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Burnout in Anesthesiology and Resuscitation

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BACKGROUND The term “burnout” was originally developed by the psychologist Herbert Freudenberg (Germany, USA) in the seventies of the last century. Then another psychologist, Christina Maslach was a co-author of the Maslach Burnout Inventory, which was adapted to different professions and translated into different languages. According to Russian scientist professor Victor V. Boyko “the emotional burnout is a form of professional distortion of an individual …”. Anesthesiology and resuscitation are certainly among the most stressful medical disciplines, daily exposing doctors to high responsibility associated with life-threatening scenarios of patients. Therefore, burnout detection is important because it is related to the safety and quality of medical care, as well as to the life and health of intensive care specialists.

Aim of study Anonymous, blind observational study of the frequency and dynamics of burnout, depression, situational and personal anxiety of anesthesiologists and resuscitation doctors and nurses of anesthesiology and intensive care departments.

MATERIAL AND METHODS The study included 64 specialists of anesthesiology and intensive care departments (41 doctors and 23 nurses). Maslach Burnout Inventory (MBI) for Medical Personnel, Purpose in life test (Crumbaugh & Maholick, 1964), “Burnout” questionnaire of V. V. Boyko, Toronto Alexithymia Scale (TAS), Spielberger State-Trait Anxiety Inventory (STAI) in the adaptation by Y. L. Khanin, Assessment of depression (HADS), and a series of general questions (gender, age, profession, working experience, marital status, number of working hours per week, how much do I love my job, how much I would like to love my job, somatic complaints, etc.).

RESULTS According to MBI, 65.9% of examined doctors and 43.5% of nurses have high rates of certain burnout, which confirms the relevance of the studied problem. Of these, 12.19% of doctors and 8.7% of nurses have high rates of all three sub-scales of burnout syndrome. Depression, personal and situational anxiety have a positive correlation with burnout.

CONCLUSION According to the literature, burnout leads to a steady decrease in work productivity, destructive behavior, emergence of a variety of psychosomatic disorders, and a sense of meaninglessness of existence, despair, suicidal thoughts and committed suicides at the final stage of burnout. It is necessary to conduct regular testing of intensive care specialists to detect burnout, depression and anxiety. When the burnout is identified, it is necessary to perform psychological interventions.

Keywords: burnout, depression, situational and personal anxiety

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BACKGROUND

The term “burnout” was introduced and developed by the psychologist *Herbert Freudenberg* (Germany, USA) in the 70s of the last century. Then another psychologist, *Christina Maslach*, developed a burnout questionnaire, which was adapted to various professions and translated into different languages. According to the statement of the doctor of psychological sciences and Russian scientist professor Viktor Vasilyevich Boyko, "... emotional burnout is a form of professional deformation of the personality." Among the medical disciplines, anesthesiology and resuscitation are certainly among the most stressful ones, requiring daily high levels of responsibility from physicians associated with patient-threatening scenarios. Based on this, the timely determination of signs of burnout is important as it is associated with the safety and quality of medical care, as well as with the life and health of anesthesiology and intensive care specialists.

A burnout doctor is a new challenge for the health care system. It is especially common in medical staff working in the field of emergency care, intensive care and anesthesiology. According to the literature review (2017), doctors of the intensive care unit and emergency medical care (55%) have the highest burnout rate with anesthesiologists in the second place (50%).

The burnout may be manifested by fatigue, decreased cognitive functioning, arterial hypertension and increased pulse rate, disorders of the gastrointestinal tract, sleep and wakefulness, eating behavior; it is characterized by emotional instability, anxiety disorders, depression, decreased attention and memory, may be associated with personality traits, ultimately affecting individual performance, thereby leading to a higher risk of medical errors. The burnout can also lead the doctor to substance abuse or alcohol abuse. According to the meta-analysis, individual, structural, or organizational strategies may lead to a significant reduction in overall burnout among physicians [1–6].

The incidence of suicide cases among medical staff is significantly higher than in other professions, and some studies clearly and ambiguously demonstrate an increased risk of suicide among anesthesiologists compared to other doctors, as well as compared to the general population [7].

