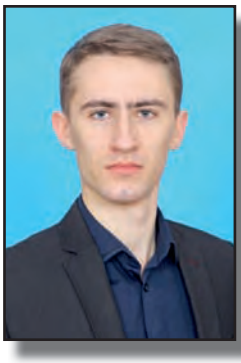
DOI: https://doi.org/10.30932/1992-3252-2020-18-230-243

Level of First Aid Skills Among Drivers in Russia and the European Union





Alexander V. POPOV **Ulyana M. KAIMAKOVA** **Nikolay P. STETSKY**

Popov, Alexander V., *Volzhsky Polytechnic Institute, branch of Volgograd State Technical University, Volzhsky, Russia.*
Kaimakova, Ulyana M., *Volgograd State Medical University of the Ministry of Health of the Russian Federation, Volgograd, Russia.*
Stetsky, Nikolay P., *Volgograd State Medical University of the Ministry of Health of the Russian Federation, Volgograd, Russia*.*

ABSTRACT

The Russian Federation occupies one of the first places in terms of road transport mortality. While the countries of the European Union play a special and significant role in reducing global indicators of road traffic mortality. The objective of the study is to compare the level of knowledge on first aid techniques among drivers in the Russian Federation and EU countries. In continuation of the previous work, in the framework of which a study was conducted by interviewing citizens of the Russian Federation according to the questionnaire developed by the authors, the number of respondents increased from 107 to 403 people. To compare the indicators, 402 European Union citizens were surveyed. The survey was conducted in May–September 2018 and in January and June 2019. A direct survey was conducted by the students of VPI (branch) of VolSTU and Volgograd State Medical University. The platform https://docs.google.com/forms was also used, a link to the questionnaire was posted in the most active driver communities in the social networks Vkontakte and Facebook. According to the data received, Russian driving schools are much more likely to neglect conducting first aid classes than European ones. EU respondents were much less likely to encounter the need for first aid, which may be due to the shorter time for arrival of a team of doctors at the scene of an accident. The most significant discrepancies were revealed in drivers' knowledge regarding issues related to application of a hemostatic tourniquet, indications of beginning of cardiopulmonary resuscitation and its methods, and actions in case of fractures of the extremities, i.e. critical in cases of traffic accidents. The general preliminary conclusion, subject to fruther detailing, is drawn that more attention is paid to first aid issues in the EU. To improve the situation in Russia, a number of measures have been proposed: compulsory medical classes at driving schools by a medical professional, greater attention to training in first aid techniques in educational institutions, training of special services for first aid skills and facilitating the training of ordinary citizens.

Keywords: *traffic accident, mortality in road accidents, first aid.*

---

*Information about the authors:
Popov, Alexander V. – Senior Lecturer at the Department of Road Transport of Volzhsky Polytechnic Institute, branch of Volgograd State Technical University, Volzhsky, Russia, alexandrus238@yandex.ru.
Kaimakova, Ulyana M. – resident physician at the Department of Cardiology and Functional Diagnostics of Department of Continuous Medical Training of Volgograd State Medical University of the Ministry of Health of the Russian Federation, Volgograd, Russia, ulyana.kaimakova@gmail.com.
Stetsky, Nikolay P. – resident physician at the Department of Cardiology and Functional Diagnostics of Department of Continuous Medical Training of Volgograd State Medical University of the Ministry of Health of the Russian Federation, Volgograd, Russia, epifen1996@gmail.com.

Article received12.11.2019, revised 01.02.2020, accepted 28.02.2020.

For the original Russian text of the article please see p. 230.

Global statistics show that the number of deaths from road accidents continues to grow, reaching more than 1,3 million people annually, though the mortality rate relative to the world population has stabilized in recent years. A reduction in mortality is observed, as a rule, in those states that WHO traditionally classifies as high-income countries. They account for 40 % of vehicles and only 7 % of the global mortality due to traffic accidents [1, p. 7]. The countries of the European Union play a particularly significant role in reducing global indices of road transport mortality. Russia, among the countries of WHO European Region, occupies one of the lower places in terms of road transport mortality [2, p. 3].

