

Research Article

Risk Factors for Seafarers Health

**Varynska Alla^{1*}, Shepel Viktoria^{2*}
 and Haichenia Oleksandr^{3*}**

¹Candidate of Philological Sciences (Ph.D.), Professor, National University "Odessa Maritime Academy",
 Didrikhson str.,8, Odessa, Ukraine, 65029

²Senior Lecturer, National University "Odessa Maritime Academy", Didrikhson str.,8, Odessa, Ukraine, 65029

³ Candidate of Technical Sciences (Ph.D.), Assistant Professor, National University "Odessa Maritime Academy",
 Didrikhson str.,8, Odessa, Ukraine, 65029

^{1*}***Corresponding author:** Email: varinskayl@gmail.com

^{2*}***Corresponding author:** Email: victoriya.shepel@gmail.com

^{3*}***Corresponding author:** Email: haichenia.ov@gmail.com

[Received: 11/04/2019; Accepted: 30/04/2019; Published: 02/06/2019]

ABSTRACT:

Seafaring is regarded as the most difficult, potentially dangerous, stressful, risks-related profession which is confirmed by the official statistics and conducted researches. The foregoing updates the matters connected with maintenance of seafarers' health. Seafarers' health risk factors are under consideration in this article. The analysis is based on theoretical and practical development of seafarers' health aspect and also questioning and interrogation data.

It is noted that seafarers' health depends on many factors, in particular, on physical, psychological, social, climatic conditions. As a result of the conducted monitoring, it was traced dependence on risk and professional stress. In this connection an occupational stress for a seafarer means stressed condition of an employee due to impact of emotionally negative, special professional and extreme factors connected with his/her occupational activity.

This paper outlines health saving priorities in the sphere of education and legislation in maritime industry. Occupational competences directed to seafarers' health maintenance have been selected.

It is emphasized that minimization of risks in seafarers' life activity is possible, provided that they are familiar with all kinds of risks and ways of their overcoming. For the purpose of determination of key risk factors taking into account dynamics of maritime industry, an anonymous interrogation and questioning of merchant seafarers about risk factors for their health has been conducted. The first three positions in a manner of priority have been determined: a time factor (long term staying out of home); a closed space, remoteness from civilization (it was combined with specificity of communication) and a climate. These factors have been considered more detailed.

The research demonstrates that in addition to purely medical aspects, the matters of health can be considered through the lens of education, law, life protection, meteorology or business communication, using in this relation the data of psychology, medicine, management. The declared theme has an integrated character and requires further complex research. In this paper the authors proceeded from priority of seafarers' health concept for navigational safety.

Keywords: risks, specifics, seafarers' life activity, seafarers' health, meteorological conditions, communication factor

[I] NTRODUCTION

Within the conditions of world economy globalization, the role of marine industry increases. As reported by UNCTAD, 80 % of

world trade according to physical volume and more than 70 % according to value are transported by sea and passes through the world seaports [14].

Thus, the world commercial fleet has a stable tendency to growth and forecasts increase in number of world sea transportations in 2017–2022 for 3.2 % [14]. Increase of sea transportations and universal interstate integration, in its turn, require adequate personnel maintenance which proves the demand in maritime professions. However, despite certain advantages of seafaring (sufficiently high salary, high career growth, long-lasting leave) lack of specialists is observed [13]. It is connected with the fact that work in sea is considered to be difficult, stressful, potentially dangerous and risks-related [7]. In the legislation of Ukraine profession of a seafarer was entered to the list of difficult jobs and jobs with complicated adverse conditions [15].

In scientific tradition seafaring is also defined as difficult working activity with special characteristics which is performed in certain contexts from physical to psychosocial [11].

Maritime activity makes specific demands to a seafarer. It is a serious test for physical and mental health of a specialist, and is a critical check of the degree of his/her professional activity, in which connection seafarers are included to occupational groups with the highest risk of stress [12].