According to Russian-language studies on the professional burnout syndrome in anaesthesiology and intensive care specialists, the integrative index of professional burnout may reach 62.5% [8, 9]. For example, emotional exhaustion was noted in 64.5% of specialists, emotional tension was revealed in 52.1%, low job satisfaction and underestimation of its importance was reported by 31.3% of specialists [8]. In another study, it was shown that up to 29.8% of anesthesiology and intensive care physicians had an established emotional burnout syndrome, while 27.2% were at the time of the study at the stage of burnout development [9]. Up to 44.4% of doctors had emotional exhaustion, 50% had depersonalization, and 44-77.8% had reduction in achievements.

In some studies, there is a greater prevalence of exhaustion among women [9, 10], while depersonalization is more common among men [9, 11], although, in general, the burnout among anesthesiologists and resuscitation male staff is more significant and more common [8, 12]. The age from 30 to 40 years corresponds to the highest emotional exhaustion and reduction of personal achievements [13].

Some foreign studies repot the data on memory deterioration and lower self-esteem of health, increased depression, increased anxiety, and sleep disorders, associated with burnout [3, 14]. The risk of burnout among anesthesiologists is almost 70%, according to other researchers, it varies from 6.34 to 46.5% [15-17]. Among nurses working in anesthesiology, a high level of burnout was observed in 18.63% [18]. Thus, the prevalence of a high level of emotional exhaustion, depersonalization and reduction of professional achievements in one of the subscales is variable from research to research and may reach 12.2%, and in some studies it reaches 90% [12, 16, 19–22].

Working conditions, psychosocial factors, low social support, and dissatisfaction with wages influence the distribution and severity of burnout syndrome among nurses [23]. For example, up to 84.4% of participants noted moderate or high levels of burnout syndrome [24]. According to a meta-analysis (2018), a significant number of pediatric nurses has a moderately high level of emotional exhaustion and depersonalization and a low personal achievements esteem. The conclusions provide recommendations on the need to develop interventions or methods of treatment that will help prevent or reduce symptoms of burnout [25]. According to a literature review (according to a search conducted over the past 15 years), nurses are stressed and have symptoms of burnout, leading to decreased performance [26].

Burnout stages (according to V.V. Boyko):

I. Tension. The precursor that triggers the formation of emotional burnout is the result of either constant exposure or short-term, but strong stressful factors. It includes experiencing traumatic circumstances, dissatisfaction with oneself, a feeling of "being driven into a cage", anxiety and depression.

II. Resistanse. Symptoms: inadequate selective emotional response, emotional and moral disorientation, reduction of emotions and professional duties.

III. Exhaustion. Symptoms: emotional deficit, emotional detachment, personal detachment, or depersonalization, psychosomatic and psycho-vegetative disorders [27].

The aim of study: an anonymous, blind, observational study of the frequency and dynamics of emotional burnout, depression, situational and personal anxiety in physicians and nursing staff of anesthesiology and resuscitation departments.

MATERIAL AND METHODS

A multicentre, anonymous, blind, observational study of the frequency and dynamics of emotional burnout in physicians and nursing staff in the anesthesiology and resuscitation departments. The study was conducted in 2018 in two medical centers: N.N. Burdenko NMRS of Neurosurgery and A.I. Burnazyan FMBC.

We surveyed 64 specialists from the departments of anaesthesiology and intensive care, among them: 41 anesthesiologists and resuscitators and 23 nursing specialists. Among the doctors participating in the study, there were 31 men and 10 women, the age of respondents ranged from 26 to 79 (averagely 40.6). Among the nursing staff participating in the study, there were 6 men and 17 women, the age of the respondents ranged from 22 to 51 (averagely 36.9 years).

In the study we used:

- Maslach Burnout Inventory (MBI) burnout questionnaire, an option for medical workers in the adaptation of N.E. Vodopianova [28];
- Purpose in life test (Crumbaugh & Maholick, 1964) [29];
- "Burnout" questionnaire by V.V. Boyko [27];
- Toronto alexithymia scale (TAS) [30];
- anxiety scale by B.H. Spielberger in the adaptation of Y.L. Hanin [30];
- Hospital Anxiety and Depression Scale (HADS) [31] ;
- a series of general questions (gender, age, profession, experience, marital status, number of working hours per week, “how much do I love my job”, “how much do I want to love my job”, somatic complaints and others)

The statistical analysis of the data was performed in the Microsoft Excel 2016 and RStudio software environment (Version 1.0.153) for statistical calculations.