Nevertheless, in recent years there has been a positive trend. This indicates the competent actions of government institutions in the framework of the Federal target program «Improving road safety in 2013–2020» and Road Safety Strategy in the Russian Federation for 2018–2024. From 2009 to 2014, mortality and accident rates remained at approximately the same level, but since 2014, a steady decrease has been observed (Pic. 1) [3].

What can be associated with such high mortality rates in the Russian Federation in comparison with other countries of the region? This is largely due to neglect by citizens of the main behavioral risk factors, which are according to WHO: speed, driving while intoxicated, neglecting motorcycle helmets, seat belts, and using mobile phone when driving a car [2, pp. 7–15]. Russian legislation provides for restrictions similar to EU countries, but many drivers neglect these rules because of the relatively low fines (except for driving while drunk) and the possibility of not being caught for violations. Experience shows that a steady decrease in speed to the values required by the rules and signs is observed in the places of installation of stationary cameras for recording violations. In addition, in Russia there is a category of drivers that are practically beyond the control of the traffic police – judges and prosecutors, in respect of whom a special procedure for ensuring the proceedings in an administrative case continues to be applied [4].

Particular disregard for traffic rules is shown by drivers aged 18–25 years, when thirst for «thrills» and self-confidence are actively manifested [5]. As it was established in [6; 7], a significant number of young drivers (15 %) have an increased tendency to risk that along with the widespread perception among youth of their superiority in performance and speed of reaction, knowledge in the technical field of cars leads to high accident and mortality rates in this age category. It is established that the presence of passengers in the car leads to faster driving than driving alone [8].The lack of gradual access to driving, shown to be effective in Canada, the USA, New Zealand and some EU countries, adversely affects the accident rate. The introduction of a number of restrictive measures (number of passengers, speed) for inexperienced drivers might greatly change the situation.

In addition to the above, the timely and high-quality first aid is an extremely important factor in reducing road traffic deaths. Effective emergency assistance begins at the scene of the accident with the actions of witnesses of the incident [9]. Even the most modern emergency care system is ineffective unless eyewitnesses urgently call for medical help, do recognize a serious injury, and do master basic first-aid methods [10]. After an accident has occurred, timely assistance to victims is crucial: a minute delay often define the border between survival and death [11].

The most common injuries in road accidents are bruises, fractures, and other bone injuries. Often fractures are accompanied by bleeding. With a significant loss of blood, blood pressure drops sharply, and if the first medical aid is not provided to the victim as quickly as possible, he may die from blood loss [12].

Significant attention is being given throughout the world to training and promotion of first aid knowledge. However, the level of knowledge of citizens in different countries is different. So, in Europe, the National Red Cross and Red Crescent Societies in 2014 alone taught 4161366 people these skills. In Western Europe, the proportion of citizens trained in first aid can reach 95 % [13]. In a 2010 survey in Stockholm (Sweden) on first-aid measures, the success rate was 52 % [14]. Surveyed Norwegian citizens were able to stop the bleeding in 81 % of cases [15]. In Manchester (UK), witnesses provide first aid in 75 % of cases of injuries [16]. A significant improvement in first aid skills after appropriate training and its undeniable

usefulness have been confirmed by studies in Iran and Nigeria [17; 18].

This paper presents the continuation of our study [19]. The *objective* is to compare the level of knowledge of first aid techniques among drivers in the Russian Federation and EU countries. The study was conducted by interviewing citizens of the Russian Federation with a driver's license and driving experience a vehicle in different regions of the country about medical training in driving schools, participation in road accidents, first aid methods, for which the questionnaire developed by the authors was used. The number of respondents increased from 107 to 403 people. For comparison of indicators, citizens of the European Union (Great Britain, Czech Republic, Denmark, Germany, Italy, the Kingdom of the Netherlands) in the amount of 402 people were interviewed. The survey was conducted in May-September 2018 and in January and June 2019. A direct survey was conducted by the students of VPI (branch) of VolSTU and Volgograd State Medical University. The platform https://docs.google.com/forms was also used, a link to the questionnaire was posted in the most active drivers' communities in the social networks Vkontakte and Facebook.

