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Open Questions of Life Satisfaction and Burnout in Anesthesiology and Resuscitation

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ABSTRACT Anesthesiologists and resuscitators are at high risk of developing burnout, which can lead to various unfavorable consequences, such as suicide and/or medical errors.

THE AIM OF THE STUDY The dependence between happiness (satisfaction with life) and burnout in staff of anesthesiology and intensive care departments. Multicenter, anonymous, blind observational study.

MATERIALS AND METHODS Maslach Burnout Inventory (MBI), Flourishing Scale (FS), Satisfaction with Life Scale (SWLS), the study also included a series of general questions (gender, age, specialization, subjective definition of "happiness"). The study included 361 participants, including 311 specialists from the departments of anesthesiology and intensive care, and a control group of 50 non-medical workers.

RESULTS According to the MBI, high burnout scores were registered for all three subscales: 15% of anesthetists, 17.5% of resuscitators, 9.9% of nursing staff, 0% in the control group. The high figures of some of the three subscales of burnout: 82% of anesthesiologists, 66.25% of resuscitators, 59.4% of nurses and nursing assistants, 14% in the control group. The life satisfaction level was significantly lower in all groups of health care staff in the study, compared to the control group. Only a little more than half of the medical workers (56.59%) never thought about suicide, which means that almost half of the staff of the anesthesiology and resuscitation departments thought to some extent about suicide.

CONCLUSION There is a growing awareness of the problem of occupational stress and burnout in anesthesiology and resuscitation. The timely identification of the first symptoms of burnout, and the provision of anesthesiology-resuscitation staff with psychological tools/psychological support to deal with occupational stress and burnout are required today.

Keywords: burnout, suicidal thoughts, life satisfaction

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DP — derepsonalization
EE — emotional exhaustion
FS — *Flourishing Scale*
MBI — *Maslach Burnout Inventory*
PA — professional achievemnets
SWLS — *Satisfaction with Life Scale*

INTRODUCTION

Burnout is a pathological syndrome provoked by constant stress, which leads to the development of negative attitudes at work, alienation from work, uncooperative and ineffective behaviors, worsening of psychological atmosphere organization and physical illness distress [1]. The physician's burnout may reduce the quality of care. It is characterized by emotional exhaustion,

depersonalization and reduction of professional achievements [2]. The term *burnout* was first proposed by *Freudenberger* (1974). *Edward J. Harvey, MD,* co-editor of the Canadian Surgical Journal noted the need for an early resolution to this problem in his message Burnout Should Not Be a Silent Epidemic (2019). According to him, every year about 400 US doctors take their own lives, and the growth of incidence of burnout among physicians in 2016, according to *the Mayo Clinic*, has grown from 46 to 54% per year. [3]

Despite the publication of a significant amount of research in the field of emotional burnout among medical professionals as well, the study of some of its aspects also requires further study.

According to a literature review (2017), burnout syndrome has already reached an epidemic level among doctors, but figures on the extent of its prevalence vary from study to study: from 10–41% - high risk, 59% - moderate risk [4].

In the USA (2017), a high level of emotional burnout increased from 26% to 59%; about 15%, according to the data presented, had unfavorable estimates for all three subscales of burnout [5].

In Poland, a high level of burnout was detected in 18.63% of nurses and 12.06% of anesthesiologists, a critical level was revealed in 3.74% and 5.90%, respectively [6].

In Italy (2018), 34% of anesthesiologists had moderately high rates of emotional exhaustion, 54% had indicators of depersonalization *(DP)*, 66% had reduction in professional achievements [7].

In China (2018) (2873 anesthetists), the prevalence of high emotional exhaustion, high depersonalization, and low personal achievement was 57%, 49%, and 57%, respectively [8].

A.B. Raymond van der Wal et al. (2016) noted that among anesthetists and residents, distress and burnout prevailed in 39.4 % and 18%, respectively [9].

In the review of E.V. Sinbukhova et al. (2018) the inevitability of stress in the work of an anesthesiologist is noted, but, as for any profession, work in stressful conditions requires proper adaptive behavior [10]. The study by *D.A. Skurupii et al.* (2017) showed that anesthesiologists have a high level of burnout, emotional exhaustion, cynicism, a low desire for career growth, stress relief, including alcohol abuse [11]. Communication within the team and surgeons is the main source of stress for the anesthesiologist [12].