RESULTS AND DISCUSSION

The data on the MBI test of anesthesiologists and resuscitation specialists are presented in Table 1.

Table 1

The MBI score in intensive care doctors

MBI doctors									
Work experience	**Emotional exhaustion**			**Depersonalization**			**Reduction of professional achievements**		
	low	medium	high	low	medium	high	low	medium	high
0-5	**4**	**1**	**2**	**3**		**4**	**3**	**3**	**1**
6-14	**12**	**5**	**2**	**2**	**10**	**7**	**5**	**2**	**12**
15-20	**2**		**2**	**2**	**1**	**1**	**1**		**3**
over 20	**4**	**3**	**4**	**4**	**2**	**5**	**4**	**3**	**4**

According to the MBI scale, 65.9% of the examined anesthesiology and intensive care physicians had high rates of one or another of the burnout subscales, which confirmed the urgency of the problem being studied. Of these, 12.19% had high rates of all 3 subscales of burnout syndrome, 24.4% had a high level of emotional exhaustion, 41.5% of doctors had a high level of depersonalization and 48.8% had a high reduction level of professional achievements. The integral indicator of all respondents of doctors in the study was in the value of "median" 60 (from 25 to 87).

It should be noted that burnout symptoms were found to depend on the working experience. Within a period from 6 to 14 years of being in the profession, emotional exhaustion appears, depersonalization increases and there is a pronounced reduction of professional achievements, that is, it is about the age of 30–40, and first of all it is necessary to pay attention to this category of doctors.

The test results on the "Burnout" questionnaire (according to V.V. Boyko) of anesthesiology and intensive care physicians are presented in Table 2.

Table 2

The results of V.V. Boyko "Burnout" questionnaire in intensive care doctors

The degree of emotional burnout (EB), stages									
Work experience	Tension stage			Resistance stage			Exhaustion stage		
	No	Developing	Formed	No	Developing	Formed	No	Developing	Formed
0-5	**6**	**1**		**3**	**2**	**2**	**4**	**2**	**1**
6-14	**12**	**5**	**2**	**2**	**10**	**7**	**9**	**5**	**5**
15-20	**1**	**1**	**2**	**1**		**3**	**1**		**3**
over 20	**8**	**3**		**6**		**5**	**6**	**4**	**1**

The median sum of all 12 symptoms for the respondent physicians in the study was 129 (from 10 to 254). The formed tension stage was detected in 9.8% of doctors, and it was developing in 24.4% of doctors; the formed resistance stage was detected in 41.5%, and in 31.7% it was developing; the exhaustion stage was detected in 24.4% of physicians still developing in 26.8%.

According to the MBI scale (nursing staff) (tab. 3), high rates of this or that burnout subscales were observed in 43.5%, which also confirmed the relevance of the problem under study. Of these, 8.7% had high rates of all 3 subscales of burnout syndrome, 39.1% had a high level of emotional exhaustion, 39.1% had a high level of depersonalization and 13% had a high level of reduction of professional achievements. The integral indicator of all respondents in the study was in the value of "median" 62 (from 14 to 86).

Table 3

The MBI score in intensive care nurses

MBI, nurses									
Work experience	**Emotional exhaustion**			**Depersonalization**			**Reduction of professional achievements**		
	low	medium	high	low	medium	high	low	medium	high
0-5	**5**	**1**	**1**	**1**	**4**	**2**	**7**		
6-14		**1**	**7**		**2**	**6**	**6**		**2**
15-20	**1**	**1**		**2**			**1**		**1**
over 20	**4**	**1**	**1**	**3**	**2**	**1**	**6**		

In nurses, the work experience also counted: emotional exhaustion is most significant in specialists who had already been 6-14 years in the profession, and the increase in depersonalization was the highest in the age group of 30–40 years. However, the level of reduction of professional achievements in nurses was generally lower compared to doctors, as only 13% of nurses scored high marks for reduction, while 48.8% of anesthesiologists and reanimatologists had a high level of reduction in professional achievements.

The data on the "Burnout" questionnaire (according to V.V. Boyko) for nursing staff of the anesthesiology and intensive care departments are presented in Table 4.