First aid classes in driving schools, which are a mandatory part of the program, were conducted by a driving school employee for the majority of respondents in the Russian Federation (63 %), and only 17 % had a person with medical education. And 23 % of the respondents did not have such classes at all. In the European Union, the percentage of respondents whose classes were conducted by a medical professional is much higher – 36 %. In addition, 68 % of respondents in the Russian Federation and 48 % in the EU did not have practical training in providing first aid using dummies.

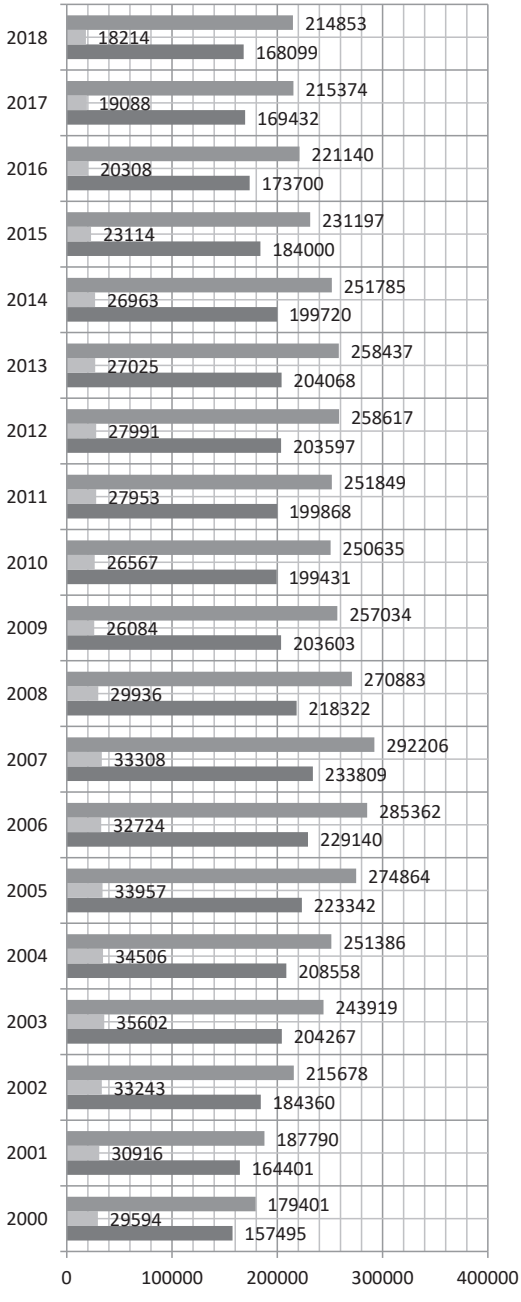
About 17 % of respondents in the Russian Federation and 7 % in the EU faced the situation of the need for first aid and provided it. About 14 % of respondents in the Russian Federation and 11 % in the EU could not help because of fear of doing harm to the victim and stressful conditions.

Next, let us consider a number of issues related to direct first aid.

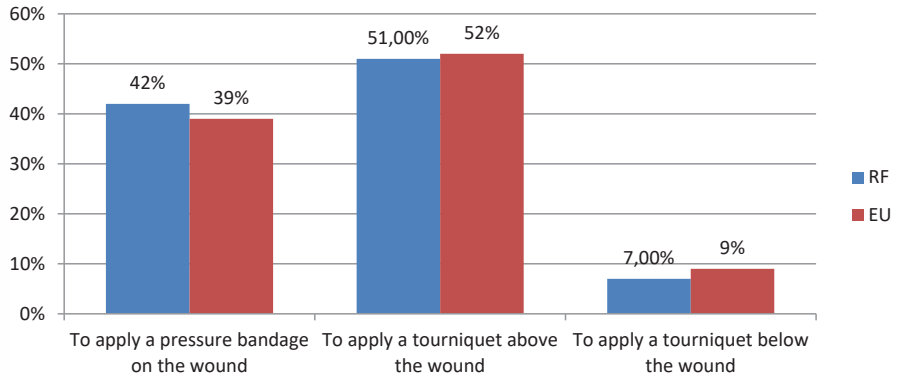
To the question «How to stop bleeding in injured veins and small arteries?» only 42 % (RF) and 39 % (EU) of the respondents gave the correct answer (to apply a pressure bandage) (Pic. 2).