Chronic interpersonal problems at work, physical malaise, emotional problems, increased staff turnover, absence from work, poor quality of work performed, negative attitude and quality of medical care rendered are only some of the problems associated with burnout [13]. The most common somatic complaints, according to the study, are headache, pain in the abdomen and intestines [12]. Thus, burnout is a threat to the mental and physical health of anesthesiologists, and therefore also to patient safety [9].

Data on the relationship between burnout and optimism showed results that illustrate that active optimists tend to burn less than realists [1]. According to a literature review (2018), subjective well-being reflects a general assessment of a person's life quality from his personal point of view, that is, how much a person believes or feels that his life is going well [14]. For example, "optimism is understood as a person's steady confidence in overcoming life's difficulties, confidence in their temporary nature, based on a belief in goodwill ... and also on faith ... in one's own strength or timely outside help" [1]. The concept of "happiness" has been changing over the years. If in ancient centuries this concept assumed the presence of luck, determined by the gods, today modern Americans define "happiness" as a "pleasant experience" that they can actively achieve and over which they have personal control [14]. As shown by *B.L. Fredrickson* in the theory of "expansion and construction", positive emotions and associated positive states are associated with the expansion of the scope of attention, cognition and action. The action of positive emotions does not end after the emotion, but resonates further, which can lead to optimization of health, subjective well-being and psychological stability. Negative emotions such as fear, anger, or sadness constrict the thoughts and actions of an individual, while positive emotions such as joy, interest, satisfaction expand a person's capabilities [15].

Nevertheless, many questions aimed at studying subjective well-being remain, and modern research should go towards studying the psychological processes that affect it [14].

In 1998, a study was published on the methods of suicide of doctors, medical personnel and other related professions, according to which the priority was given to taking medications (18–29%), hanging (13%), taking cyanides (10%), jumping from a height (10%) and drowning (8%) [16]. According to *E.L. Fink-Miller et al*. (2018), doctors and veterinarians have an increased risk of suicide compared to the general population. Risk factors are stress at work, personality traits and access to drugs [17]. According to a literature review (2018), suicide is a worldwide phenomenon, which is a serious social and health problem that should be given priority.

According to the WHO, in 2015, there were about 800,000 suicides worldwide. Moreover, in the second and third decades of life, suicide is the second of the main causes of death. Suicide attempts are 30 times more common, but are important predictors of retries and completed suicides. Depression and anxiety, use of psychoactive substances, some personal traits are the most relevant factors for suicide risk [18]. In the United States, from 300 to 400 physicians each year take their own lives [19], and anesthesiologists head statistics of suicides; the level of suicides among them is quite high, and depression and sleep disorders may be markers of the risk of suicide [20-22]. According to the Finnish study, a quarter of all anesthesiology respondents thought about suicide, and 2% seriously planned it [22]. Substance abuse and the possibility of suicide are the main occupational hazards of anesthesiologists [23]. It is extremely important identify risk factors and recognize doctors who are prone to suicide in order to help them in time [21].

MATERIAL AND METHODS

Aim of study: the dependence of happiness (satisfaction with life) and emotional burnout of employees of the departments of anesthesiology and intensive care. A multicenter, anonymous, blind observational study conducted in February 2019.

The study included 361 participants, including 311 specialists from the departments of anesthesiology and intensive care (39 anesthesiologists, 80 resuscitators, 192 nurses and nurse assistants), as well as a control group of 50 non-medical workers. Anesthesiologists: gender (women — 18, men — 21); the mean age is 38.4 years; length of service on average — 13.3 years (from 1 to 40); resuscitators: gender (women — 40, men — 40); average age — 39.6 years; length of service on average —13.2 years (from 1 to 50); nurses and nurse assistants: gender (women — 141, men — 51); the average age is 33.9 years; length of service on average — 10.2 years (from 0.2 to 39); control group — non-medical workers: gender (women — 30, men — 20); the average age is 37.3 years.