Storms, change of time and climatic zones, limited communication, Somali pirates' activity and geopolitical situation in the region of Kerch Strait - all these factors represent seafaring as one of the most dangerous occupations in the world.

Besides the ones listed above, the Ukrainian public interest organizations have declared a new threat - increase of death rate onboard has been fixed. It is also proved by sad statistics.

In recent times eight facts of death of our countrymen who died during commercial voyages have been established. Moreover, according to the official data, it mainly refers to officers, and they commit suicides.

The WHO statistics for 2006-2017 also refers to 355 incidents connected with mental health of seafaring personnel, including 77 cases of suicide. Besides, experts have revealed that the number of suicides has essentially increased, and its large

share concerns young seafarers.

The reason of such situation, as a rule, is insufficient resistance to stress.

The stress which seafarers experience during work has some peculiarities and differs from stress which can be estimated in other kinds of working activity [2].

A marine vessel is a complicated engineering construction which should be managed by highly skilled multi-discipline specialists having sufficient professional and integral competence.

A modern specialist of maritime transport should be simultaneously both a manager who is capable to solve many questions and an engineer with high level of erudition, fundamental theoretical education and practical skills directed to safety of navigation and life activity onboard and wide spectrum of competent skills: beginning from ability to use conceptual knowledge and critical understanding of basic laws, theories, principles, methods and concepts of navigation and management of marine vessels to solve occupational tasks, as well as ability to work in a team, to organize work of staff, including, under difficult and critical conditions [20]. Such set of skills is not limited to special knowledge, for example, in the field of ship navigation, cargo transportation technologies or navigational meteorology.

They also include knowledge in medicine, psychology and communication. Taking into consideration that a seafarer has to perform his/her work in closed space of a ship, among the limited staff of crew, under conditions of rolling motions, vibration, noise, electric and magnetic fields, shift basis working hours (shifts-based work) and others unfavorable peculiarities of work, the competence directed to personal health is not less important than occupational ones. It is connected with rather numerous risk factors in occupational activity of ship crew. And in conditions of globalization a tendency to considerable increase of risk factors is traced.

In addition to the above-mentioned generally recognized factors of negative influence on

seafarers' health, researchers note that in modern conditions seafarers work in circumstances of mixed paradoxes; such as social isolation and constant social intimacy; considerable social changes connected with wide attraction of multinational teams are obvious [7]. Additional pressure in maritime activity, for example, can be imposed on due to reduction of the number of crew members.

Coverage of potential risk factors for ship crew is defined by researchers in a multidirectional range - from biological virus vectors to telemedicine; from observance of safety regulations to fair employment (starting from conclusion of contracts) and many other things.

All this is reflected in a recognition that the concept of seafarers' health should include a number of positions with different, but interrelated components. In this connection the International Maritime Health Association (IMHA) conceptualizes maritime health as "a wide spectrum of disciplines which are directed to improvement of seafarers' health by means of development of more effective approaches to health protection" [9]. Adhering to this position, we will emphasize that in a global paradigm of seafaring the matters of seafarers' health are directly connected with navigational safety issues. The foregoing actualizes the declared theme and justifies the necessity of study of risk factors for seafarers' health for the purpose of creation of techniques of their prevention. Our attention was fixed on an integrated approach in a format of seafarers' activity safety and application of educational technologies for the purpose of minimization of key risks for seafarers' health.

[II] MATERIALS AND METHODS

2.1. Research material

Risk factors for seafarers' health served as the research material, and namely: peculiarities of life activity, a climate, communication; and elements of minimization of risk for seafarers' health: educational technologies.

The research is based on theoretical and practical

development of an issue of seafarers' health, and also the data of questioning and interrogation conducted by the authors.

2.2. Methodological base

While analyzing risk factors for seafarers' health we were guided by the system of axiological and methodological principles covering theory and practice of human protection in a format of seafarers' activity safety onboard. In particular, we applied principles of entirety, consistency and integrity.

