EE), high depersonalization (DP) and low personal accomplishment (PA)<sup>17</sup>. In brief, EE is a subjective work-related sense of fatigue, DP is a defense mechanism in the effort to separate oneself from work issues, and low PA embodies a sense of frustration with work-related achievements. Furthermore, burnout syndrome differs from depression because it is specific to the work environment. Burnout has been linked with the strained professional relationships in team members<sup>18</sup>, together with a lower work activity<sup>19</sup>, worse quality of care and higher healthcare costs<sup>20</sup>; moreover, burnout also seems to involve unhealthy lifestyles and alcohol abuse<sup>21</sup>.

Anesthesiology is among the most stressful medical disciplines. Anesthesiologists are exposed to a high workload, working overnight, weekends and during festivities; indeed, improving the working schedule is one of the approaches currently under investigation in order to reduce physicians' burnout<sup>22</sup>. Moreover, anesthesiologists face frequent clinically challenging scenarios, which are an inevitable source of stress<sup>23, 24</sup>. Challenging burnout is one of the future quality targets in the setting of anesthesia<sup>25</sup>, and this need is common also to low and middle-income countries<sup>26</sup>. Nonetheless, a recent systematic review reported the

same level of burnout in anesthesiology as in other medical disciplines, although with great variability in study design, modality of assessment and, more importantly, in the diverse anesthesiological settings<sup>27</sup>. It is obvious that stress factors in anesthesiology may vary considerably, and the setting of cardiac surgery could offer greater challenges and exposure to frequent stressors than other sub-types of anesthesiology specialty. Our group hypothesized that anesthesiologists working for cardiac surgery may report higher risk of burnout since they are exposed to a high degree of stress, facing daily clinical challenges and patients with high-risk mortality. With this background we conducted a nationwide survey in Italy, involving anesthesiologists working primarily for cardiac surgery.

## MATERIALS AND METHODS

This study was designed by the study group for cardio-thoraco-vascular anesthesiology of the Italian Society for Anesthesia, Analgesia, Resuscitation and Intensive Care (SIAARTI). We planned an anonymous online survey for anesthesiologists working mainly in cardiac surgery. From the website of the Italian Society of Cardiac Surgery (SICCh) we found the centers with active Cardiac Surgery Units (both public and private), and over a period of six months we gathered emails and contacted the Chiefs of the Anesthesia Departments via email or telephone (up to five attempts were made; see acknowledgements). They were asked to provide all the emails of the anesthesiologists working in cardiac surgery at their Centers. Among those in active Service in Cardiac Surgery, 71 agreed to provide emails of the anesthesiologists working in cardiac surgery. We eventually collected a total of 707 emails of Cardiac Anesthesiologists. The survey was distributed anonymously throughout a website with coded personal mail invitation. The final survey was sent out for the first time on 23 November 2017 with two further reminders sent to those who had not completed the survey (first and second reminders on 3 and 12 December 2017 respectively). The study phases can be summarized as follow: 1) hypothesis and agreement to design a national survey; 2) collection of emails and internal pilot; 3) start of survey and subsequent reminders; 4) data analysis and draft of manuscript.

The questionnaire consisted of three parts. The aim of the first one was to gather information on the work place, type of hospital, affiliation with the university, type of cardiac surgery, number of interventions, presence of residents, anesthesiologists' willingness to leave/stay in cardiac surgery (should a change be offered). The second part asked participants a few question about their private lives: partner status,

parenthood, and alcohol consumption. The questions on the first and second part were developed according to factors reported as influencing burnout by a recent systematic review<sup>27</sup>. An internal pilot on these questions was forwarded to members of the SIAARTI study group for cardio-thoraco-vascular anesthesiology before distributing the survey (May 2017), in order to identify issues and modify the survey accordingly. The third part specifically investigated burnout levels through the Maslach Burnout Inventory (MBI) test, which is the most commonly adopted test for burnout risk screening. The MBI test evaluates the three main constituents of burnout: EE, DP and low PA<sup>17</sup>, and it has been validated in the Italian language<sup>28</sup>. In short, burnout is associated with high EE and DP values, as well as with low PA score. Several cut-offs have been used in the literature in order to define the risk of burnout. We adopted criteria for high-risk and moderate-high risk of burnout previously reported by several studies conducted in the anesthesiology setting<sup>29-32</sup>(Table 1).