94,5 % (RF) and 96 % (EU) of the respondents can identify signs of bleeding from a large artery and with what the first aid begins when it is wounded (Pic. 3).

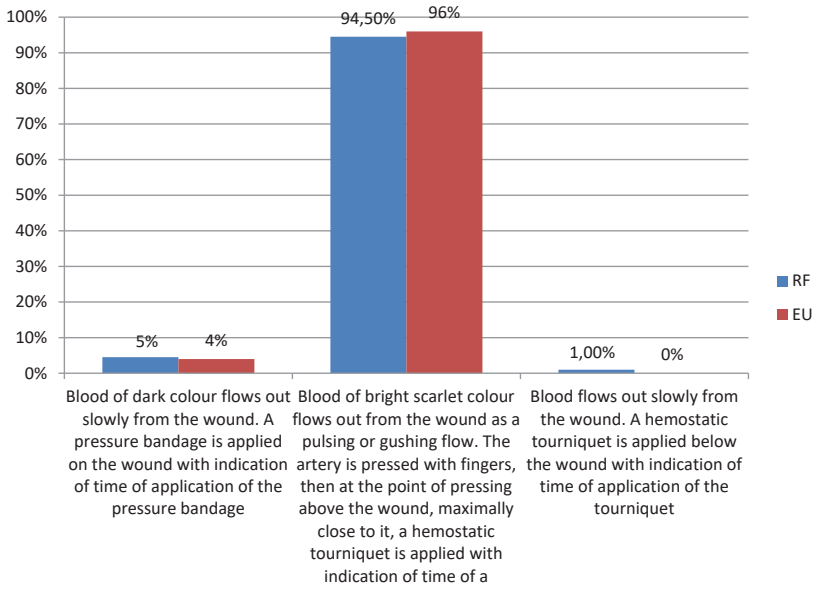
71 % (RF) and 78 % (EU) of respondents know for how long a hemostatic tourniquet can be applied (Pic. 4).



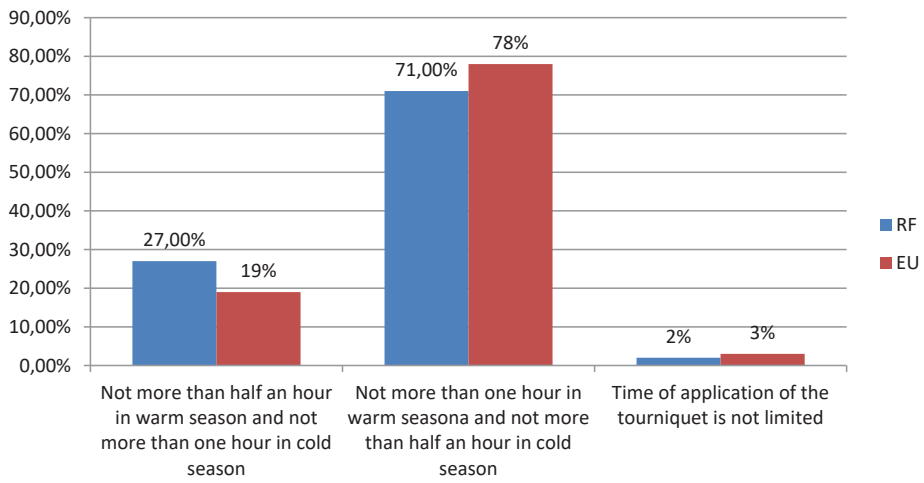
Pic. 1. Number of traffic accidents in the period 2000–2018. Authors' drawing based on the materials of the source [3].