As specific methods of research we used methods of observation (questioning, interrogation), analysis and synthesis.

The research was conducted as a complex work by experts of different sciences.

[III] RESULTS

3.1. Peculiarities of Seafarers' Life Activity and Risk Factors for Their Health

Over the last years the issue of influence of occupational specificity on health of employees whose work is closely connected with intensive and emotionally stressed interaction with people, increasingly frequently becomes a subject of scientific analysis. Seafarers are included to such category. Various mental and physiological reactions to a rather wide range of situations in their working activity resulting in occupational stress are most often observed. In this connection scientific researches for minimization of occupational risks are required. Minimization of risks in seafarers' life activity is possible provided that they are familiar with all kinds of risks and ways of their overcoming. However, researches demonstrate that 35 % of navigators are not able to give a definition to the term "risk" [19]. Scholars contend that these indicators prove, on the one hand, a high degree of uncertainty of the concept, absence of standard definitions, and, on the other hand, overestimated perception of one's possibilities [19].

The performed monitoring of researches of this theme demonstrated that the first position is a defining one. In works of scholars a significant

number of definitions of a risk is observed. All of them depend on contextual interpretation. Thus, a general key format of the concept is focused on a position that all risks in the basis have potential negative influence, are connected with possible harm or a damage of property, health and life of people, can depend on a person and the decision made by him / her, or, on the contrary, do not depend on a person and the decision made by him / her.

By their physical nature the danger/risks of seafaring are as follows:

- bedforms and forms of coastal line (shelves, reefs, rocks, banks, etc.);
- artificial fixed technical and floating constructions (drilling derricks, platforms, piers, bridges, meeting ships, etc.);
- hydrometeorological phenomena (dense fog, wind, current, storm waves, floating ices, icebergs, hard snowfalls, rain showers, low air temperatures, snow drifts, hurricanes, tide conditions) are considered especially dangerous and emergency;
- floating uncontrollable subjects (timber, trees, lost fish-tackles, buoys broken from anchors, barrels, etc.);
- failure of mechanisms, devices, constructions;
- epidemics and other reasons causing physiological failure of crew members;
- wrong placing of cargo, fuel, ballast, commercial arms, etc., their undue fastening;
- deliberate destroying or damaging action on a ship and crew (military actions, piracy, a crime);
- other [16].

Among represented physical risks we will specify the risks which are potentially dangerous to human health:

- hydrometeorological phenomena (dense fog, wind, current, storm waves, floating ices, icebergs, hard snowfalls, rain showers, low air temperatures, snow drifts, hurricanes, tide conditions);
- epidemics and other reasons causing physiological failure of crew members;
- deliberate destroying or damaging action on a

ship and crew (military actions, piracy, a crime);

Except the risks having impact on the general activity of a ship and a person, we will also specify such specific factors of the ship environment influencing human health: vibration, noise, thermal and electromagnetic fields, conditions of direct interaction with devices and equipment in the working zone, rolling motions. In addition to solving occupational problems each crew member bears administrative, criminal, material, civil and legal, disciplinary responsibility within the duties assigned to him/her by general and special legislation [18]. Accordingly, each action of a crew members is strictly regulated by charters and legal acts. Legal responsibility imposes additional psychological loading on each crew member. Within the limits of a psychological risk we will also specify a communicative (restricted communication) risk. We will analyze it in detail at a relevant subsection.

Social and psychological factor is rather important. Isolation from home, limitation of information and necessity to contact people of various cultures can be a reason for the strongest stress.

Occupational stress is a widely spread phenomenon among seafarers. Analyzing the risk factors, we proceed from the fact that occupational stress for a seafarer is a stressed condition of an employee arising of influence of emotionally negative, special occupational and extreme factors connected with his/her profession.

In this connection formation of stress resistance becomes a top target.