### **Statistical analysis**

The database and data entry were reviewed for typos by four authors (FS, AN, GJP, MI). Statistical analyses were performed using SPSS<sup>®</sup> Statistics 17 for windows by three authors (FS, AN, EB). Categorical variables are shown as number and percentage (%). Continuous variables are presented as mean  $\pm$  standard deviation (SD) or as median and inter-quartile range (IQR), according to the distribution tested with the Kolmogorov-Smirnov test. With regard to the scores of the MBI, the test results are also described as a percentage of cardiac anesthesiologists reporting values above the high or moderate-high risk cut-offs for each component of the MBI test. The correlation between scores in the EE, DP and PA components of MBI were investigated with the two-tailed Pearson test ( $r^2$ ). We also performed sub-analyses on the level of burnout components (EE, DP, PA) according to the working and private-life characteristics. According to the distribution, comparison between three or more groups was made with ANOVA or Kruskal-Wallis, while t-student of Mann-Whitney tests were used to detect differences between two samples. The significance level was set at p value of 0.05.

## RESULTS

We sent emails to 707 Italian cardiac anesthesiologists requesting them to fill in the questionnaire. Thirty-seven emails were identified by the software as undelivered (antispam filter or wrong email address), thus we successfully emailed 670 anesthesiologists (51.2% were male), and 382 of them completed the survey (57%). In total, we collected responses from 71 hospitals, and the mean response rate per center was  $58.4 \pm 21.5\%$ . 349 anesthesiologists (91.4%) stated that they spent most of their working time in the cardiac theater or cardiac intensive care unit. The working and private life characteristics of those who responded are shown in Table 2, together with the results of the MBI test in its three components. Interestingly, we found that over 75% of cardiac anesthesiologists would choose to remain in the same setting should they be offered the chance to leave.

We found a significant positive correlation between EE and DP ( $r^2=0.58$ ,  $p<0.001$ ) as well as significant negative correlations between PA and both the other two components (vs EE:  $r^2=-0.31$ ,  $p<0.001$ ; vs DP  $r^2=-0.36$ ,  $p<0.001$ ).

### Subgroup analyses

The analyses of the sub-groups that evaluate the burnout components results according to dichotomous variables of the working and private lives of the respondents are shown in Table 3. Notably, of the screened dichotomous factors, two were associated with lower risk of burnout at all three component levels: the choice to remain in cardiac surgery if offered another opportunity (EE  $p<0.001$ ; DP:  $p<0.001$ ; PA:  $p=0.01$ ), and parenthood (EE  $p=0.01$ ; DP:  $p<0.05$ ; PA:  $p<0.05$ ). Other significant factors associated with lower burnout scores in one or two components were: male gender (EE, PA), working only with adults (EE, DP), being married (EE, DP), spending more than 66% of working time in a cardiac setting (DP), and working in private hospitals (PA, with also a trend towards higher DP scores).

With regard to the experience in anesthesiology, cardiac anesthesiologists with more years of practice showed a progressive decrease in EE and DP as well as higher PA scores, with few significant differences as highlighted in Figure 1. While EE showed only a non-significant progressive reduction with increasing experience, we found some significant difference in DP and PA scores. In particular, cardiac anesthesiologists with >25 years of practice showed significantly lower DP and higher PA values than those with <5 years ( $p=0.02$  and  $p=0.001$ , respectively) and of those with 6-15 years of experience (both  $p=0.03$ ). Higher PA scores were also found in cardiac anesthesiologists with 16-25 years of practice compared to those with less than 5 years ( $p<0.05$ ).

With regard to the geographical area of Italy, most respondents were from northern Italy ( $n=210$ , central Italy  $n=80$ , and southern Italy  $n=92$ ). Better results in the MBI test were found in cardiac anesthesiologists practicing in southern Italy and worse in central Italy. Southern Italian cardiac anesthesiologists reported lower DP and higher PA scores than those in both the other areas. Central Italy had worse EE compared with the other two areas (Figure 2).