We used *Maslach Burnout Inventory (MBI)*, a burnout questionnaire (an option for medical workers in the adaptation of N.E. Vodopyanova); *Flourishing Scale (FS)* (*E. Diener , D. Wirtz , W. Tov , C. Kim-Prieto , D. Choi, S. Oishi , R. Biswas-Diener* , 2009); *Satisfaction with Life Scale (SWLS) (E. Diener , R.A. Emmons, R.J. Larsen, Sh. Griffin)*. The study also included a series of

general questions: gender, age, specialization, work experience, subjective definition of the concept of "happiness", etc.

Statistical analysis was performed using the *RStudio* software environment (Version 1.0.153-© 2009–2017 *RStudio*). To identify correlation between variables we used linear hydrochloric regression. To evaluate the differences between two independent the Mann-Whitney U-test was used. $P < 0.05$ was considered statistically significant.

RESULTS AND DISCUSSION

Table 1 shows data on regression analysis: burnout and happiness/well-being.

Table 1

Regression analysis: burnout and happiness/well-being

Burnout and Happiness / Well-being				
	Estimate	**Std. Error**	**t-value**	**P-value**
Anesthesiologists				
(Intercept)	51.7754	4.5968	11.263	1.63e-13 ***
EE	-0.5239	0.1467	-3.571	0.00101 **
(Intercept)	41.5122	2.9132	14.250	<2e-16 ***
DP	-0.6183	0.2852	-2.168	0.0367 *
(Intercept)	7.0667	4.2210	1.674	0.103
PA	1.0075	0.1415	7.121	1.96e-08 ***
Resuscitators				
(Intercept)	51.39223	2.04379	25.145	<2e-16 ***
EE	-0.59430	0.08205	-7.243	2.7e-10 ***
(Intercept)	40.6794	1.7554	23.173	<2e-16 ***
DP	-0.4132	0.2053	-2.013	0.0476 *
(Intercept)	8.3543	3.5137	2.378	0.0199 *
PA	0.9627	0.1121	8.584	6.92e-13 ***
Nursing staff				
(Intercept)	54.06310	1.32563	40.783	<2e-16 ***
EE	-0.45654	0.04689	-9.737	<2e-16 ***
(Intercept)	47.8283	1.3022	36.730	<2e-16 ***
DP	-0.6096	0.1238	-4.925	1.83e-06 ***
(Intercept)	20.3221	3.5002	5.806	2.65e-08 ***
PA	0.6272	0.1001	6.266	2.42e-09 ***
Control group				
(Intercept)	57.8295	1.7698	32.675	<2e-16 ***
EE	-0.6001	0.1244	-4.822	1.47e-05 ***
(Intercept)	50.3525	1.0159	49.566	<2e-16 ***
DP	-0.2791	0.3587	-0.778	0.44
(Intercept)	36.2742	5.1329	7.067	5.81e-09 ***
PA	0.3368	0.1267	2.659	0.0106 *
Signif . codes: 0 '*' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 '' 1**				

Notes: EE — emotional exhaustion; DP — depersonalization; PA — reduction of professional achievements

Higher burnout *(MBI)* : a high level of emotional exhaustion, depersonalization and low scores for the subscale of reduction of professional achievements (which corresponds to a high level of regression) reduce the level of well-being. According to the data, we could suggest that a low level of satisfaction with the lives of doctors and nurses may be a precursor of burnout syndrome. All three subscales of *MBI*: *EE*, *DP*, *PA* showed a significant result of communication with life satisfaction. In the control group, such a correlation also exists, but the values obtained are not as high as those of medical workers. It should be noted that life satisfaction cannot be explained only by the level of burnout and conversely.

Fig. 1-3 show a comparison of burnout syndrome in different groups.