Multi-vector nature of the concept of risk results in absence of a generally recognized classification of risk factors for seafarers' health. Therefore, in our study, we will be guided not by traditional classifications, but rely on the data of interrogation and anonymous questioning of seafarers.

3.2. Legislative and Educational Health Saving Priorities in Maritime Industry

Before proceeding to analysis of the data received

by us, we will specify health saving priorities in the sphere of education and legislation in maritime industry. Bachelor's degree in Major 271 "River and Sea Transport" with specialization "Navigation and Management of Marine Vessels" provides the following knowledge and skills in the sphere of seafarers' health saving:

- ability to make decisions and to perform necessary actions in unforeseen conditions;
- knowledge and skills for safe processing, loading, fastening, maintenance during voyage and unloading of cargo, including bulk cargo, and also dangerous and harmful cargoes, and their influence on safety of a human life and a ship;
- ability to provide first medical aid and ability to apply medical manuals and the medical consultations received by radio, in particular, ability to take effectual measures on the basis of such knowledge in case of accidents or diseases;
- skills of personal survival, provision of personal safety and knowledge of public duties on ships [20].

The specified abilities, knowledge and skills are formulated according to requirements of STCW Convention [5] and International Labor Organization Convention 2006 on labor in maritime navigation [10].

These documents are focused on worthy working conditions and technologies of their formation. In particular, Article IV of International Labor Organization Convention 2006 on labor in maritime navigation prescribes "Every seafarer is entitled to health protection, medical services, social service and to other forms of social protection" [10]. World experts of the industry are also focusing on this aspect. In particular, the Rector of the National University "Odessa Maritime Academy" Professor Mikhail Miyusov considers that "provision of favorable conditions of work and rest of seafarers (level of wages, intensity of work, duration of contract / voyage, quality of meals, possibility of sports activity, accident insurance, medical insurance for crew members and family members" [13] is an important interstate task.

In this connection, the countries which ratified these documents should develop and declare national guiding principles of management of labor and health safety onboard of a flag-state, observe safety policy and implement guiding principles and standards in maritime industry [1].

3.3. Climate as a Risk Factor in Maritime Activity

For the purpose of determination of key risk factors, taking into account dynamics of maritime industry, an anonymous interrogation and questioning of commercial seafarers about risk factors for their health has been carried out.

One of the questions of the interrogation contained the task: rank, at your own discretion, in manner of importance the risk factors for seafarers' health:

1. Time (long-term staying out of home).
2. Closed space, remoteness from civilization.
3. Restricted communication.
4. Absence of the Internet.
5. Specifics of a working day (without days off).
6. Specifics of life activity (rolling motions, technical noises).
7. Specifics of life activity (electromagnetic field onboard).
8. Passing through different climate and geographical zones.
9. Weather conditions.
10. Rapid change of temperature.
11. Piracy zones.
12. Absence of a doctor onboard.
13. Add your own factor.

The first three positions were ranked as follows:

1. Time (long-term staying out of home).
2. Closed space, remoteness from civilization. It was united with specificity of communication.
3. Climate.

Thus, in other formulation of questioning to name an association to the concept of risks in seafaring, the first associative connection was with the concept of climate (more than 60 % of respondents demonstrated it).

Due to priority of this factor we consider it is necessary to execute a more detailed analysis here.

Natural, climate and geographical factors: temperature, humidity, air velocity, atmosphere pressure make high demands to body systems of seamen. Let us specify the basic ones.

1. One of the most specific climate and geographical factors is frequent change of sailing regions. Long-term passages through various climatic zones expose the crew to impact of extreme temperature and weather conditions. Rapid change of temperature arising in this connection affects negatively the immune protection of body. In case of voyages to tropic latitudes a seaman's body is affected by hot and humid climate.

Excessive heat and high humidity or, on the contrary, strong frosts can result in bad state of the crew health. Long-term and constant exposure to direct sunlight during deck operations, work under conditions of extreme heat can cause deterioration in health. One of apparent adverse factor here is intensive insolation to which influence the deck crew is substantially exposed. In the course of adaptation to a hot climate people have body temperature rise, heart acceleration and rapid breathing, drop in blood pressure [8].

