

# Risk of Addiction and Burnout

Copotoiu Monica<sup>1</sup>, Ioniță Alexandrina<sup>2</sup>, Copotoiu Ruxandra<sup>3</sup>, Copotoiu Sanda-Maria<sup>3</sup>

<sup>1</sup> Clinic of Rheumatology, Emergency County Hospital, Tîrgu Mureș, Romania

<sup>2</sup> Department of Anesthesia and Intensive Care, Emergency County Hospital, Tîrgu Mureș, Romania

<sup>3</sup> Clinic of Anesthesia and Intensive Care, Emergency County Hospital, Tîrgu Mureș, Romania

**Background:** A significant problem in medical practice is represented by addiction to chemical substances and frequently to alcohol. The impact of addiction to alcohol in medical professions is similar to others, although there are slightly different circumstances.

**Aim:** To compare the rate of dependence to different substances in several medical specialties.

**Material and method:** We ran a survey based on a questionnaire to assess the level of burnout in connection to the habit of using chronic medication, coffee, alcohol and tobacco. The respondents were our colleagues, 70 doctors of different backgrounds: 28 anaesthesiologists, 27 general surgeons and urologists, 15 gastroenterologists and internists, but also emergency physicians. Data were processed with Graph Pad Prism 5.0.

**Results:** We found a moderate risk of burnout both in anaesthesiologists and surgeons. Anaesthetists tended to use chronic medication more than their colleagues (20%). As for alcohol use, the surgeons seemed to be placed in pole position (22.22%). The internists styled themselves as no chronic users whatever the item investigated.

**Conclusions:** Alcohol use and chronic medication were associated frequently to burnout. It is important to clarify if the dependence is a reaction to occupational stress to certain individuals or not. Due to the limited number of respondents, our results do not entitle us to take them as a model.

**Keywords:** burnout, occupational stress, dependency

## Introduction

Although there are substantial advances in understanding addiction and therapeutic methods used in the management of this disease, addiction still remains a major issue in medical practice and outcomes have not significantly changed. Apparently alcoholism and addiction to other substances and mental illness, impact anesthesiologists at rates similar to those in other professions. There is a considerable association between chemical dependence and other mental conditions, and successful treatment for addiction is less likely when co morbid psycho-pathology is not treated [1–3].

Physician impairment, according to the American Medical Association (AMA), is any physical, mental or behavioral disorder that interferes with the physician's ability to carry on safely his professional activities. Gold et al consider the impairment of physicians to be a result of substance use, abuse or dependency [4].

## Material and methods

We performed a prospective observational survey. For this purpose we used a questionnaire to measure the level of burnout in the profession of man-man type, based on Maslach and Jackson's theory. The levels of professional exhaustion we used belong to Maslach [5]. Institutional ethical approval was waived since we guaranteed confidentiality. The respondents kept anonymity, revealing only their profession, age, gender, marital status, dependencies and habits as to chronic medication, coffee, alcohol use and smoking. The questionnaires were distributed to physicians with medical and surgical profiles working at the Tîrgu Mureș Emergency County Hospital in Romania. We ended up with a number of 70 subjects who responded in due time.

The collected data were processed statistically with Graph Pad Prism 5.0 program (Software Inc. Graph Pad. San Diego, CA, USA). A p value of less than 0.05 was considered significant.

## Results

The 70 respondents belonged to the following groups: 28 anesthetists and emergency physicians, 27 general surgeons and urologists, 15 doctors in the medical departments, globally named internists: cardiologists, gastroenterologists, endocrinologists and radiologists. All the groups included residents, specialists and consultants.

The gender distribution for the anesthetists (who in our country are also intensivists) was the following: 10 men and 18 women, while the surgeons counted 5 women and 22 men. The internists' group consisted of 5 men and 10 women. Women were slightly surpassed by men – 33 versus 37.

Answers to the questionnaire were correlated to general data of the participants in the study in an attempt to identify a possible relationship between the degree of burnout and factors of the individual features.

Professional stress exerts a negative impact on physicians. We ranked the effects of professional stress in three degrees of severity, ranging minimum through medium to high. We previously looked for emotional exhaustion, depersonalization and reduced achievements to burnout [6]. The data are included in Tables I, II and III for anesthetists, internists and surgeons respectively.