With regard to the number of cardiac surgical operations performed per year, we calculated the average number of surgeries performed yearly according to what was declared by each anesthesiologist. Among 71 centers, the median was 500 interventions/year. We found no significant differences in burnout scores between Centers performing up to ( $n=36$ ) or more than 500 ( $n=35$ ) interventions/year (EE:  $14.5\pm 7.1$  vs  $14.5\pm 4.6$ ,  $p=0.99$ ; DP  $9.1\pm 4.7$  vs  $8.5\pm 3.7$ ,  $p=0.58$ ; PA  $33.3\pm 6.1$  vs  $34.6\pm 4.3$ ,  $p=0.31$ ). Two analyses were conducted according to the response rate: the first one compared the Medical Centers with response rates of  $\leq 50\%$  and  $>50\%$ ; the second one was performed by dividing the Medical Centers below or above the median response rate (62.5%). Both analyses found no differences in burnout components scores. Another analysis was conducted comparing anesthesiologists who declared that they worked in the role of Director or vice-Director with the remaining cardiac anesthesiologists; this analysis showed significantly lower EE and DP risks for the former group (EE:  $12.5\pm 8.0$  vs  $15.1\pm 10.0$ ,  $p=0.03$ ; DP  $6.5\pm 4.3$  vs  $9.8\pm 7.5$ ,  $p<0.001$ ) while the PA scores although higher were not significantly different ( $36.9\pm 8.5$  vs  $32.8\pm 8.9$ ,  $p=0.31$ ).

**DISCUSSION**

Burnout is an emerging problem for physicians and for the whole healthcare system, with an increase in the number of doctors reporting at least one burnout symptom, from 45% to 54% between 2011 and 2014<sup>7</sup>. Burnout seems particularly common when health care professionals deal with emergencies. Indeed among the medical disciplines, U.S. critical care and emergency medicine physicians reported the highest percentage of burnout (55%)<sup>33</sup>. Anesthesiologists scored slightly lower, with half of them at significant risk. With this background, we hypothesized a high degree of burnout in anesthesiologists working in cardiac surgery, since every day they have to care for patients at high risk of death, frequently facing life-threatening scenarios like cardiac arrest, resuscitation and chest re-opening; moreover, most of them also work as intensivists in the specialized cardiac intensive care units. In our national survey we managed to obtain an acceptable response rate (57%), and most of the respondents worked mainly in cardiac surgery (91%) with an average time for clinical duties in the cardiac setting as high as 85%. Thus, we believe our survey accurately portrays the actual working pattern of cardiac anesthesiologists in Italy. To the best of our knowledge, our survey is the first in the specific field of anesthesiology and one of the largest in the discipline.

Our main result is that two of the three components of burnout (high DP and low PA) support the initial hypothesis of high-risk in the discipline. Indeed, a rate of 54% and 66% of cardiac anesthesiologists scored a “high or moderate-high risk” of burnout according to DP and PA criteria, respectively. Moreover, mean scores for DP and PA were in the “moderate-high risk” range (9 and 34 points, respectively). On the other hand, the EE component had a mean score in the moderate or lower range (mean of 14 points) and only about one in three (34.3%) cardiac anesthesiologist were at “high or moderate-high risk” of burnout for the EE component, thus lower than reported in the discipline. However, it should be kept in mind that a recent systematic review found great variability in the burnout incidence in anesthesiology<sup>27</sup>.

Taken together, our results indicate an average burnout of around 50% and highlights the fact that cardiac anesthesiologists have a low work-related sense of fatigue (EE), and that low satisfaction with job related achievements seems the main issue afflicting them, with a sensation of frustration in this regard. In this context, it was somewhat surprising to find that despite the low level of PA and a relatively high DP scores,



most anesthesiologists (76%) responded they would prefer to remain in cardiac anesthesiology if offered another position. As expected, scores of the three burnout components were significantly worse in anesthesiologists willing to leave the cardiac setting.