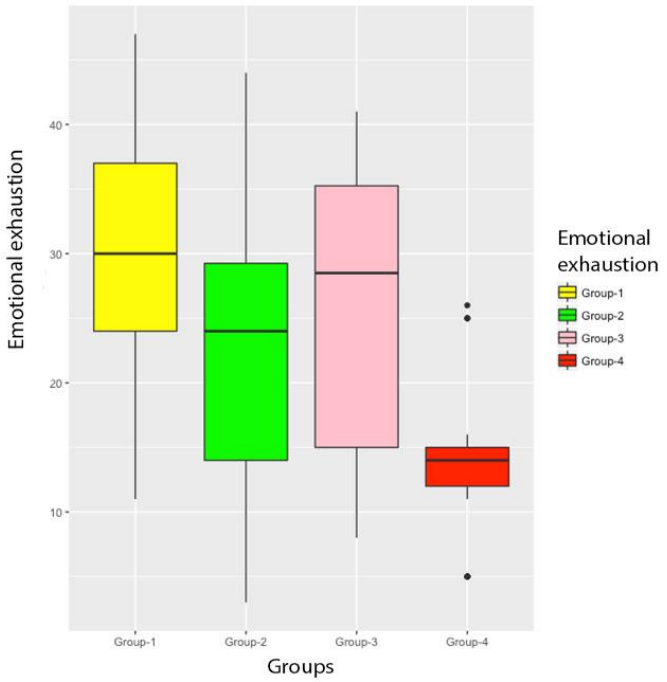

Fig. 1. EE: group 1 — anesthesiologists, 2 — resuscitators, 3 — nursing staff, 4 — control group

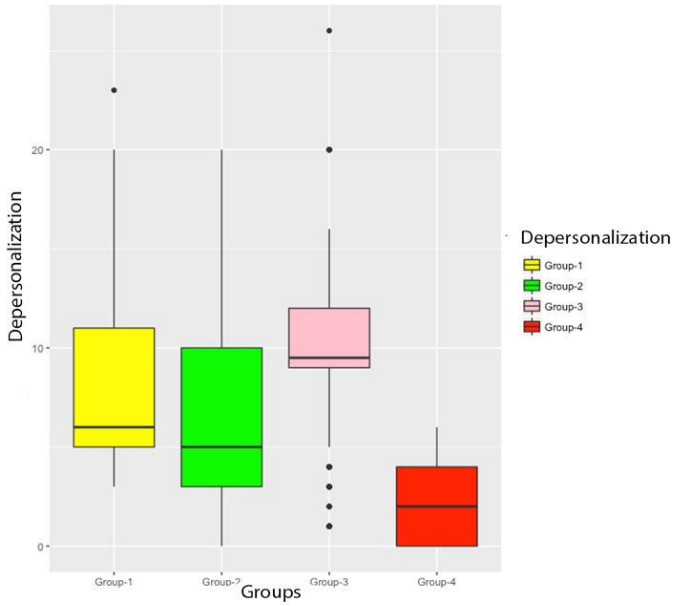

Fig. 2. Depersonalization: group 1 — anesthesiologists, 2 — resuscitators, 3 — nursing staff, 4 — control group

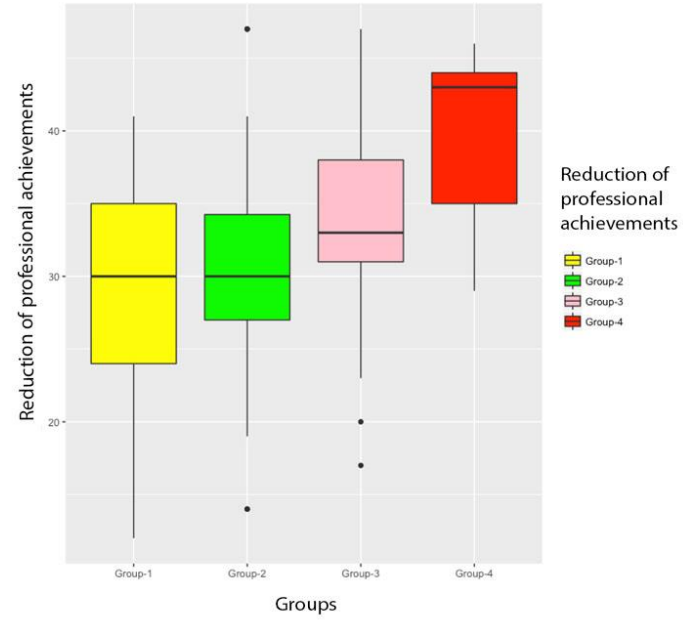

Fig. 3. Reduction of professional achievements: group 1 — anesthesiologists, 2 — resuscitators, 3 — nursing staff, 4 — control group

As can be seen in the figures, according to the *MBI*, 15% of anesthesiologists, 17.5% of resuscitators, 9.9% of nurses and nursing assistants, 0% in the control group have high burnout scores for all three subscales. In addition, 82% of anesthesiologists, 66.25% of resuscitators, 59.4% of nurses and nurse assistants, 14% of the examined from the control group have high rates for some of the three burnout subscales .