Absolutely contrast as compared to tropics is activity in north latitudes. Strong wind (at a speed of more than 15 m/s), high indicator of humidity and low temperatures, altogether, increase susceptibility of a person to various catarrhal diseases, and also can provoke acute conditions of various chronic diseases. It should be noted that seafarers work in the open air in any season of the year and under any weather conditions.

During their work they have to contact with cold, sometimes iced things, or rather hot, due to extremely low or high temperature of any surfaces with which they need to work. Under conditions of weather transformations, the body is suffering from considerable stress.

2. Atmosphere pressure is considered to be an important meteorological parameter determining weather conditions. Decrease or increase of atmosphere pressure is the factor which influences state of health of a person. Constant sailing

exposes seafarers to fluctuations of atmosphere pressure. It is connected with passage of cyclones and anticyclones, with atmospheric fronts. The interrogated respondents noticed that differences of atmosphere pressure, in their turn, result in decrease of working capacity and level of attentiveness; body heaviness and headache are observed.

Space and time fluctuations of atmosphere pressure depend on wind mode, change of its speed and direction, and as a result, waving state of the sea.

3. Waving state of the sea is the main factor influencing seaworthiness of a ship. It causes rolling and pitching motion. Such constant fluctuation of a ship results in a so-called sea-sickness.

Sea-sickness is one of the forms of motion sickness caused by physical stimulus. A distinctive feature of sea-sickness is its duration: it lasts long enough. Many seafarers experience motion sickness to a greater or lesser degree. Sea-sickness can be made worse by strong smells (for example, diesel fuel), overheating or overcooling of a body, and also eyes fatigue from reading or computer work.

During long-term staying onboard (for several days and more) adaptation (accustoming) to rolling motion is gradually developing. According to various researches, satisfactory adaptation to sea-sickness is observed at 60-70 % of seafarers. People with low resistance to motion sickness have much less chances to adapt to sea-sickness than those with moderate and high resistance.

Employees with low resistance had reduce of sight and decrease in hearing which substantially reduced working capacity of the persons suffering from motion sickness. In case of serious picture of sea-sickness, apathy and depression often developed.

4. Sun insolation has direct influence on human body systems and organs, suppresses immunity. Excessive ultra-violet radiation negatively affects the immune system functioning. Long-term and close influence of radiation from a ship radar also

has been noted as one of the reasons of problems with health.

Thus, the revealed climatic factors are determined as leading risk factors in seafarers' life activity.

In this connection, we consider ability to estimate and forecast meteorological conditions of sailing, taking into account available and forecasted weather in navigation area, keeping in mind local meteorological conditions for a possible correction of a ship's track and safe execution of a voyage [20] as obligatory components of professional maritime education.

3.4. Communication as a Risk Factor

According to the results of the conducted questionnaire survey, together with a time factor (long-term staying out of home) and a climatic factor, the following risk factor has been determined - a closed space factor, remoteness from civilization. Here it is connected with specificity of communication onboard.

As we already specified, onboard communication is caused by a number of features. It can be divided on two components: personal communication and communication by modern means of distant communication.

1. Personal communication is closely connected with a psychosocial risk factor. It takes place under conditions of increased density of contacts – with the same people, in physically limited space of a ship - creating effect of “violent communication” (“beyond will” communication, even when you don't wish - just because “there is no escaping”).

Its consequences are blocking of demands of seamen in communication (there appears a steady unwillingness to talk to crew members), artificial mediation of contacts and rupture of communicative channels between crew members. These processes have two purposes: first, preservation of “personal” space; second, keeping of social distance and, thus, differentiation of official and informal spheres of interrelations (by restriction - first of all by officers – of a circle of contacts [6].