Together with parenthood, willingness to remain in cardiac anesthesiology was the only dichotomous variable influencing all the burnout components. The willingness of most respondents to continue in cardiac anesthesiology is quite encouraging. This may contribute to the stability of the “cardiac team” in the context of a multidisciplinary approach. An ongoing study is evaluating the importance of building a collaborative culture in the cardiac and thoracic operating rooms. This study aims at investigating the impact of training strategies of teamwork in order to improve not only patients’ safety but also staff wellbeing (reducing turnover intentions and burnout, and increasing job satisfaction)<sup>34</sup>. Importantly, in view of the considerable efforts required for the training of a cardiac anesthesiologist, a high turnover would not be economically advantageous, both for healthcare organizations and for anesthesiologists. For instance, several healthcare systems worldwide require cardiac anesthesiologists to be board-certified for trans-esophageal echocardiography. Such certification process is time-consuming and a drain on resources, usually requiring at least two years; therefore, it is easy to understand that a high turnover would partially diminish the efforts of individuals and of the hospital.

In our cohort, having children seemed the most protective factor to counter burnout (EE  $p=0.01$ , DP  $p<0.05$ , PA  $p<0.05$ ), although this finding is different from other studies reporting negative effects of parenthood<sup>35-37</sup>. Having a partner was also a protective factor, being associated with better scores of EE and DP; this is not surprising since parental support has been already reported as being a protective factor against burnout<sup>29, 38</sup>. Other protective factors were: dealing with adult patients only (EE and DP both  $p<0.001$ ), working in private hospitals (DP  $p=0.05$ , PA  $p=0.003$ ), and spending most of the duties in cardiac anesthesiology or cardiac ICU (DP  $p=0.02$ ). On the other hand, working with residents and alcohol consumption did not seem to influence burnout scores.

Among other factors, we found worse EE (higher values) and PA (lower scores) in female cardiac anesthesiologists than in males. Although the mean EE score of female anesthesiologists was not at a risky level, their level of PA was between high and moderate-high risk of burnout. This lower PA in female gender

is not a completely new result, since disparities have been already described both from clinical<sup>39, 40</sup> and academic perspectives<sup>41, 42</sup>. On the other hand, a recent systematic review on burnout in anesthesiology did not show clear gender disparities<sup>27</sup>, demonstrating high variability (two studies reported higher risk in females<sup>30, 43</sup>, another showed no gender differences<sup>44</sup>, and three found higher burnout exposure in males<sup>35, 37, 45</sup>).

A very interesting aspect of our survey was the progressive decrease of burnout risk (lower EE and DP, higher PA scores) with increasing experience in anesthesiology. It is known that burnout may peak during the initial stages of the anesthesiology career as a result of facing challenging situations with a lack of adequate support<sup>31</sup>. Recently, the topics targeting physicians' well-being have been introduced in the program for graduate medical education<sup>46</sup>. A recent meta-analysis by West et al. clearly showed a significant decrease in overall physicians' burnout and in both EE and DP through structural interventions (involving the work environment) and individual-focused interventions (i.e. stress management and self-care training, and communication skills training).

We believe that cardiac anesthesiologists in Italy are always well-supported at the beginning of their careers. Indeed, the dual Specialty Training in Anesthesia and Intensive Care in Italy is shorter than in other countries, lasting only four years (recently increased to five). The period spent in cardiac surgery during this training varies and in most cases ranges between 3 and 6 months, which is in our judgment not enough to become independent in the practice of cardiac anesthesiology. Therefore, a period of supervision is required in young specialists starting out in the field of cardiac anesthesia. On the other hand the significant stress imposed by life-threatening scenarios during the early stages of an anesthesiology career may influence burnout. The better scores seen in anesthesiologists with higher experience might possibly be the result of a "survival effect", since those who do not tolerate the stressful conditions associated with cardiac anesthesia may soon move to other settings of the discipline. It is important to highlight that excessive stress may have a drastic effect on some anesthesiologists who cannot cope with stress, causing them to abandon their careers in cardiac anesthesiology; alternatively, stress could encourage the implementation of coping strategies. Such "survival effect" has been already described in both anesthesiologists<sup>31</sup> and emergency physicians<sup>21</sup>. We found lower burnout scores in cardiac anesthesiologists working as Directors/vice-Directors, similar to other

studies showing lower burnout in anesthesiologists working in apical positions (i.e. program directors<sup>38</sup> and directors of anesthesiology departments<sup>29</sup>).

