

## **СРАВНИТЕЛЬНАЯ ХАРАКТЕРИСТИКА ПРОФЕССИОНАЛЬНОЙ ДЕЯТЕЛЬНОСТИ МЕДИЦИНСКИХ СПЕЦИАЛИСТОВ ИЗ СОСТАВА НЕШТАТНЫХ ФОРМИРОВАНИЙ СЛУЖБЫ МЕДИЦИНЫ КАТАСТРОФ МИНЗДРАВА РОССИИ И ФЕДЕРАЛЬНОГО МЕДИКО-БИОЛОГИЧЕСКОГО АГЕНТСТВА**

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**Резюме.** Цель исследования – изучение характеристик и возможностей профессиональной деятельности медицинских специалистов из состава нештатных формирований (НФ) Службы медицины катастроф (СМК) Минздрава России и НФ Федерального медико-биологического агентства (ФМБА России) с целью выявления и оценки особенностей их деятельности как по основному месту работы – в режиме повседневной деятельности, так и в составе НФ – в режимах повышенной готовности и чрезвычайной ситуации (ЧС).

**Материалы и методы исследования.** Для достижения поставленной цели было проведено социологическое исследование (анкетирование) 255 медицинских специалистов, работающих в НФ СМК Минздрава России (n=206) и в НФ ФМБА России (n=49). Была разработана специальная анкета, вопросы в которой были составлены таким образом, чтобы отразить профессиональную деятельность медицинского специалиста как эксперта, охарактеризовать его профессиональную деятельность по основному месту работы и в составе НФ в режимах повышенной готовности и чрезвычайной ситуации. Каждый из респондентов дал добровольное согласие на обработку своих персональных данных, содержащихся в анкете, с применением порядка, установленного законодательством Российской Федерации о персональных данных и на основании решения независимого Этического комитета.

**Результаты исследования и их анализ.** Изучена и представлена общая характеристика медицинских специалистов, входящих в состав НФ СМК Минздрава России и НФ ФМБА России. Проанализированы их профессиональные возможности, наличие опыта оказания медицинской помощи пострадавшим в ЧС вне лечебной медицинской организации (ЛМО). Показано, что медицинские специалисты из состава нештатных формирований Службы медицины катастроф Минздрава России чаще участвуют в ликвидации медико-санитарных последствий ЧС непосредственно в очаге массовых санитарных потерь и др. Внесено предложение о целесообразности разработки интегрального показателя «индекс нагрузки» конкретного очага ЧС.

**Ключевые слова:** медицинские специалисты, нештатные формирования, очаг массовых санитарных потерь, пострадавшие, Служба медицины катастроф Минздрава России, Федеральное медико-биологическое агентство, чрезвычайные ситуации

**Конфликт интересов.** Авторы статьи подтверждают отсутствие конфликта интересов

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## **COMPARATIVE CHARACTERISTICS OF PROFESSIONAL ACTIVITY OF MEDICAL SPECIALISTS IN NON-STAFF UNITS OF DISASTER MEDICINE SERVICE OF THE RUSSIAN MINISTRY OF HEALTH AND OF THE FEDERAL MEDICAL AND BIOLOGICAL AGENCY**

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**Summary.** The aim of the study was to investigate characteristics of professional activity of medical specialists from non-staff units of the Disaster Medicine Service of the Ministry of Health of Russia and from non-staff units of the Federal Medical and Biological Agency – in order to identify and to assess features of their activities both at their main place of work – in the daily activities mode, and as part of non-staff unit – in modes of high readiness and of emergency situations.

**Materials and research methods.** A sociological study (questionnaire study) of 255 medical specialists working in the non-staff units of the Disaster Medicine Service of the Ministry of Health (n=206) and of the Federal Medical and Biological Agency of Russia (n=49) was conducted. A special questionnaire was developed, the questions in which were composed to evaluate the expert level of medical specialist, to characterize his professional activity at the main place of work and in the non-staff formations in modes of high readiness and emergency situation. Each of respondents gave voluntary consent to process their personal data contained in the questionnaire, applying the procedure established by the legislation of the Russian Federation on personal data and based on the decision of the independent Ethics Committee.

**Results of the study and their analysis.** General characteristics of medical specialists included in the non-staff units of the Disaster Medicine Service of the Ministry of Health of Russia and in the non-staff units of the FMBA of Russia were studied and presented. Their professional abilities and experience in providing medical aid to the victims of emergencies outside the medical treatment organization were analyzed. It is shown that medical specialists from the non-staff units of the Disaster Medicine

Service of the Ministry of Health of Russia participate more often in elimination of medical and sanitary consequences of emergencies directly in the focus of mass sanitary losses. The suggestion on the expediency of the development of the integral index "load index" of a particular emergency area has been made.