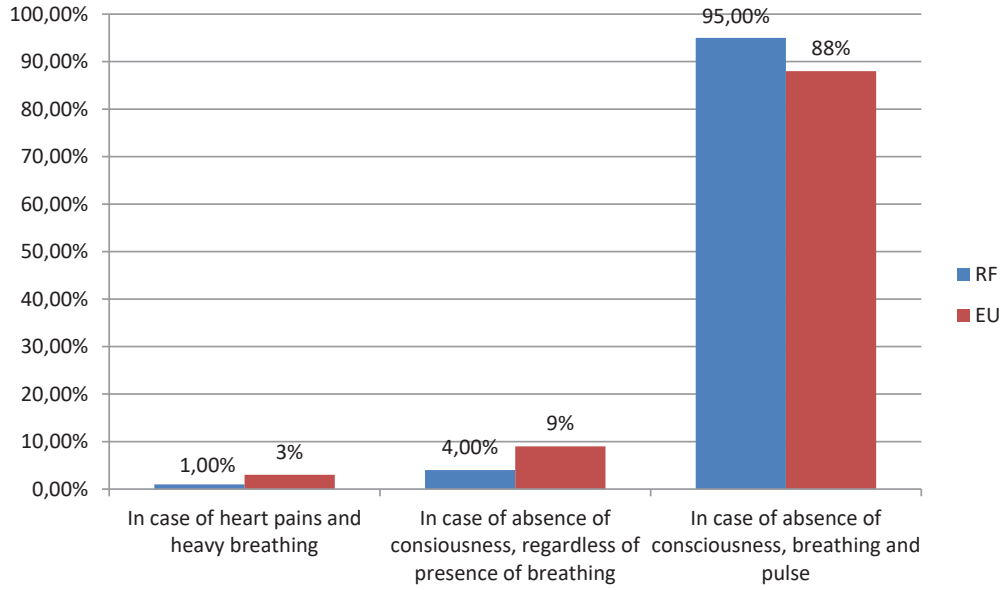
Pic. 2. Distribution of the answers to the question «How to stop bleeding in case of injured veins and small arteries?». Authors' drawing.



Pic. 3. Distribution of the answers to the question «What are the signs of bleeding from a large artery and what does first aid for when it is wounded?». Authors' drawing.



Pic. 4. Distribution of the answers to the question «For how long can a hemostatic tourniquet be applied?». Authors' drawing.



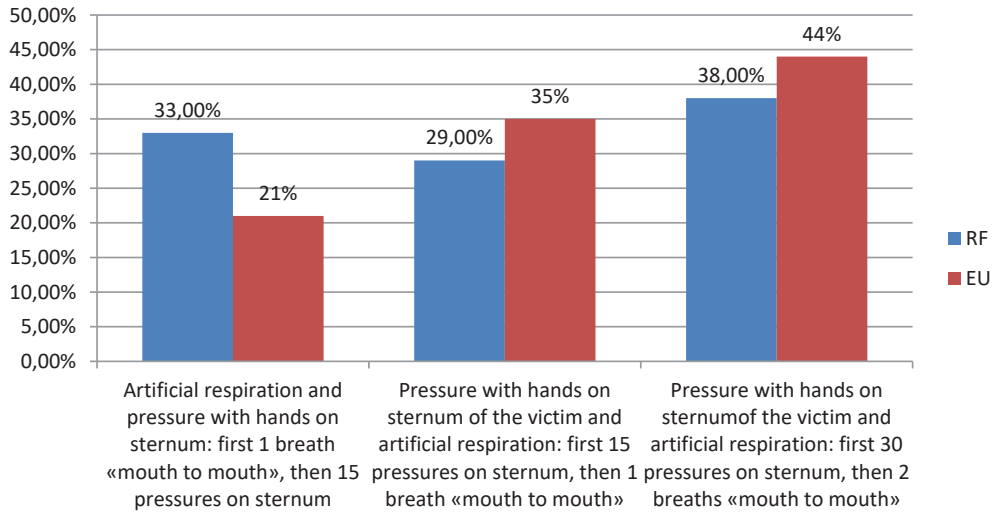
Pic. 5. Distribution of the answers to the question «In what cases should the cardiopulmonary resuscitation of the victim begin?». Authors' drawing.

The signs for the start of cardiopulmonary resuscitation can be called by respectively 95 % (RF) and 88 % (EU) respondents, but only 38 % (RF) and 44 % (EU) of respondents were able to provide it correctly (Pics. 5, 6).