No statistically significant result of the correlation between life satisfaction, age of participants and work experience was obtained in any group.

Satisfaction with life (30–35 points — highly satisfied, up to 10–14 — not satisfied and 5–9 — extremely dissatisfied) and an assessment of the level of prosperity among different groups of medical workers are presented in Fig. 4, 5. All groups of employees of the departments of anesthesiology and resuscitation set low scores of satisfaction compared with the control group of non-medical workers. In general, an assessment of the level of satisfaction with life and prosperity shows the worst results for these tests among employees of anesthesiology and intensive care units compared with the control group.

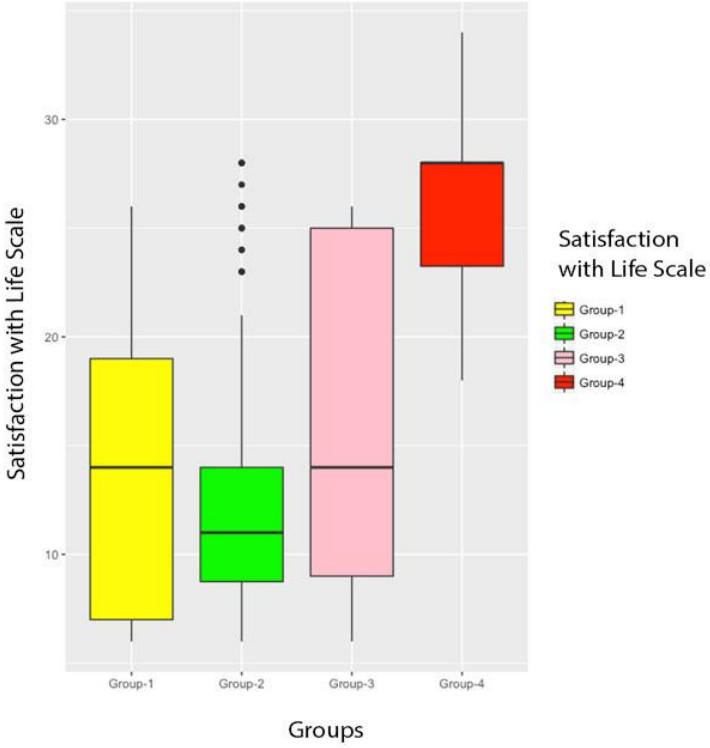

Fig. 4. Satisfaction with Life Scale: group 1 — anesthesiologists, 2 — resuscitators, 3 — nursing staff, 4 — control group

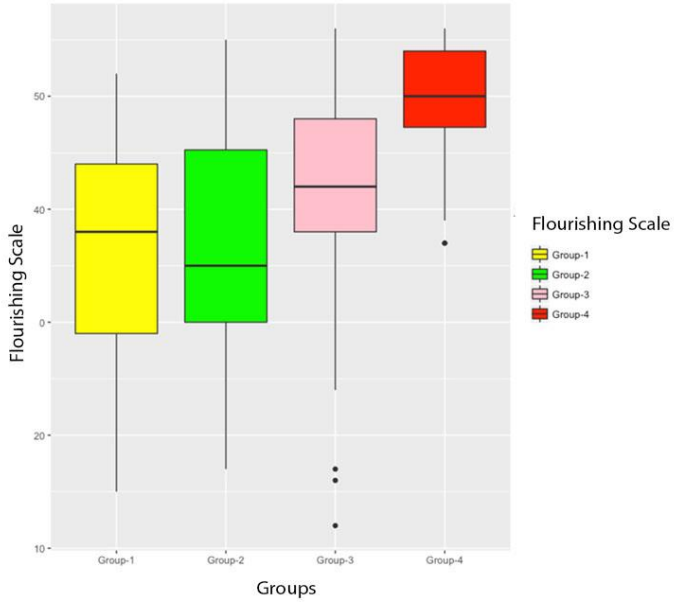

Fig. 5. Flourishing Scale: group 1 — anesthesiologists, 2 — resuscitators, 3 — nursing staff, 4 — control group

Table 2 presents a comparison of the significance of test indicators among medical staff and the control group of non-medical workers.