**Keywords:** Disaster Medicine Service of the Ministry of Health of Russia, emergencies, Federal Medical and Biological Agency, focus of mass sanitary losses, medical specialists, non-staff units, victim

**Conflict of interest.** The authors declare no conflict of interest

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#### Introduction

According to the study conducted by V. I. Evdokimov (2017), in 2002-2016 in the Russian Federation there were 7388 emergencies, of them man-made – 4335; natural – 2370; bio-social – 583; major terrorist attacks – 100. In these emergencies 13,866 people died, of them in man-made – 11,417; in natural – 788; bio-social – 263; in major terrorist acts – 1,400 people. [1, 2]. In accordance with the established military-medical terminology, this number of deaths is regarded as irretrievable losses. During the same period of time in Russia, 5 mln 969.7 thousand people suffered in emergencies, on average, 397,983 per year; of them in man-caused emergencies – 331,968; in natural – 64,654; bio-social – 1063; in major terrorist acts – 299 people. [1, 2]. Not all of them can be attributed to sanitary losses, since a certain part of the victims are people who have lost their usual way of life, suffered material damage, lost their homes, etc. To those who have suffered and fallen ill in an emergency the forces and means of the All-Russian Disaster Medicine Service (hereinafter the Service)<sup>1,2</sup> provide medical aid.

All-Russian Disaster Medicine Service – a functional subsystem of the Unified State System of Prevention and Elimination of Emergency Situations, functionally uniting the Disaster Medicine Services of federal executive bodies, forces and means of various federal executive bodies, executive bodies of subjects of the Russian Federation (hereinafter – subjects), local government bodies and organizations, whose powers include addressing issues of protection of population and territories from emergencies<sup>3</sup>.

According to current legislation, medical aid to victims of emergencies is provided by mobile emergency medical teams (EMTs), emergency response teams (ERTs), medical workers of multidisciplinary hospitals and medical treatment organizations providing assistance in outpatient and inpatient conditions, as well as full-time and part-time formations (hospitals, units, brigades, groups), which in case of an emergency come under the operational control of the emergency medical services management bodies at the corresponding level.

In order to bring medical aid as close as possible to the focus of

mass sanitary losses in the emergency zone it is practiced to involve medical workers of different profiles in the non-staff formations of Ministry of Health and of Ministry of Defense of Russia, whose specialists bear a significant load to eliminate the medical and sanitary consequences of the emergency. Non-staff formations are intended to reinforce special purpose medical detachments and medical treatment organizations of civil and military health care, providing medical aid to victims of emergencies. The peculiarity of the contingency formations of the Ministry of Defense of Russia is that in determining their list and composition, structure and therapeutic and evacuation characteristics of sanitary losses in emergencies of natural and man-made nature, taking into account the available experience of military medicine, play an important role. The organizational core of non-staff formations of the Disaster Medicine Service is the brigades of specialized medical assistance.

At the beginning of 2020 in the system of the Disaster Medicine Service of the Ministry of Health of Russia there were about 90 ERTs, almost 5 thousand brigades of specialized medical assistance, more than 100 of air medical teams, etc. [1]. In the structure of brigades of specialized medical assistance, surgical teams dominated – 19.0%; therapeutic teams – 11.8%; anesthesiology and intensive care teams – 9.5%; infectious disease teams – 8.8%; and trauma teams – 6%. Mobile EMTs were represented by paramedic teams – 72.0%; general physician teams – 21.0%; and specialized physician teams – 7.0% [3].

Medical specialists of in-patient medical treatment organizations of different departments, involved in the non-staff formations to eliminate medical and sanitary consequences of emergencies, often have different ideas about the organization and implementation of medical and evacuation support of the population affected by emergencies, and different approaches to the system of management, interaction and monitoring of the effectiveness of their functional responsibilities. The consequence of such differences can be a decrease in efficiency and deterioration of the results of the medical support measures, low continuity, increased costs of material resources and human resources. Thus, in order to improve the efficiency of attracting medical specialists from inpatient medical treatment organizations to the non-staff formations of Disaster Medicine Service, as well as to optimize the setting of tasks and their implementation, a clear understanding of the characteristics and capabilities of the professional activity of these specialists is necessary, which indicates the relevance of the study.