Although this is not strictly the target of our survey, in order to give a complete picture we will briefly describe some measures that can be undertaken to reduce physicians' burnout,<sup>47</sup> which should be a duty for both the physicians and their healthcare organizations. In a simplistic manner, interventions for decreasing burnout could be divided into those directed at the working environment under the responsibility of the healthcare organization, and those focused on individuals (physicians)<sup>48, 49</sup>. Some examples of organization-directed interventions are: changes in schedule with reduction of workload intensity; increase in the participation in decision-making; policies aiming at improving teamwork; and increased supervision, etc. In this way, physicians may perceive a reduction in job demands and enhanced control over their work. Physician-directed interventions typically involve courses on mindfulness or cognitive behavioral techniques that help to enhance job competence, and improve communication skills and coping strategies. A recent meta-analysis looking at controlled interventions to tackle physicians' burnout found that the majority of interventions were physician-directed (60%)<sup>50</sup>. However, this meta-analysis showed that organization-directed interventions had a higher treatment effect compared with physician-directed interventions which still produced a significant (though smaller) benefit. Interestingly, interventions on physicians with higher experience had greater effectiveness compared with interventions targeting less experienced physicians.<sup>50</sup>

This survey has two main limitations. The first one is intrinsic to its national design, and our findings are not automatically transferable to other contexts outside Italy. Another limitation is the absence of a control group, for instance of anesthesiologists working in different settings of the discipline. We have encouraged other groups to conduct surveys in specific settings of anesthesiology (i.e. pediatric and obstetric settings), since there is a dearth of research in the literature in this field. Our study could be the first attempt to fill this gap of knowledge.

## CONCLUSIONS

The prevalence of burnout syndrome among cardiac anesthesiologists in Italy is relatively high. While their occupational sense of fatigue is low, the main concern raised by our survey is the high sensation of frustration with work-related achievements due to low personal accomplishments. Parenthood and willingness to remain working in cardiac anesthesiology are the main factors that seem to protect against development of burnout.

## FIGURE LEGENDS

Figure 1.

Scores of the Maslach Burnout Inventory (MBI) test according to the years of experience in anesthesiology. Years of experience are divided into four categories and the results are presented according to the three components of the MBI test: emotional exhaustion (EE), depersonalization (DP) and personal accomplishments (PA). Burnout risk increases with higher scores of EE and DP, and with lower scores of PA. Trending lines shows the tendency of scores.

\*  $p < 0.05$  vs anesthesiologists with up to 5 years of experience in cardiac anesthesiology

#  $p < 0.05$  vs anesthesiologists with up to 6-15 years of experience in cardiac anesthesiology

Figure 2.

Scores of the Maslach Burnout Inventory (MBI) test according to the Area of Italy, divided into Northern, Central and Southern. The results are presented according to the three components of the MBI test: emotional exhaustion (EE), depersonalization (DP) and personal accomplishments (PA). Burnout risk increases with higher scores of EE and DP, and with lower scores of PA.

\* Difference between North and Center ( $p < 0.05$ ). # Difference between North and South ( $p < 0.05$ ). § Difference between Center and South ( $p < 0.05$ ).

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## ABSTRACT

**Objective:** There is increasing burnout incidence among medical disciplines, and physicians working in emergency settings seems at higher risk. Cardiac anesthesiology is a stressful anesthesiology sub-specialty dealing with high-risk patients. We hypothesized a high-risk of burnout in cardiac anesthesiologists.

**Design:** National survey conducted after contacting all Italian cardiac centers.

**Setting:** Burnout.

**Participants:** Cardiac anesthesiologist.

**Interventions:** We administered via email an anonymous questionnaire divided into three parts. The first two evaluated workload and private life. The third part consisted of the Maslach Burnout Inventory (MBI) test with its three constituents: high emotional exhaustion (EE), high depersonalization (DP), and low personal accomplishment (PA).