Table 4

The results of V.V. Boyko "Burnout" questionnaire in intensive care nurses

The degree of emotional burnout (EB), stages									
Work experience	Tension stage			Resistance stage			Exhaustion stage		
	No	Developing	Formed	No	Developing	Formed	No	Developing	Formed
0-5	**6**	**1**		**3**	**4**			**3**	**4**
6-14	**1**	**1**	**6**	**1**		**7**	**1**		**7**
15-20	**2**				**2**			**2**	
over 20	**6**			**1**	**3**	**2**	**1**	**3**	**2**

The median sum of all 12 symptoms for respondents (nurses) in the study was 161 (from 45 to 223). The formed tension stage was detected in 26% of nurses, and in 8.7% it was developing; the formed resistance stage was detected in 39.1%, and in another 39.1% it was developing; the formed exhaustion stage was detected in 56.5%, and in 34.8% it was developing.

Estimates of situational and personal anxiety, depression (number of people), the Purpose in Life test and the Toronto alexithymia scale (median value) for anesthesiology and intensive care physicians and nurses in the departments of anesthesiology and intensive care are presented in Fig. 1.

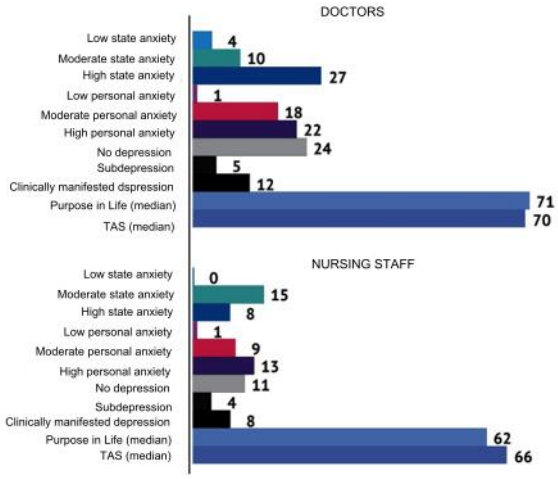

Fig. 1. Situational and personal anxiety, depression.
Purpose in life test, TAS (median value): anesthesiologists and intensive care specialists and nurses of anesthesiology and intensive care departments. Research data

Thus, a high level of situational anxiety was detected in 65.9% of doctors and in 34.7% of nurses, a high level of personal anxiety in 53.7% of doctors and in 56.5% of nurses. Subdepression was detected in 12.2% of doctors and 17.4% of nurses, and depression was revealed in 29.3% of doctors and 34.8% of nurses. According to the Purpose in life test, a total value below 50 points might indicate a lack of a goal in life, the doctors in the study had a result from 51 to 99 points (median 71 points), nursing staff had from 55 to 91 points (median 62 points).

The increased level of alexithymia (TAS) may be a contraindication for professionals working in the field of communication. The "alexithymic" type of personality had 74 points or more, "non-alexithymic" type had 62 points or less. According to the Psychoneurological Institute of V.M. Bekhterev, researchers who adapted the method, identified the average value of alexithymia in several groups: the control group of healthy people had 59.3±1.3 points, the group with psychosomatic disorders had 72.09±0.82, the group with neuroses had 70.1±1,3 [27]. In this study, the TAS median was 70 points (from 63 to 100) for doctors, and 66 points (from 63 to 83) for nursesing staff.

In addition to the questionnaires, respondents were also asked a series of general questions, the results of the survey are presented below in Fig. 2–4.

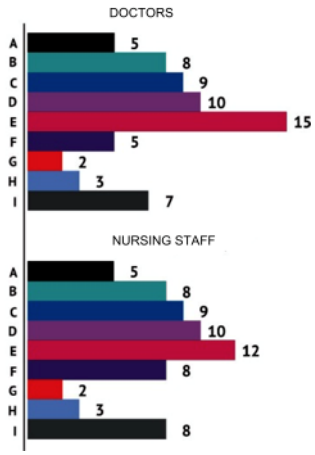

Fig. 2. Additional questions. The assessment of one's fatigue during the work week on average from 0 to 10 (where 10 is very tired) (A). The assessment of one's own working capacity from 0 to 10 (where 0 is a low level of efficiency) (B). How much you like your work from 0 to 10 (C). How much you would like to love your work from 0 to 10 (D). If I had the opportunity, I would not work (E) (number of "Yes" answer). How optimistic you feel about the future from 0 to 10 (F). How many positive feelings did you experience today (G). How many positive feelings did you experience yesterday (H). Rate your emotional state now from 0 to 10 (I) (median value)