**The aim of the research** is to study characteristics and capabilities of professional activity of medical specialists in the non-staff formations of the Disaster Medicine Service of the Ministry of

<sup>1</sup> On Approval of the Regulation on the All-Russian Disaster Medicine Service: Government Decree of 26.08.2013 No. 734

<sup>2</sup> On protection of population and territories from emergencies of natural and man-made character: Federal Law of the Russian Federation of 21.12.1994 No. 68-FZ as amended on 14.10.2014 No. 307-FZ

<sup>3</sup> On Approval of the Procedure for Organizing and Providing Medical Aid by the All-Russian Disaster Medicine Service in Emergency Situations, Including Medical Evacuation: Order of the Russian Ministry of Health of November 1, 2020, No. 1202n

Health of Russia and of medical specialists of the non-staff formations of the Federal Medical and Biological Agency, to identify and to assess their features both in the main place of work in everyday activities and in the non-staff formations in the modes of high readiness and emergency situation.

**Materials and methods of the study.** In order to achieve the objective, a sociological study (questionnaire study) was conducted of 255 medical specialists within the non-staff formations of Disaster Medicine Service of Ministry of Health (n=206) and within the non-staff formations of FMBA (n=49). A special questionnaire was developed, the questions in which were composed in such a way as to reflect the professional activity of the medical specialist as an expert, to characterize his professional activity at the main place of work and as part of the non-staff formations in modes of high readiness and emergency situation. Each of respondents voluntarily consented to the processing of their personal data contained in the questionnaire, applying the procedure established by the legislation of the Russian Federation on personal data<sup>4</sup> and based on the decision of the independent Ethics Committee.

The bulk of the obtained data was statistically processed using IBM® SPSS® Statistics version 25 and PAST 4.0 software [4]. Normality of the distribution of the groups under study was assessed using the Shapiro-Wilk and Anderson-Darling criteria. Continuous normally distributed data are presented as mean and standard deviation (M[SD]); categorical data are presented as units and percentages (fractions). Significance of differences between compared groups of variables for continuous data was assessed using the Mann-Whitney U-test for independent groups. When analyzing categorical data, the significance of differences between groups was determined using the  $\chi^2$  criterion. In all cases, differences were considered statistically significant with p values < 0.05.

**Results of the study and their analysis.** The mean age (SD) of the respondents from the Russian Ministry of Health's Disaster Medicine Service non-staff formations formed in the medical treatment organizations of the Ministry of Health was 44.5 years. Women predominated among medical specialists (62.2%). The av-

erage age of medical specialists in the Russian Federal Medical and Biological Agency was significantly higher (52.6 years, p<0.001); the proportion of women also prevailed (53.1%), although it was lower than in the Ministry of Health's Disaster Medicine Service non-staff formations.

The average period of professional activity of the specialists in the disaster Medicine Service non-staff formations of the Russian Ministry of Health was 6 years, while for the specialists in the FMBA of Russia this indicator was almost 2 times higher — 10 years. At the same time less than a quarter (45 people - 22%) of the medical specialists of the Ministry of Health of Russia's Disaster Medicine Service and over a third (17 people - 34.7%) of the medical specialists of the Russian Federal Medical and Biological Agency had experience in the response to the medical and sanitary consequences of emergencies.

The Russian Ministry of Health and the Federal Medical and Biological Agency provided medical care to victims of emergencies outside the medical organization in 22.8 and 32.7% of cases, respectively. Emergency care was provided by Russian Ministry of Health and Federal Medical-Biological Agency employees in 32.7% and 40.8% of cases, respectively (Table). The study did not reveal any significant differences in the types of medical care provided by brigades of specialized medical assistance specialists, both in day-to-day activities and in emergency situations.

Non-staff formations' medical specialists were significantly less likely to perform such activity as medical and social counseling of emergency victims: Russian Ministry of Health medical treatment organizations specialists — in 14.1% of cases; Russian Federal Medical and Biological Agency medical treatment organizations specialists — in 12.2% of cases. Almost all medical specialists complied with the existing procedures and standards of medical care: medical specialists of the Russian Ministry of Health organizations — in 87.4% of cases; medical specialists of the Russian Federal Medical and Biological Agency organizations — in 87.8% of cases.

The results of the survey demonstrated no significant differences in the organization of medical care (professional activity) by the medical specialists of the non-staff formations of the Disaster Medicine Service of the Ministry of Health of Russia and non-staff formations of the FMBA of Russia. At the same time, it revealed a number of

<sup>4</sup> On Personal Data: Federal Law of July 27, 2006 No. 152-FZ

Таблица / Table

**Количество случаев оказания медицинской помощи специалистами МО Минздрава России и ФМБА России при работе в режимах повседневной деятельности и чрезвычайной ситуации, абс./%**

Number of cases of medical care provision by specialists of medical organizations of the Ministry of Health and of the Federal Medical and Biological Agency of Russia when working in the modes of daily activities and emergency situations, abs./%