When looking at the intensity of emotional exhaustion, we see that anesthetists respond with a medium dominance, depersonalization is rather minimal and the filling of reduced achievements is medium to minimal. Still, one man and one woman were intensely convinced of having

**Table I. Effects of professional stress in anesthetists**

	Emotional exhaustion			Depersonalization			Reduced achievements			Burnout		
	Min	Medium	High	Min	Medium	High	Min	Medium	High	Min	Medium	High
Women	3	12	3	10	8	0	6	11	1	6	11	1
Men	6	2	2	6	4	0	3	6	1	3	7	0

**Table II. Effects of professional stress in internists**

	Emotional exhaustion			Depersonalization			Reduced achievements			Burnout		
	Min	Medium	High	Min	Medium	High	Min	Medium	High	Min	Medium	High
Women	3	5	2	6	3	1	5	4	1	3	7	0
Men	3	0	2	2	3	0	1	3	1	3	1	1

**Table III. Effects of professional stress in surgeons**

	Emotional exhaustion			Depersonalization			Reduced achievements			Burnout		
	Min	Medium	High	Min	Medium	High	Min	Medium	High	Min	Medium	High
Women	2	3	0	4	1	0	1	4	0	3	2	0
Men	15	5	2	18	4	0	13	8	1	15	6	1

**Table IV. Association of burn out to dependencies to the physicians according to their profile**

Habits – no. (%)	Anesthetists	Internists	Surgeons	Total
Coffee	21 (84%)	9 (50%)	19 (70.37%)	49 (70%)
Smoking	4 (16%)	0 (0%)	4 (14.81%)	8 (11.42%)
Alcohol	1 (4%)	0 (0%)	6 (22.22%)	7 (10%)
Chronic medication	5 (20%)	1 (5.55%)	1 (3.70%)	7 (10%)

reduced achievements. Only one woman was inserted in the intense burn-out box (Table I).

Internists ranked emotional exhaustion as rather minimal or medium, depersonalization as well along with reduced achievements. As for the burnout, half of them seemed to be affected in a medium way, only one men being found in the high burnout box (Table II).

The impact on surgeons stays to the left, that is, they feel to be minimally afflicted by emotional exhaustion, depersonalization, reduced achievements and burnout. Thus only one man was to be found in the high burnout box, which is encouraging as to the solid psychic constitution they manifest (Table III).

We further looked for a possible connection of the professional stress response with bad habits, such as coffee, alcohol, chronic medicine intake and smoking.

Table IV depicts burnout association with coffee, alcohol, medication use and smoking.

The results showed that the anesthetists were the heaviest coffee consumers, shy as to alcohol compared to surgeons, but in pole position for smoking. It seems that in the Mures county hospitals, the internists do not touch to alcohol or tobacco. Half of them still use coffee.

As for chronic medication, one fifth of the anesthetists are on, while the surgeons tend to disregard such addiction (only

3.70% are on). Internists consume considerable less medication compared to anesthetists, but a little bit more than surgeons. We can only speculate that the anesthetists can reach medication around the clock, while the surgeons are limited by their timetable and chaining to the operating theater.

Figure 1 depicts a graph on the incidence of burnout and alcohol use in anesthetists.

The anesthetists unaffected by burnout do not use alcohol. As for the burned out, the number of alcohol users is so small (four cases), that it seems to be of no significance. But still, the non users do not develop burnout syndrome in our series.

Figure 2 depicts the incidence of burnout and chronic medication in the anesthetists.

Due to the fact that 20% of the anesthetists are on chronic medication, one takes that some of those who do not display symptoms of burn out are medication users, while the amount of users in the burn out group is proportionately smaller (2 versus 3 users for both groups).

We deepened our analysis on the association of burn out to dependencies to the anesthetists and figured it in Table V.

We failed to identify any significant association of coffee, alcohol, medication use or smoking with the burn out syndrome to our anesthetists.

**Table V. Association of burnout and dependences in anesthetists**

Variable/Cofactor	RR 95% CI	OR 95% CI	P 95% CI	Se 95% CI	Sp 95% CI	PPV 95% CI	NPV 95% CI
Coffee	0.7500 [0.5823, 0.9660]	0.1658 [0.0081, 3.337]	0.2808	0, 6522 [0.4273, 0.8362]	0.0000 [0.0000, 0.5218]	0.7500 [0.5090, 0.9134]	0.0000 [0.0000, 0.3694]
Tobacco	0.4000 [0.06741, 2.374]	0.3333 [0.03816, 2.912]	0.5546	0.5000 [0.0675, 0.9324]	0.2500 [0.0977, 0.4671]	0.1000 [0.0123, 0.3170]	0.7500 [0.3491 0.9681]
Alcohol	NA	1.308 [0.0481, 35.50]	1.000	1.000 [0.0250, 1.000]	0.2963 [0.1375, 0.5018]	0.0500 [0.0012, 0.2487]	1.000 [0.6306, 1.000]
Chronic medication	0.8421 [0.0883, 8.025]	0.8235 [0.0638, 10.63]	1.000	0.6667 [0.0943, 0.9916]	0.2917 [0.1262, 0.5109]	0.1053 [0.0131, 0.3314]	0.8759 [0.4735, 0.9968]