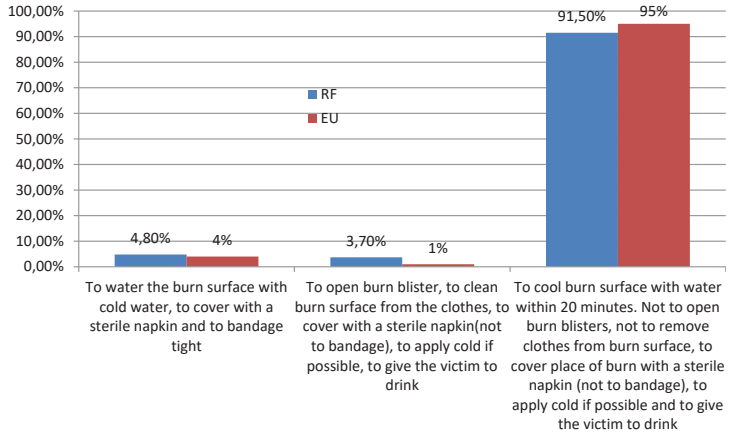
91,5 % (RF) and 95 % (EU) of those surveyed are able to provide first aid in case of burns (Pic. 7).

53,8 % (RF) and 42,5 % (EU) of those surveyed will be able to properly help with fractures of the limbs (Pic. 8).

According to the indicated data, Russian driving schools are much more likely to neglect conducting first aid classes than European ones. EU respondents were much less likely to encounter the need for first aid, which may be due to the shorter time for arrival of a team of doctors at the scene of an accident. In general, the differences in knowledge about first aid are not so great. The greatest discrepancy takes place regarding timing of application of a hemostatic



Pic. 6. Distribution of the answers to the question «How is cardiopulmonary resuscitation of the victim carried out?». Authors' drawing.

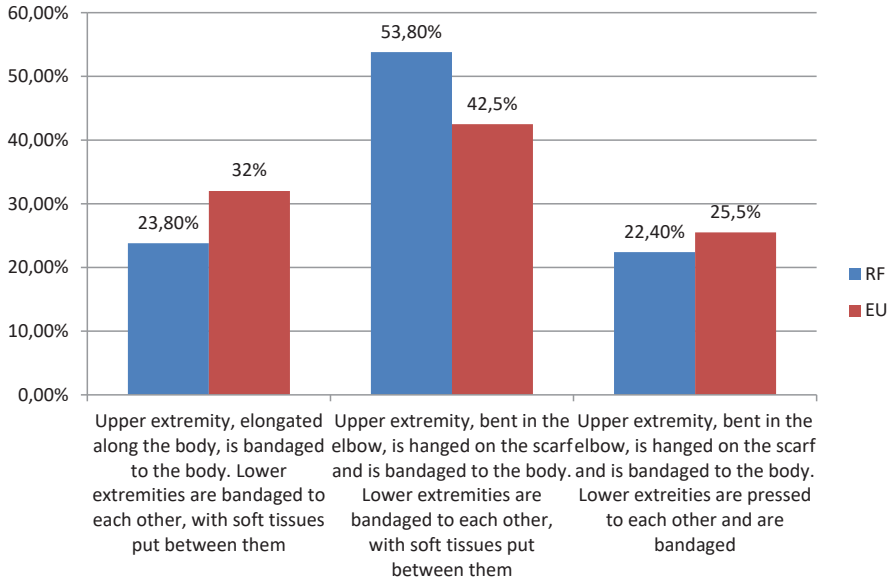


Pic. 7. Distribution of the answers to the question «What is first aid with the signs of surface thermal burn?». Authors' drawing.

tourniquet, the indications of onset of cardiopulmonary resuscitation and its methods, and actions in case of fractures of the extremities. Vital questions include questions about cardiopulmonary resuscitation and stopping arterial bleeding, when each minute counts. It is in these questions that the percentage of correct answers of Russian respondents is truly lower than in the EU. Given that, nationwide, for every percentage of incorrect answers there may be hundreds of unsaved lives, the differences will seem less insignificant. It can be concluded that first aid issues are given more attention in the EU. At the same time with events such as high fines, phased access to driving, equality of responsibility for all citizens, it led to a decrease in accident rate and mortality.