Вид медицинской помощи Type of medical care	Медицинские специалисты МО Минздрава России, n=206 Medical specialists of medical organizations of the Ministry of Health of Russia, n=206	Медицинские специалисты МО ФМБА России, n=49 Medical specialists of medical organizations of the Federal Medical and Biological Agency of Russia, n=49	P
Скорая медицинская помощь / Emergency medical care	ПД / DA ЧС / ES	51/24,8 46/22,3	12/24,5 14/28,6
Первичная медико-санитарная помощь / Primary health care	ПД / DA ЧС / ES	76/36,9 56/27,2	16/32,7 16/32,7
Специализированная, в т.ч. высокотехнологичная, медицинская помощь / Specialized, including high-tech, medical care	ПД / DA ЧС / ES	791/38,3 16/7,8	21/42,9 4/8,2
Не оказывалась / Not provided	ЧС / ES	88/42,7	15/30,6

Примечания. ПД — режим повседневной деятельности; ЧС — режим чрезвычайной ситуации  
Notes. DA —daily activity mode; ES —emergency situation mode

points that should be taken into account when planning the involvement of medical specialists in the non-staff formations to respond to the medical and sanitary consequences of emergencies.

During the organization of medical support for victims of emergencies it is necessary to take into account the large proportion of women in the non-staff formations, especially in the non-staff formations of the Ministry of Health of Russia. An important factor is also the differences between the groups of medical specialists under study in terms of their professional experience — specialists from the Federal Medical and Biological Agency of Russia have, on average, more experience in their professional work in non-staff formations and more experience in dealing with medical and sanitary consequences of emergencies.

At the same time, differences in the location of medical care — on the basis of / outside the medical treatment organization — and the frequency of its provision in an emergency form may indicate that employees of FMBA of Russia more often perform their professional duties in inpatient conditions — within "their" medical treatment organizations, and more often encounter patients hospitalized in a more serious condition. Medical specialists from the Ministry of Health of Russia's Disaster Medicine Service non-staff formations more often perform the elimination of medical and sanitary consequences of emergencies directly in the focus, where in general the severity of the injury or illness of the patient is considered to be light to medium, but the ratio of the number of sanitary losses and the number of medical specialists is less favorable and, in addition to the lack of forces, there may be a lack of means of medical care. Thus, there are natural differences in special training among medical specialists of various departments with medical and other material and technical equipment, which require elimination. Here we encounter a situation, when for adequate planning of medical and evacuation measures traditional criteria (structure, therapeutic and evacuation characteristics of sanitary losses), characterizing the focus of emergency of natural or manmade character, are not enough. Taking into account the identified differences in characteristics of non-staff medical specialists and in order to optimize planning of involvement of specialists in non-staff formations of different departments it is reasonable to develop the integral index — index of "load" in the focus of a specific emergency. This index is the relation of the focus characteristics (its location, number of victims, their features and severity of condition) to the characteristics of non-staff formations specialists contingent, whose par-

ticipation in elimination of medical and sanitary consequences of this emergency is planned. Consequently, each zone of an emergency together with medical specialists, including those in the non-staff formations, can be numerically characterized, and the obtained specific value of this index (above or below a certain threshold) will indicate the insufficient efficiency of the planned measures to eliminate the medical and sanitary consequences of an emergency and the need to attract a larger number of specialists of higher qualification or specialists of another profile [5]. Another conclusion that naturally follows from the results obtained is the relevance of conducting a more in-depth study of the professional activities of the medical specialists of the non-staff formations of the Disaster Medicine Service of the Russian Ministry of Health with their subsequent improvement, as well as the need for training interaction between specialists from different departments with the setting and solution of training tasks.

### Conclusion

1. The results of the survey demonstrated no significant differences in the organization of professional activities of medical specialists of the non-staff formations of the Disaster Medicine Service of the Ministry of Health of Russia and of the non-staff formations of FMBA of Russia.

2. When organizing activities to eliminate medical and sanitary consequences of emergencies it is necessary to take into account the predominance of women in non-staff formations, especially in the non-staff teams of the Ministry of Health of Russia, as well as the greater average experience in professional activity in the non-staff formations and the greater experience in the elimination of medical and sanitary consequences of emergencies among medical specialists of the Russian Federal Medical and Biological Agency non-staff formations.

3. It is necessary to eliminate differences in special training and provision with medical and other equipment between medical specialists of non-staff formations of different departments.

The development of integral characteristic (index of "load") of the focus of a particular emergency, taking into account the characteristics of forces and means, sent to this center to eliminate medical and sanitary consequences, as well as the need for more in-depth study of the professional activities of medical specialists of non-staff formations of the Disaster Medicine Service of the Russian Ministry of Health with the subsequent improvement of their training is topical.

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