**Measurements and Main Results:** We measured the prevalence and risk of burnout through the MBI questionnaire and analyzed factors influencing burnout. Among 670 contacts from 71 centers, 382 cardiac anesthesiologists completed the survey (57%). We found the following mean MBI values:  $14.5 \pm 9.7$  (EE),  $9.1 \pm 7.1$  (DP) and  $33.7 \pm 8.9$  (PA). A rate of 34%, 54% and 66% of respondents scored in “high” or “moderate-high” risk of burnout (EE, DP and PA, respectively). We found that, if offered to change sub-specialty, 76% of respondents would prefer to remain in cardiac anesthesiology. This preference and parenthood were the only two investigated factors with protective effect against all components of burnout. Significantly lower burnout scores were found in more experienced anesthesiologists.

**Conclusions:** A relatively high incidence of burnout was found in cardiac anesthesiologists, especially with regards to high DP and low PA. Nonetheless, most of the respondents would choose to remain in cardiac anesthesiology.

**Key words:** Anesthesia; Depression; Maslach Burnout Inventory; Stress; Emotional Exhaustion; Depersonalization; Personal Accomplishment.

Burnout component	High Risk	Moderate-High Risk
Emotional exhaustion (score)	> 26 points	17-26 points
Depersonalization (score)	> 12 points	7-12 points
Personal accomplishments (score)	< 32 points	32-38 points

*Table 1. Burnout components and cut-offs for high and moderate-high risk.*

#### Professional and Private-Life Characteristic of Respondents

<b>Gender</b>	Males	193 (50.5%)
	≤ 5 years	60 (15.7%)
<b>Time from Specialty Degree</b>	6-15 years	167 (43.7%)
	16-25 years	97 (25.4%)
	≥ 26 years	58 (15.2%)
<b>Type of Hospital</b>	Public	267 (69.9%)
	Private	115 (30.1%)
	University Hospital	179 (46.9%)
<b>Relationship with University</b>	Public and Affiliated with University	148 (38.7%)
	Not Affiliated with University	55 (14.4%)
<b>Working with residents (%)</b>	Yes	327 (85.6%)
<b>Average cardiac surgery per year</b>	Mean and SD	594 ± 310
	Median and IQR	500 (400-658)
	Cardiac Theatre	42.4 ± 20.9
	Cardiac ICU	42.3 ± 23.4
<b>Average time spent in Cardiac (%)</b>	Non-cardiac Theatre	12.6 ± 15.6
	Other ICU	2.6 ± 9.5
	Cardiac ICU or Cardiac theatre	84.7 ± 18.6
<b>Type of Cardiac Surgery</b>	Only Adults	320 (83.8%)
	Only Pediatrics	6 (1.6%)
	Both	56 (14.7%)
	Yes, in order to work with less stress	34 (8.9%)
<b>If offered, would you leave cardiac?</b>	Yes, in order to change colleagues	11 (2.9%)
	Yes, although I would be not sure	48 (12.6%)
	No, although I would be not sure	122 (31.9%)
	No, I would definitely stay in cardiac	167 (43.7%)
	I am married/live with partner	285 (74.6%)
<b>Partner</b>	I have a fiancée	23 (6.0%)
	I am divorced	23 (6.0%)
	I am single	51 (13.4%)
<b>Parenthood</b>	Having one or more child	238 (62.3%)
	No parenthood	144 (37.7%)
<b>My partner is</b>	A doctor	125 (32.7%)
	A nurse	42 (11.0%)
	Other	215 (56.3%)
	< 2 glasses wine/die (or alcohol equivalent)	354 (92.7%)
<b>Average alcohol consumption</b>	3/5 glasses wine/die (or alcohol equivalent)	18 (4.7%)
	> 5 glasses wine/die (or alcohol equivalent)	0 (0%)
	I prefer not to answer	10 (2.6%)

## Results of the Maslach Burnout Inventory Test

	Mean score $\pm$ SD	14.5 $\pm$ 9.7
	Median score (IQR)	12 (7-21)
<b>Emotional Exhaustion</b>	- High risk (>26 points)	54 (14.1%)
	- Moderate-high risk (17-26 points)	77 (20.2%)
	- Moderate or less	251 (65.7%)
	Mean score $\pm$ SD	9.1 $\pm$ 7.1
	Median score (IQR)	7 (4-12)
<b>Depersonalization</b>	- High risk (>12 points)	93 (24.4%)
	- Moderate-high risk (7-12 points)	114 (29.8%)
	- Moderate or less	175 (45.8%)
	Mean score $\pm$ SD	33.7 $\pm$ 8.9
	Median score (IQR)	35 (27-40)
<b>Personal Accomplishment</b>	- High risk (<32 points)	140 (36.7%)
	- Moderate-high risk (32-38 points)	114 (29.8%)
	- Moderate or less	128 (33.5%)