**Table VI. Association of burnout and dependences in internal medicine**

Variable/Cofactor	RR 95% CI	OR 95% CI	P 95% CI	Se 95% CI	Sp 95% CI	PPV 95% CI	NPV 95% CI
Coffee	1.750 [0.4653, 4.500]	4.000 [0.4468, 35.81]	0.3147	0.6667 [0.2993, 0.9251]	0.6667 [0.2228, 0.9567]	0.7500 [0.3491, 0.9681]	0.5714 [0.1841, 0.9010]
Tobacco	NA	NA	NA	NA	NA	NA	NA
Alcohol	NA	NA	NA	NA	NA	NA	NA
Chronic medication	0 infinite	0.3333 [0.0116, 9.574]	1.000	0.0000 [0.0000, 0.9750]	0.5000 [0.2304, 0.7696]	0.0000 [0.0000, 0.4096]	0.8750 [0.4735, 0.9968]

**Table VII. Association of burnout and dependences in surgeons**

Variable/Cofactor	RR 95% CI	OR 95% CI	P 95% CI	Se 95% CI	Sp 95% CI	PPV 95% CI	NPV 95% CI
Coffee	0.8482 [0.4653, 1.546]	0.5952 [0.1025, 3.455]	0.6578	0.2632 [0.0914, 0.5120]	0.6250 [0.2449, 0.9148]	0.6250 [0.2449, 0.9148]	0.2632 [0.0914, 0.5120]
Tobacco	7.125 [0.8659, 58.63]	10.80 [0.9124, 127.8]	0.0646	0.7500 [0.1941, 0.9937]	0.7826 [0.5630, 0.9254]	0.3750 [0.08523, 0.7551]	0.9474 [0.7397, 0.9987]
Alcohol	NA	33.00 [1.372, 794.0]	0.0130	1.000 [0.2924, 1.000]	0.8421 [0.6042, 0.9662]	0.5000 [0.1181, 0.8819]	1.000 [0.7941, 1.000]
Chronic medication	0.0000 infinite	0.3333 [0.01161, 9.574]	1.000	0.0000 [0.0000, 0.9750]	0.5000 [0.2304, 0.7696]	0.0000 [0.0000, 0.4096]	0.8750 [0.4735, 0.9968]

Looking at the same variables for the internists, keeping in mind that they did not assume alcohol use or smoking, the p value was not significant for the remaining coffee or chronic medication, as it is obvious from Table VI.

As surgeons confessed to use some alcohol, unsurprisingly we found that half of the burned out used alcohol, while the abstinent displayed no clinical signs of burn-out.

Surgeons behaved similarly for chronic medication, but with a smaller figure of consumers. Symptom free surgeons naturally were medication free as well (Figure 3).

Further studying the association of dependencies with burnout to surgeons, we found that only alcohol users were

significantly associated with the burn out syndrome, for a p value of <0.0130 (Table VII). Smokers get closer to this figure, but still do not manage to acquire statistical significance.

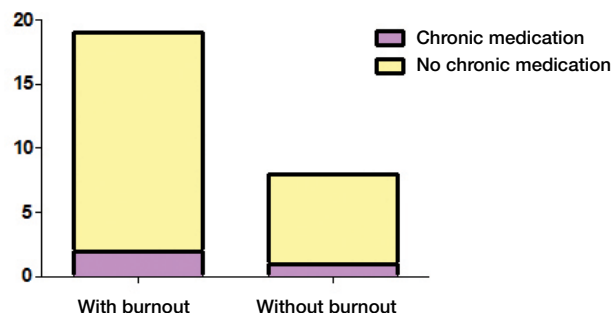
**Discussions**

Our anesthetists are chronic medication consumers. Coupled with younger age and gender dominance, the chronically use of medication in healthy women is often attributed to systemic contraceptives, at least to our group.