During personal communication onboard there is also loss of some social roles (of a father, a husband and others - so-called “role deprivation”) due to which occurs narrowing of spheres of activity of a person.

2. Personal communication occurs, mainly, under conditions of foreign language communication. The basic means of communication onboard of speech process participants representing an international multilingual audience, consisting of representatives of various cultures, is English language. And for many of them English is not a native language which can create additional discomfort for a communicator and affect safety of activity.

3. Skills of competent interpersonal business communication are absent.

Bases of business communication are necessary for solving the matters of personnel management onboard, determination of specific goals and tasks, possibility to notify to specialists and non-specialists the information, ideas, problems, their decision, own experience in occupational activity, to use function of message, information, ability to hold sessions, meetings and conversations.

Communication by way of a modern communication facilities is targeted to minimize psychosocial risks of remoteness from home.

A short time ago only 6 % of seamen had access to the Internet; nowadays 75 % of seamen have a possibility to be online onboard in the sea.

Since 2015 about 500 thousand members of ship crews use these privileges in voyage [17]. However, this fact is not considered as positive. Many employers regard that modern communication systems (Internet) and messengers prevent social interaction onboard.

With development of new technologies and access to the Internet, seamen are “sitting” in their cabins. In this connection, relationships with other crew members are not built up, people cannot find a common language and spend their leisure-time more useful [17].

And lack of communication negatively affects human state of mind.

[IV] DISCUSSION

The theme “Risk Factors for Seafarers’ Health” is interesting to many experts in various disciplines. As we have demonstrated, the matters of health can be considered through the lens of education, law, life safety, meteorology or business communication. In this connection, we relied upon the data of psychology, medicine, management.

Research of an issue of decrease in social interaction onboard, even in the absence of the Internet, or medical competence of a navigator, problems of meteosensitivity under conditions of sailing, or relationships of crew members can become a point of intersection of different sciences.

We have started analysis of the three first results of the questioning, other positions are also of particular interest.

In such a manner, we see that the declared theme is of integral nature and requires further complex study.

FINANCIAL DISCLOSURE

The undertaken study has confirmed that seafarers as an occupational group still remain in a category of persons with a high occupational risk for health.

In the course of study, the circle of risk factors for seafarers’ health has been outlined. Among significant factors are named as follows:

1. Time (long-term staying out of home).
2. Closed space, remoteness from civilization. It was united with specificity of communication.
3. Climate.

The climatic and communicative risk factors for human health have been analyzed.

The undertaken analysis demonstrated that educational technologies play major role in minimization of risks for seafarers’ health.

Summarizing the above, we emphasize that in a global paradigm of seafaring the matters of seafarers’ health are directly connected with navigation safety issues.

REFERENCES

1. Bercedo, D. R. G., Urkullu, A. C. & Purnawarman, I. (2011). Security of seafarers in the maritime labour convention, 2006 ILO (MLC). Актуальні проблеми транспортної медицини.
2. Carotenuto, A., Molino, I., Fasanaro, A. M., & Amenta, F. (2012). Psychological stress in seafarers: a review. *International maritime health*, 63(4), 188-194.
3. Fedchenko A. (2010) Pochemu ukrainskiye kapitany svodyat v more schety s zhizn'yu? KP v Ukraine. URL: <https://kp.ua/incidents/252081-pochemu-ukraynskye-kapytany-svodyat-v-more-schety-s-zhynui> [In Russian].
4. Goerlandt, F., & Montewka, J. (2015). Maritime transportation risk analysis: review and analysis in light of some foundational issues. *Reliability Engineering & System Safety*, 138, 115-134.
5. International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW-F), (1995). URL: <http://www.imo.org/en/OurWork/HumanElement/Pages/STCW-F-Convention.aspx>
6. Istomina, O. A. (2007). Sotsial'no-psikhologicheskiye osobennosti morskikh ekipazhey v usloviyakh dlitel'nykh reysov. *Transport Rossiyskoy Federatsii. Zhurnal o nauke, praktike, ekonomike*, (12 (12)). [In Russian].
7. Lipowski, M., Lipowska, M., Peplińska, A., & Jeżewska, M. (2014). Personality determinants of health behaviours of merchant navy officers. *International maritime health*, 65(3), 158-165.
8. Lupachev, V. V., Kubasov, R. V., & Bogdanov, R. B. (2015). Vliyaniye klimatogeograficheskikh usloviy na sostoyaniye zdorov'ya moryakov vo vremya reysa (na osnove analiza publikatsiy). *Vestnik gosudarstvennogo universiteta morskogo i rechnogo flota im. admirala SO Makarova*, (3 (31)). [In