*Table 2. Results of the Survey. Professional and Private-Life Characteristic of Respondents are indicated in the upper part of the table, while the last three rows indicates the results of the Maslach Burnout Inventory Test. IQR: inter-quartile range; SD: standard deviation.*

Factor	N=	EE	P value	DP	P Value	PA	P value
Male	193	13.1 $\pm$ 9.6	<b>0.004</b>	9.2 $\pm$ 7.1	0.64	34.9 $\pm$ 8.7	<b>0.005</b>
Female	189	16.0 $\pm$ 9.6		8.9 $\pm$ 7.1		32.3 $\pm$ 8.9	
Public Hospital	267	14.8 $\pm$ 9.7	0.40	9.5 $\pm$ 7.4	0.06	32.8 $\pm$ 9.0	<b>0.003</b>
Private Hospital	115	13.9 $\pm$ 9.6		8.0 $\pm$ 6.2		35.8 $\pm$ 8.5	
Work with residents	327	14.6 $\pm$ 9.6	0.87	9.2 $\pm$ 7.2	0.48	33.7 $\pm$ 8.9	0.73
No residents	55	14.3 $\pm$ 10.3		8.4 $\pm$ 6.6		33.3 $\pm$ 9.1	
Working $\leq$ 66% in cardiac	60	14.6 $\pm$ 8.6	0.96	11.0 $\pm$ 7.9	<b>0.02</b>	32.6 $\pm$ 9.2	0.29
Working >66% in cardiac	322	14.5 $\pm$ 9.9		8.7 $\pm$ 6.9		33.9 $\pm$ 8.9	
Adult cardiac surgery only	320	13.7 $\pm$ 9.3	<b>&lt;0.001</b>	8.5 $\pm$ 6.6	<b>0.001</b>	33.8 $\pm$ 9.1	0.74
Pediatric $\pm$ adult cardiac surgery	62	18.7 $\pm$ 10.5		11.9 $\pm$ 8.8		33.3 $\pm$ 8.3	
I would stay in cardiac	289	13.1 $\pm$ 8.8	<b>&lt;0.001</b>	8.0 $\pm$ 6.5	<b>&lt;0.001</b>	34.3 $\pm$ 9.1	<b>0.01</b>
I would leave cardiac	93	18.9 $\pm$ 10.8		12.2 $\pm$ 8.0		31.6 $\pm$ 8.1	
Married/living with partner/Fiancée	308	14.0 $\pm$ 9.3	<b>0.04</b>	8.7 $\pm$ 6.6	<b>0.04</b>	33.7 $\pm$ 8.9	0.88
Divorced/single	74	16.6 $\pm$ 10.8		10.6 $\pm$ 8.9		33.8 $\pm$ 9.3	
I have one or more children	238	13.6 $\pm$ 9.3	<b>0.01</b>	8.5 $\pm$ 6.4	<b>&lt;0.05</b>	34.4 $\pm$ 9.0	<b>&lt;0.05</b>
I have no children	144	16.2 $\pm$ 10.2		10.0 $\pm$ 8.1		32.5 $\pm$ 8.8	
Drink up to 2 wine glasses/day	354	14.5 $\pm$ 9.5	0.67	9.0 $\pm$ 7.1	0.39	33.6 $\pm$ 9.0	0.28
Drink more than 2 wine glasses/day	18	13.6 $\pm$ 10.0		10.6 $\pm$ 7.2		34.8 $\pm$ 8.7	

*Table 3. Analyses of burnout scores of cardiac anesthesiologists according to their working and private-life characteristics. EE: emotional exhaustion; DP: depersonalization; PA: personal accomplishments.*