The group of surgeons confessed to use some alcohol and medication, which as was evidenced, impacted their response to professional stress. The group of internists was by far the



**Fig. 1. Incidence of burnout and alcohol use in anesthetists**



**Fig. 2. Incidence of burnout and chronic medication in anesthetists**



Fig. 3. Incidence of burnout and alcohol use in surgeons

least dependent on anything investigated. This could be either true, which is to be hailed and attributed to their lifestyle. A lot less stressed than their more invasive colleagues, be those surgeons or anesthetists, the internists might also be less eager to confess of anything to be eventually blamed.

The American Medical Association declared alcoholism and dependence on all drugs to be an illness. There have been many theories regarding the etiology of chemical dependence, including biochemical, genetic, psychiatric, and more recently, exposure-related theories. Neither of them identified specific causes. They only suggest what may increase the risk of developing addiction [1].

Addiction is recognized as a chronic brain disease that involves complex interactions between repeated exposure to drugs and biological (genetic, developmental), and environmental (drug availability, social, economic variables) factors [7].

Far from insisting on the associations of certain habits and the professional stress that could develop into an important condition, such as burnout, we found in the most exposed to stress group, the surgeons, a significant association of alcohol use and burn out. We did not follow further disease development to this group or to the other groups.

The American Board of Psychiatry and Neurology recognizes addiction psychiatry as a subspecialty of psychiatry that focuses on evaluation and treatment of individuals with alcohol, drug, or other substance-related disorders and of individuals with dual diagnosis of substance-related and other psychiatric disorders [1]. This is only to emphasize on the importance of our findings as to the risks the exposed individuals run when dealing with their daily tasks. We did not look this time for chemically dependent physicians.

A major medical and managerial problem is represented by the identification and treatment of the chemically dependent physicians. The nature of dependency can vary, in part, by medical specialties and practice locations. The risk of death from dependency is associated with the drugs used in clinical practice (important in case of opiates) [8]. And when it comes for the anesthetists, the opiates are at their reach.

A study performed in India showed a direct association between greater consumption of alcohol and increased risk of mortality from various alcohol-specific causes. In addition to individual effects, the authors also demonstrated the

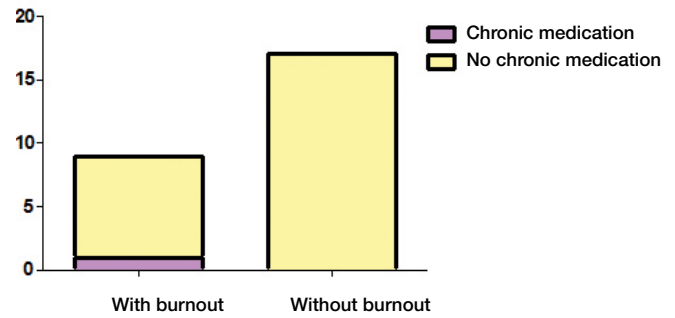


Fig. 4. Incidence of burnout and chronic medication in surgeons

synergistic interaction between alcohol consumption and tobacco usage, the largest risks being in people who both drink alcohols and consume tobacco [9]. The primary difference between nicotine addiction and addiction to other drugs is the absence of behavioral disruption associated with tobacco use. Still, this does not diminish the addictive capabilities of nicotine according to Hatsukami [10].

The alcohol use by all healthcare professionals is related to higher socioeconomic status. Weekly total alcohol use is related to age, other evidence suggesting a consistent relationship between the incidence of alcohol problems and lower socioeconomic status. The data presented in Kenna's study suggest that social influence and relationship factors correlate with alcohol use and misuse in various groups. Age may be related to higher levels of alcohol use by healthcare professionals and the desire to enhance social interactions may involve alcohol use [11]. However, due to the fact that we did not analyze all those aforementioned factors in our groups, we can only speculate on their importance.

Physician drug abuse may cause malpractice, preventable medical accidents, financial crime, and irregular prescribing practices. Addicted physicians risk legal sanctions, career disruption, drug-related disease, and premature death, especially by suicide as they are exposed to greater risk over the long term than the other categories [12].

A group of researchers showed that the majority of non-anesthesiologists (52%) had alcohol-related problems, whereas for most anesthesiologists (55%), the associated primary drug of abuse was an opioid. There was no evidence indicating patient harm with any relapse in his studies [13].

In case of rehabilitated anesthesiologists and anesthesiologist residents, Collins suggested that redirection into another lower-risk specialty may be the most prudent course of action and may allow them to achieve successful medical careers and avoid significant mortality [8].