- Russian].
9. MacLachlan, M., Kavanagh, B., & Kay, A. (2012). Maritime health: a review with suggestions for research. *International Maritime Health*, 63(1), 1-6.
 10. Maritime Labor Convention, as amended. (2006). URL: https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---normes/documents/normativeinstrument/wcms_554767.pdf
 11. McVeigh, J., MacLachlan, M., & Kavanagh B. (2016). The positive psychology of maritime health. *Journal of the Institute of Remote Health Care*, 7(2), 20-28.
 12. McVeigh, J., MacLachlan, M., Vallières, F., Hyland, P., Stilz, R., Cox, H., & Fraser, A. (2019). Identifying Predictors of Stress and Job Satisfaction in a Sample of Merchant Seafarers Using Structural Equation Modeling. *Frontiers in psychology*, 10.
 13. Miyusov, M. V. Global'nyye morskoye perevozki i ikh kadrovoye obespecheniye: doklad
URL: http://www.midships.ru/articles/Miyusov_Rector_ONMA_report_2011.html [In Russian].
 14. Obzor morskogo transporta YUNKTD (2017). Konferentsiya OON po trgovlyu i razvitiyu (UNCTAD). N'yu-York - Zheneva. 147. [In Russian].
 15. Perelik vazhkykh robit i robit iz shkidlyvymy i nebezpechnymy umovamy pratsi, na yakykh zaboronyayet•sya zastosuvannya pratsi nepovnolitnikh: zatverdzenyy nakazom Ministerstva okhorony zdorov•ya Ukrayiny vid 31 bereznya 1994 roku № 46. URL: <http://zakon2.rada.gov.ua/laws/show/z0176-94> [In Ukrainian].
 16. Rymina, T. N., & Pyatyrova, Ye. V. (2014). Osobennosti vozdeystviya stressa na rabotnikov plavsostava v usloviyakh raboty v more. *Zdorov'ye. Meditsinskaya ekologiya. Nauka*, 58(4). [In Russian].
 17. Seafarers Jojrnal URL: <http://www.seafarersjournal.com/technologie>
[s/nuzhen-li-morjaku-dostup-k-internetu-na-sudne/](https://mon.gov.ua/storage/app/media/vishch-a-osvita/zatverdzeni%20standarty/12/21/271-richkoviy-ta-morskiy-transport-bakalavr.pdf)
 18. Shemyakin, A. N. (2004). *Morskoye pravo: ucheb. posobiye*. KH.: Odissey. [In Russian].
 19. Snopkov, V. I., Konopel'ko, G. I., & Vasil'yeva, V. B. (1994). *Bezopasnost' moreplavaniya*. M.: Transport. [In Russian].
 20. Standart vyshchoyi osvity Ukrayiny za sptsial•nistyu 271 "Richkovyy ta mors•ky transport" haluzi znan• 27 "Transport" persho (bakalavr•koho) rivenya osvity: zatverdzenyy nakzom Ministerstva osvity i nauky Ukrayiny vid 13.11.2018 r. № 1239. URL: <https://mon.gov.ua/storage/app/media/vishch-a-osvita/zatverdzeni%20standarty/12/21/271-richkoviy-ta-morskiy-transport-bakalavr.pdf> [In Ukrainian].