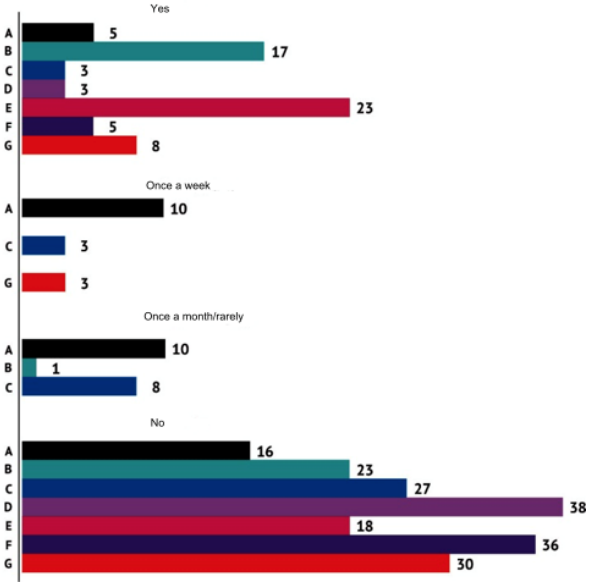

Fig. 3. Somatic complaints of doctors. Frequency of headache (A), use of analgesics (B), dizziness (C), complaints of heartbeat/pain in the heart/discomfort in the heart area (D), complaints about the gastrointestinal tract (E), complaints about the respiratory system (F), feeling of lack of air (G)

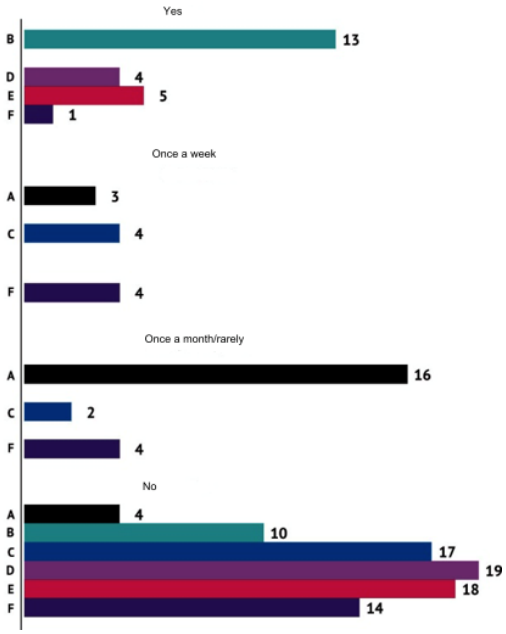

Fig.4. Somatic complaints of nurses. Frequency of headache (A), use of analgesics (B), dizziness (C), complaints of heartbeat/pain in the heart/discomfort in the heart area (D), complaints about the gastrointestinal tract (E), complaints about the respiratory system (F), feeling of lack of air (G)

In terms of the median, doctors rated the optimism of their future as 5 points, from a minimum score of 0 to a maximum of 10 points, while 24.4% of anesthesiology and intensive care physicians chose a score of 8 and higher, while the lowest expectation scores (from 0 to 4 points) were chosen by 36.6% of doctors.

That is, almost every third doctor poorly saw his/her future.

Nursing staff rated the optimism of their future by 8 points in the value of the median, from a minimum score of 5 to a maximum of 10 points, while 87% of respondents chose a score of 8 or higher (this indicator was only 24.4% for doctors), whereas the lowest estimates of expectations (from 0 to 4 points) were not chosen by anyone at all (Fig. 2).

Thus, nurses in general subjectively assessed the optimism of their future and it was much higher than in the doctors included in the study.

According to the literature, the most common somatic complaints against a background of burnout were included in the survey by separate points, where respondents were asked to emphasize a suitable answer. The data obtained are presented in Fig. 3 and 4.