To improve the situation in Russia, it seems necessary to proceed with: compulsory conduct of medical classes at driving schools by a medical professional, paying more attention to training in first aid methods in educational institutions, training of special services which may arrive at the scene of an accident earlier than doctors, first aid skills and facilitating the training of ordinary citizens, including closer cooperation between federal, regional and local authorities with Red Cross and Red Crescent Society.

At the same time, the problem of reducing accidents and mortality suggests an integrated



Pic. 8. Distribution of the answers to the question «How is first aid provided for fractures of the extremities if there are no transport tires and improvised tools for their manufacture?». Authors' drawing.

approach. Improving the general driving culture, installing stationary cameras for recording dangerous violations, abolishing the special administrative procedure for judges and prosecutors, reducing the influence of the main behavioral risk factors by increasing penalties for the most dangerous violations (for example, the recently introduced fine for «dangerous driving»), introduction of phased access to driving while obtaining a driver's license.

These measures, applied together, will allow to achieve a significant reduction in both the total number of accidents and grave consequences from them, which is provided for by the Road Safety Strategy in the Russian Federation for 2018–2024.

REFERENCES

1. Global status report on road safety 2018. Geneva: World Health Organization, 2018. [Electronic resource]: https://www.who.int/violence_injury_prevention/road_safety_status/2018/en/. Last accessed 06.11.2019.

2. European facts and report on the state of road safety in the world [*Evropeiskie fakty I doklad o sostoyanii bezopasnosti dorozhnogo dvizheniya v mire*]. World Health Organization, 2015. [Electronic resource]: http://www.euro.who.int/_data/assets/pdf_file/0009/298386/European-facts-Global-Status-Report-road-safety-ru.pdf. Last accessed 07.02.2019.

3. Indicators of the state of road safety [*Pokazateli sostoyaniya bezopasnosti dorozhnogo dvizheniya*]. [Electronic resource]: http://stat.gibdd.ru/. Last accessed 28.10.2019.

4. Order of the Ministry of Internal Affairs of Russia dated August 23, 2017 No. 664 (as amended on December 21, 2017) «On approval of the Administrative Rules for the Ministry of Internal Affairs of the Russian Federation to exercise the state function to carry out federal state supervision of compliance by road users with the requirements of the legislation of the Russian Federation in the field of road safety» [*Prikaz MVD Rossii ot 23.08.2017 No. 664 (red. ot 21.12.2017) «Ob utverzhdenii Administrativnogo reglamenta ispolneniya Ministerstvom vnutrennikh del Rossiiskoi Federatsii gosudarstvennoi funktsii po osushchestvleniyu federalnogo gosudarstvennogo nadzora za soblyudeniem uchastnikami dorozhnogo dvizheniya trebovanii zakonodatelstva Rossiiskoi Federatsii v oblasti bezopasnosti dorozhnogo dvizheniya»*]. [Electronic resource]: http://www.consultant.ru/document/cons_doc_LAW_280037/. Last accessed 28.10.2019.

5. Worldwide report on the prevention of road traffic injuries [*Vsemirniy doklad o preduprezhdenii dorozhno-transportnogo travmatizma*. Transl. from English]. Moscow, Ves' Mir publ., 2004, 280 p.

6. Popov, A. V., Goncharevich, D. V., Sokolov, R. O. Problems of youth accident rate [*Problemy molodezhnoi avariinosti*]. *Avtotransportnoe predpriyatie*, 2016, Iss. 5, pp. 14–17.

7. Popov, A. V., Sokolov, R. O. To the issue of youth accident rate in the Russian Federation [*K voprosu o molodezhnoi avariinosti v Rossiiskoi Federatsii*]. *Zhurnal avtomobilnykh inzhenerov*, 2017, Iss. 2, pp. 32–35.

8. Rhodes, N., Pivik, K., Sutton, M. Risky driving among young male drivers: The effects of mood and passengers. *Transportation Research Part F: Traffic Psychology and Behaviour*, January 2015, Vol. 28, pp. 65–76. DOI: https://doi.org/10.1016/j.trf.2014.11.005.