Table 2

The comparison of the significance of test scores of medical staff and the control group of non-medical staff (Mann–Whitney U-test)

Questionnaires:	**P-value** *comparison with control group*
	Anesthesiologists
FS	p-value = 6.382e-11
EE	p-value = 2.74e-11
DP	p-value = 6.338e-12
PA	p-value = 2.141e-10
SWLS	p-value = 9.946e-13
	Resuscitators
FS	p-value = 9.585e-12
EE	p-value = 1.406e-07
DP	p-value = 1.609e-10
PA	p-value = 7.328e-12
SWLS	p-value <2.2e-16
	Nursing staff
FS	p-value = 1.198e-10
EE	p-value = 1.047e-13
DP	p-value <2.2e-16
PA	p-value = 8.023e-10
SWLS	p-value <2.2e-16

Notes: DP — depersonalization; EE — emotional exhaustion; FS — Flourishing Scale; MBI — Maslach Burnout Inventory; PA — reduction of professional achievements; SWLS — Satisfaction with Life Scale

Since the level of suicide is high among doctors according to the literature, the issue of suicide was included in the study. The results are presented in Fig. 6.

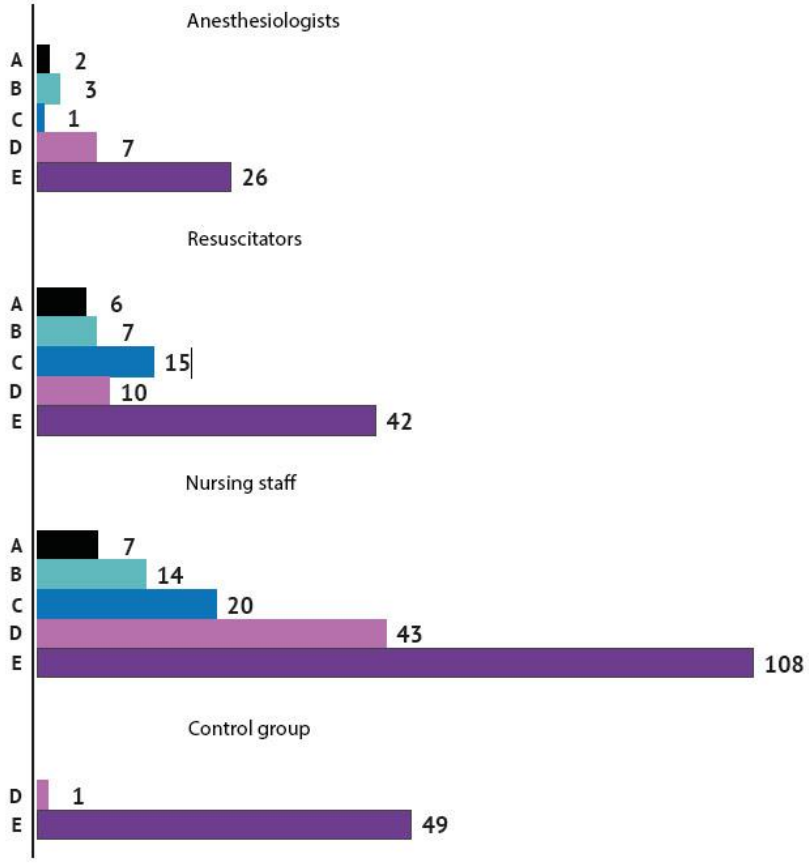

Fig. 6. Suicide: Yes, I thought about it (A); Sometimes (B); Rarely (C); Almost never (D); Never thought about it (E) (number of respondents)

At the same time, two anesthesiologists, 6 resuscitators and 7 nurses confidently answered: *yes, I thought about suicide*. *Sometimes* was the answer of 7.72% of medical workers, *rarely* and *almost never* — 30.87%, *never* — only 56.59%. Only a little more than half of the medical workers never thought about suicide, which means that the other half of the staff of the departments of anesthesiology and resuscitation approached this line to one degree or another.

