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A RISK-ORIENTED APPROACH TO PATIENT–DOCTOR COMMUNICATION: AN ANALYTICAL REVIEW

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ABSTRACT — Studying one of the most relevant issues within the context of healthcare digitization – the doctor–patient communication – offers a significant potential for finding solutions related to prevention of risks that are constantly present given the shortage of resources in healthcare. In view of the issue in question, there are ethical, legal, socio-psychological, and technological risks that are described here within the communication framework. The authors offer a view at the outcomes of a structural and functional analysis concerning these communication risks and possible options for their prevention within the context of the basic doctor–patient relationship models.

KEYWORDS — doctor–patient communication, communication risks, doctor–patient interaction model.

Healthcare system is a vitally important social institution that requires close attention and studying, while its dynamic progress has to face a number of issues that remain unresolved. These issues constitute risks — events or a group of related random events that cause damage to the object to which the risk pertains [1] under complex and constantly progressing social relationships. Studying of the communication between the doctor and the patient, seen as the main actors through the process of medical assistance, features a significant potential in terms of finding solutions to prevent and overcome the continuously emerging risks.

A special place here belongs to the interaction between patients and medical professionals, which makes it especially relevant to consider it through the prism of risk management, i.e. a system of measures that will mitigate the negative impact that the danger may have on the health and life of the risk taker. Potential risk is an inevitable part of people's daily routine as any action or situation of choice contains risk potential. Social changes due

to research-and-technology as well as communication progress resulted in the development of a *special arrangement of public life* — a risk-based society [2]. Risks are to be observed in various types of human activity, including healthcare, where communicational interaction between the doctor and the patient is of particular importance.

A rational attitude towards studying risk issues, as well as prompt application of knowledge and practical recommendations in social healthcare, helps explain a proper behavior technology in real situations involving ethical, legal, socio-psychological and technological risks through the doctor–patient communication. Creating a fundamental risk concept involves an interdisciplinary synthesis of various theoretical models that would reflect the patterns and mechanisms of risk thinking and behavior in various fields. Accordingly, the methodology for risk processing should be based on the image of open rationality, which implies polyvariety, a shift away from the concepts of rigid determinism, which feature a strictly determined pattern of relationships and dependencies, and exclude any alternative.

The purpose of this study

is to analyze the relevant risks within the healthcare system employing the example of communication between the patient and the doctor within the risk-based methodology context.

In this context, there can be a special interest in the health risks classification proposed by V.Z. Kucherenko and N. V. Eckert, since it allows identifying socio-legal, psychoemotional and technogenic risks as the major ones [3]. This classification sets certain vectors for working with these issues and provides the potential for further research. Following the structure of health risks, we can identify ethical, legal, socio-psychological and technological risks of the doctor–patient communication. Within the context of this study, we are going to examine the risks of the conventional (face-to-face) interaction between the doctor and the patient as well as its modern option, online.

ETHICAL & LEGAL RISKS

An analysis of the modern healthcare system reveals this current trend: the faster the progress of the technical support offered to medical activities, the less attention is paid to the patient's personality. Certain

doctors believe that a precise examination technology eliminates the need for the doctor to communicate with the patient. Therefore, students nowadays are also taught a *light* model of medicine, where the patient is a set of impaired functional systems that are to be subjected to a certain diagnostics procedure. The society is more interested in new developments within medical technology rather than in the art of the doctor–patient communication. However, the top condition to ensure effective treatment is to establish a psychological contact and trust between the doctor and the patient. In 2003, for instance, a study was held embracing 6 countries (USA, UK, Canada, Germany, South Africa and Japan), the focus of that being doctors' (1,201 persons) and patients' (2,506 persons) view on the role of the relationships they share. One of the conclusions the study produced was the following: *The doctor–patient relationship is one of the major grounds for the stability of the society, and ranks second most important, giving way to family relations only, in all of the countries involved* [4].

The pluralism of the contemporary doctor–patient communication models as well as the lack of reflection on the types of implementing these models, the principles on which they are based, may result in a situation where values can be substituted and, in view of the modern biotechnological progress in medicine, in an expansion of the technical model. Given this situation, the requirements for a modern doctor have changed, too. The presence of illnesses, fear, psychological discomfort, lack or insufficient medical knowledge, make the patient more vulnerable and unprotected through the process of interacting with the doctor [5]. The doctor, on the contrary, is the main actor in medical practice, which means it is the doctor who is to initiate cooperation with the patient, which should be done based on trust, a peer-to-peer attitude, mutual interest, equality and active involvement of both parties.