In their study, Lutsky et al. found no significant differences between surgery, anesthesia and medicine in impairment rates, but they noted a greater prevalence of impairments in younger surgeons and anesthetists and older physicians [14]. Although the American authors insist on opiates dependence among anesthesiologists, Beaujouan and Chandon in their studies reveal that in French anaesthetists addiction is mainly related to alcohol consumption but includes also tobacco and a broad spectrum of

substances, such as psychoactive ones. Sleep disturbances and negative perception of work environment were more frequently reported among addicted anesthetists and were considered by the authors to contribute to the development of their pathology [15,16].

Some have even proposed a genetic link between affective disorders and substance abuse [3].

Auliffe and colleagues suggest that unintentional exposure in the workplace, such as aerosolisation of anesthetics administered intravenously to the patient, sensitize the brain and may increase the risk of addiction [17]. Thus Gold demonstrated that propofol and fentanyl are present in the operating room air after intravenous administration. This may explain why anesthesiologists have more relapses and are unable to return to their workplace [3].

## Conclusions

Alcohol use and chronic medication were associated frequently to burnout in physicians. Surgeons were more likely to use alcohol as compared to anaesthetists or internists. It is important to clarify if the dependence to coffee, chronic medication, alcohol or smoking is a reaction to occupational stress to certain individuals or not. Due to the limited number of respondents, our results do not entitle us to take them as a model.

## References

1. Bryson EO, Silverstein JH – Addiction and substance abuse in anesthesiology. *Anesthesiology* 2008, 109: 905–917.
2. Brysson EO, Levine A – One approach to the return to residency for anesthesia residents recovering from opioid addiction. *J Clin Anesth* 2008, 20: 397–400.
3. Rose GL, Brown RE Jr – The impaired anesthesiologist: not just about drugs and alcohol anymore. *J Clin Anesth* 2010, 22: 379–384.
4. Gold MS, Melker RJ, Goldberger BA – Physician drug addictions: additional data support the gold hypothesis. *Eur Psychiatry* 2007, (22) suppl 1: S118.
5. Maslach C, Jackson SE, Leiter MP, Schaufeli WE, Schwab RL – *Maslach Burnout Inventory Manual*. Consulting Psychologists Pr, 3rd edition (1996).
6. Ionita A, Copotiu M, Paşcan C, Copotiu SM – Assessment of Occupational Stress in Some Medical and Surgical Specialties. *Acta Medica Marisensis* 2011, 57(3): 214–217.
7. Volkow ND, Li TK – Drugs and alcohol: treating and preventing abuse, addiction and their medical consequences. *Pharmacol Ther* 2005, 108: 3–17.
8. Collins GB, McAllister MS, Jensen M, Gooden TA – Chemical dependency treatment outcomes of residents in anesthesiology: results of a survey. *Anesth Analg* 2005, 101: 1457–1462.
9. Pednekar MS, Sansone G, Gupta PC – Association of alcohol, alcohol and tobacco with mortality: findings from a prospective cohort study in Mumbai (Bombay), India. *Alcohol* 2012, 46(2): 139–46. Epub 2011 Sep 10.
10. Hatsukami DK, Stead LF, Gupta PC – Tobacco addiction. *Lancet* 2008, 371: 2027–2038.
11. Kenna GA, Wood MD – Alcohol use by healthcare professionals. *Drug Alcohol Depend* 2004, 75: 107–116.
12. Holtman MC – Disciplinary careers of drug-impaired physicians. *Soc Sci Med* 2007, 64: 543–553. Epub 2006 Oct 31.
13. Skipper GE, Campbell MD, Dupont RL – Anesthesiologists with substance use disorders: a 5-year outcome study from 16 state physician health programs. *Anesth Analg* 2009, 109: 891–896.
14. Lutsky I, Hopwood M, Abram SE et al – Use of psychoactive substances in three medical specialties: anaesthesia, medicine and surgery. *Can J Anaesth* 1994, 41: 561–567.
15. Beaujouan L, Czernichow S, Pourriat JL, Bonnet F – Prévalence et facteurs de risque de l'addiction aux substances psychoactives en milieu anesthésique: résultats de l'enquête nationale. *Ann Fr Anesth Reanim* 2005, 24 (5): 471–479.
16. Chandon M – Addiction en milieu anesthésique : pour aller plus loin. *Ann Fr Anesth Reanim* 2005, 24: 463–465.
17. McAuliffe PF, Gold MS, Bajpai L et al – Second-hand exposure to aerosolized intravenous anesthetics propofol and fentanyl may cause sensitization and subsequent opiate addiction among anesthesiologists and surgeons. *Med Hypotheses* 2006; 66 (5): 874–882.