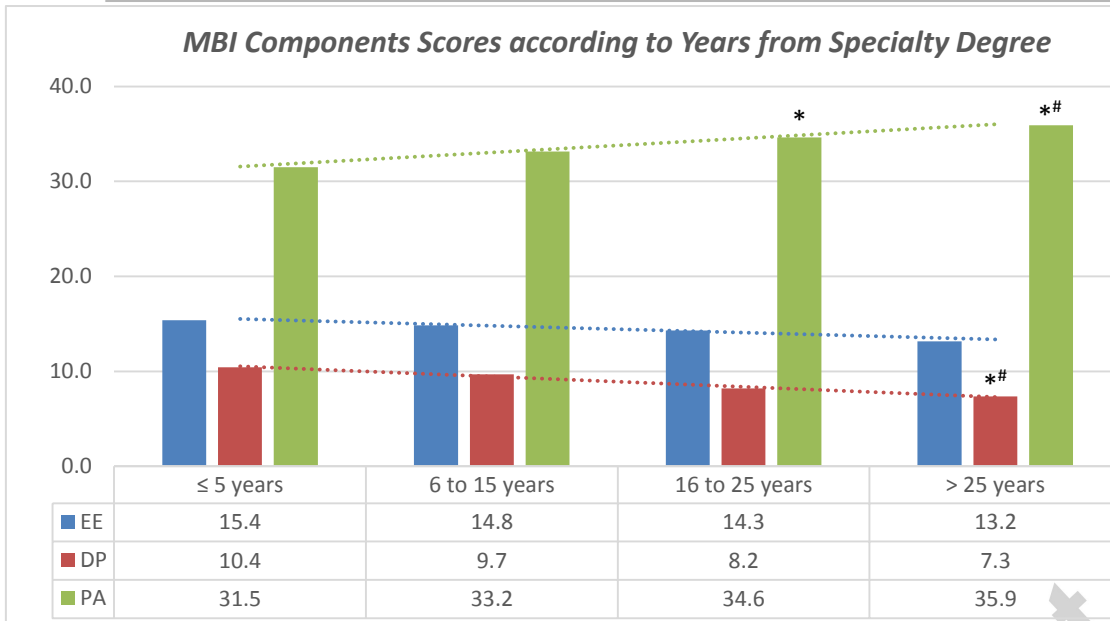


Figure 1.

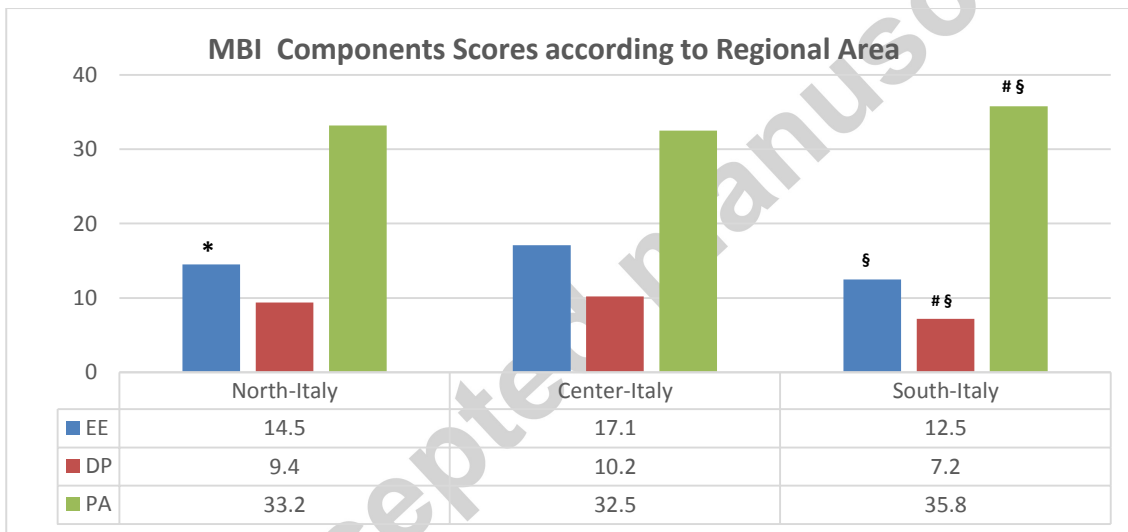


Figure 2.