Doctors: the correlation "working hours per week and the sum of all 12 symptoms of burnout" was 0.23, positive. Thus, the greater the number of working hours per week was, the higher the burnout rate could be. “Working hours per week”: the tension, resistance, and exhaustion stage had positive correlations, 0.16, 0.3449222 and 0.1, respectively. The correlation between the symptoms of burnout and the Purpose in Life test was negative -0.54, with an increase in the burnout symptoms, the result of the goals in life decreased. Doctors: correlation of symptoms of burnout and alexithymia level was 0.21, positive. It can be assumed that alexithymic personality traits might contribute to the development of burnout. “Depression and burnout” also had a positive correlation 0.66 and, as shown in the literature, burnout studies should include an assessment of the level of depression. “Personal and situational anxiety” had a positive correlation with burnout of 0.45 and 0.39, respectively. The correlation “Work experience and assessment of the future” was -0.23, negative: the longer respondents worked, the more pessimistic they assessed the future.

Nursing staff: the correlation "working hours per week" and the sum of all 12 symptoms of burnout was 0.23, positive. Thus, the greater the number of working hours per week was, the higher the burnout rate could be. “Working hours per week”: the tension, resistance, and exhaustion stage had positive correlations of 0.26, 0.16, 0.1, respectively. The correlation between the burnout symptoms and the Purpose in Life test was -0.56, negative. The result of Purpose in Life test decreased with an increase in the burnout symptoms. The correlation of burnout symptoms and alexithymia level was 0.26, positive. It can be assumed that alexithymic personality traits might contribute to the development of burnout. “Depression and burnout” also had a positive correlation among nursing staff, 0.71. "Personal and situational anxiety" had a positive correlation with burnout 0.3; 0.1 respectively. The correlation of work experience and assessment of the future was -0.29, negative; the longer respondents worked, the more pessimistic they assessed the future.

However, to further refine the results, it is necessary to conduct a larger scale research.

DISCUSSION

The burnout is quite widespread among anesthesiologists and itensive care specialists. Its correlation with alcoholism, depression, cardiovascular and digestive disorders, use of sedatives and overeating is noted [20]. A US study confirms the association of burnout with alcohol/addiction among medical students. At the same time, depression, or a reduced emotional background, the likelihood of alcoholism is much higher among respondents with burnout. Thus, emotional exhaustion and depersonalization are closely related to alcohol addiction [4]. Emotional and/or physical breakdowns of anesthesiologists may have serious consequences for patients. Causes of burnout should be studied more carefully, it is necessary to implement means for the prevention and treatment of this syndrome [16]. The data presented indicate the need to focus on the problem of burnout and the anesthesiologists have the skills to overcome it [5]. According to the literature review (2017) [1], the prevalence of burnout among anesthesiologists is high

at all stages of a career. However, a small number of studies, as well as significant differences in their methodology and approach to presenting results, require further research in this area.

CONCLUSION

According to the literature, the burnout leads to a steady decline in labor productivity, mental block and memory impairment, increased consumption of various stimulant drinks, destructive behavior, the emergence of various psychosomatic disorders (insomnia, sexual dysfunction, tachycardia, increased pressure, headache, frustration digestive system, reduced immunity), etc., and in the final stage of burnout a sense of meaninglessness despair comes, suicidal thoughts may appear and result in real suicides.

Thus, the prevention of burnout syndrome should begin with its diagnosis, as well as assessing the presence of depression, situational and personal anxiety.

It should be noted the advantage of sharing different scales of burnout for greater reliability of the results.

FINDINGS

1. According to the study, 65.9% of the examined anesthesiology and intensive care physicians (MBI) and 43.5% of nursing staff had high rates of various subscales of burnout, of which 12.19% of doctors and 8.7% of nurses had high rates on all 3 subscales of burnout syndrome. Depression, personal and situational anxiety had a positive correlation with burnout.

2. Since the results indicated a significant prevalence of emotional exhaustion, depersonalization and reduction of professional achievements, as well as a high risk of suicides, it is desirable to carry individual work (not anonymous) with the staff of anesthesiology and intensive care, aimed at identifying burnout, its prevention and psychosocial support in the form of psychosocial rehabilitation activities with doctors and nursing staff.

3. Psychological assistance should be specific and targeted in order to help both the doctor and the patient.

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