Participants were also asked to rate the statement *I see reasons to live* (on a scale of 5 points ("yes") to 0 ("no")). And this *reason to be alive* has a positive correlation with life satisfaction: anesthesiologists — 0.8; resuscitators — 0.67; nurses — 0.6; control group — 0.4.

Another additional question *how optimistic are you about your future* (from 0 to 10 points) was rated by 38% of anesthetists as 5 points, by 41% as 5-7 points and only by 20.5% as 8-10 points. Among resuscitators, less than 5 points were noted in 28.7%, 5-7 points — in 38.75%; 32.5% rate their future as 8–10 points. Nurses/nurse assistants: less than 5 points in 20.8%, 5-7 points in 48.95%, 8-10 points in 30.25%. In the control group of non-medical workers, 6% chose 7 points, while 94% - 8-10 points. As can be seen, only from 20.5 to 32.5% of medical workers rated their future at 8-10 points. This indicator was 94% in the control group compared to the other groups. Such a low result of assessing prospects in the future among medical workers sets us thinking.

An additional question from the questionnaire (*write your definition of happiness*) caused difficulties for both medical staff and the control group. However, among the most frequent answers there were: a good environment and the absence of conflicts at work, the life and health of loved ones, doing what you love, satisfaction and the feeling that someone needs you.

Burnout and the intention to quit a profession/job are also often studied in medical facilities. For example, in a Swiss study (2018) (1840 employees), on average, every 12 employees had increased burnout symptoms, and every 6 ones often thought about leaving the profession [24].

There is growing awareness of the problem of occupational stress and burnout in anesthesiology. Today, it is necessary to provide anesthesiologists with psychological tools to deal with occupational stress. And the assessment of personality traits predisposing to the development of burnout can also be taken into account in the selection procedure for residents [25].

Various interventions among doctors are also being studied to prevent burnout or to reduce its symptoms. Evaluation of the use of art therapy (4 months of weekly sessions) for the treatment of burnout among medical staff of oncology departments showed a statistically significant decrease in its level [26].

Today, stress is one of the largest public health problems leading to anxiety, a decrease in the activity of the immune system, or even a malfunction of internal organs. According to a systematic literature review (2018), in Germany, absence from work due to stress costs about 20 billion euros annually. Art therapy is seen as an innovative way to prevent/manage the stress. Active artistic intervention, such as drawing, clay modeling, significantly reduced stress and anxiety in 8 studies out of 11 [27]. Back in 2009, according to the proposed recommendations of *S. Boorman*, ordered by the Ministry of Health of Great Britain, the need for changes in working conditions was noted with the aim of improving the health and well-being of medical workers [28].

However, an insufficient number of studies and limited data on effectiveness create the need for the development of interventions/psychological support for employees of the department of anesthesiology and intensive care aimed at ensuring health and well-being in medical institutions.

In our study, according to our analysis, we reject the hypothesis that there is no difference in satisfaction with life and the level of burnout between anesthesiology and intensive care workers and a control group of non-medical workers.

CONCLUSION

There is a growing awareness of the problem of occupational stress and burnout in anesthesiology and resuscitation. Today, timely detection of the first symptoms of burnout and the provision of anesthesiology-resuscitation staff with psychological tools/psychological support aimed at managing/preventing occupational stress and burnout are required.

FINDINGS

1. The level of satisfaction with life is statistically significantly lower in all groups of medical workers in the study compared to the control group.

2. According to the *MBI*, high burnout scores for all three subscales: 15% of anesthesiologists, 17.5% of resuscitators, 9.9% of nurses and nurse assistants, 0% in the control group. High rates in one of the three subscales of burnout: 82% of anesthesiologists, 66.25% of resuscitators, 59.4% of nurses and nurse assistants, 14% in the control group.

3. Only a little more than half of medical workers (56.59%) never thought about suicide, which means that almost half of the staff of anesthesiology and resuscitation departments thought to some extent about suicide.

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