9. Save LIVES – A road safety technical package. Geneva: World Health Organization, 2017. [Electronic resource]: https://apps.who.int/iris/bitstream/handle/10665/255199/9789241511704-eng.pdf?sequence=1. Last accessed 28.10.2019.

10. World Health Organization. Post-crash response: Supporting those affected by road traffic crashes Geneva, 2016. [Electronic resource]: http://www.who.int/violence_injury_prevention/publications/road_traffic/post-crash-response/en/. Last accessed 28.10.2019.

11. WHO Newsletter: Road traffic injuries *[Informatsionniy byulleten' VOZ: dorozhno-transportnie travmy*]. [Electronic resource]: http://www.who.int/ru/news-room/fact-sheets/detail/road-traffic-injuries. Last accessed 07.02.2019.

12. Dhondt, S., Macharis, C., Terryn, N., van Malderen, F., Putman, K. Health burden of road traffic accidents, an analysis of clinical data on disability and mortality exposure rates in Flanders and Brussels. *Accident Analysis and Prevention*, July 2012, Vol. 50, pp. 659–666. DOI: 10.1016/j.aap.2012.06.019.

13. International first aid and resuscitation guidelines [*Mezhdunarodnoe rukovodstvo po pervoi pomoshchi i reanimatsii*]. 2016. [Electronic resource]: https://www.redcross.ru/sites/default/files/books/mezhdunarodnoe_rukovodstvo_po_pervoy_popomoshc_i_reanimacii_2016.pdf. Last accessed 07.10.2019.

14. Nordberg, M., Castrén, M., Lindström, V. Primary Trauma Triage Performed by Bystanders: An Observation Study. *Prehospital and Disaster Medicine*, August 2016, Vol. 31, Iss. 4, pp. 353–357. DOI: 10.1017/s1049023x1600039x.

15. Bakke, H. K., Steinvik, T., Eidissen, S.-I., Gilbert, M., Wisborg, T. Bystander first aid in trauma – prevalence and quality: a prospective observational study. *Acta Anaesthesiologica Scandinavica*, June 2015, Vol. 59, Iss. 9, pp. 1187–1193. DOI: 10.1111/aas.12561.

16. Oliver, G. J., Walter, D. P., Redmond, A. D. Prehospital deaths from trauma: Are injuries survivable and do bystanders help? *Injury*, May 2017, Vol. 48, Iss. 5, pp. 985–991. DOI: https://doi.org/10.1016/j.injury.2017.02.026.

17. Ali Vakili, M., Mohjervatan, A., Taghi Heydari, S., Akbarzadeh, A., Sadat, N., Farideh, H., Peyman, A., Mohammad, A., Moghasemi, J. The efficacy of a first aid training course for drivers: an experience from Northern Iran. *Chinese Journal of Traumatology*, October 2014, Vol. 17, Iss. 5, pp. 289–292. DOI: 10.3760/cma.j.issn.1008-1275.2014.05.008.

18. Olumide, A. O., Asuzu, M. C., Kale, O. O. Effect of First Aid Education on First Aid Knowledge and Skills of Commercial Drivers in South West Nigeria. *Prehospital and Disaster Medicine*, December 2015, Vol. 30, Iss. 6, pp. 579–585. DOI: https://doi.org/10.1017/S10.

19. Popov, A. V., Kaimakova, U. M., Stetsky, N. P. High Mortality Rates from Road Traffic Accidents in the Russian Federation: Possible Causes and Ways to Overcome Challenges. *World of Transport and Transportation*, 2019, Vol. 17, Iss. 3, pp. 192–205. DOI: https://doi.org/10.30932/1992-3252-2019-17-3-192-205.

EDITORIAL NOTE

The focus on insufficient drivers' first aid skills highlighted by the authors within the context of the factors resulting in increased road accidents fatality rate is of high topicality. Nevertheless, some conclusions on the causes of the situation and suggestions regarding measures towards positive changes are to some extent disputable. Further development of the topic requires broader research, comprising more representative surveys, but it is no doubt that it might be subject to efficient journal's discussion.