The recent years have witnessed a significant growth in the number of claims against healthcare. The number of printed items containing negative feedback on medical topics is increasing year after year [6]. Russians now much more often contact the Investigation Committee complaining of medical issues. In 2019, over 6.5 thousand reports of improper medical care were filed, and, compared to 2018, twice as many patients came to the Committee in person to file complaints; 2.1 thousand criminal cases were initiated, with 332 cases proceeding to courts (10% more than a year earlier) [7].

The above shows that modern medicine demonstrates a transformation of the axiological communication field within the doctor–patient dyad. This trend

confirms: first, the growing potential of medicine nowadays in terms of implementing its role; second, the transformation of value attitudes and patient's orientation towards more productive and competent cooperation with the doctor within the system of therapeutic relations; third, a change in attitudes and orientation of medical professionals towards technologization of patient care; declining interest from the doctor to a common human contact with the patient; reluctance to listen to the patient and express compassion and mercy.

The practice of the recent decades has featured a common situation where patients shift the entire responsibility for an unfavorable treatment outcome onto medical professionals. This is why it is important to enhance the institution of the patient's responsibility for their treatment outcomes. If an expert evaluation of the medical care quality proves that the patient failed to duly follow the doctor's recommendations, then the blame for the unsatisfactory quality of the care should reside in the patient alone [8].

It is rather common that the responsibility for negative treatment outcomes is shifted onto the doctor, there has spread a negative practice of illegal attacks on doctors undertaken by patients. This phenomenon is an effect of a weak development of legal tools that could be employed to protect doctors. It is an especially relevant issue concerning emergency care doctors. As reported by the Russian Ministry of Health, there have been over 1,200 cases of attacks on health workers registered since 2010. 200 of such cases are recorded annually in Moscow. At the same time, only 10% of the perpetrators are brought to criminal responsibility, and another 18% — to administrative responsibility [9]. The actions taken by medical employees often feature (for various reasons) violations of the provisions guaranteed by the Consumer protection law as well as by various acts regulating the procedure for offering medical care. In rare cases, medical workers themselves may die never getting due assistance to come in time [10], which is a violation of the right to medical care, subject to Article 41 of the Russian Constitution, and Article 19 of Federal Law # 323-FZ of 21/11/2011 "On the basics of public health protection in the Russian Federation" [11]. It is to be noted that there is an increasing aggression coming from patients who do not trust medical specialists and, moreover, deliberately neglect their recommendations, which undermines the authority of the medical community in the eyes of the public [12].

In this situation, health care workers do not make sufficient use of the available legal mechanisms to protect themselves from such attacks. In light of this, it seems a reasonable idea to empower medical professionals enabling them to prevent such actions. How-

ever, in 2016, Tatyana Yakovleva (Deputy Head of the Russian Ministry of Health) emphasized that it is *only a phonendoscope that a doctor should have in the hands* [13]. Despite the amendments to the Criminal and Administrative Codes, meant to offer legal protection of healthcare employees [14], which imply penalties for counteracting to lawful actions taken by a healthcare professional offering medical assistance (at the time this article was being written, there was still no legally established court practice aimed to follow the provisions of Article 6.3.6 of the Administrative Code and Article 124.1 of the Criminal Code), so doctors remain basically unprotected as they enjoy no right to respond immediately whenever there is a threat to their lives and health.

This reality urges a need for public and professional discussion on potential use of non-legal solutions when medical professionals stay performing their medical duties. Besides, the respective management should assist in filing claims against cases of insulting doctors' honor and dignity, as well as in cases where doctors' rights were violated. The protection of honor and dignity, professional reputation is done on a common basis, which is obvious from the practice adopted by the Supreme Court of the Russian Federation [15]. These aspects make the doctor and the patient unequal members within the respective legal interaction, since the doctor is deprived of certain tools to work an impact on the patient and to control the treatment and diagnostics process, namely: employing the medical community's authority to encourage the patient to listen to the doctor's opinion; deliberate non-disclosure of certain information to the patient concerning unsatisfactory treatment outcomes or full disclosure of the risks and effects of the upcoming treatment; using differences in the way various social groups perceive medical information, where, due to numerous factors (low standard of living; information from the media that discrediting medical employees; previous negative experience) shape a negative attitude among patients. This affects not doctors alone, yet also patients, who, in turn, are deprived of competent and timely medical assistance and empathy from medical staff, which is due to the progressive introduction of the *technogenic approach* in healthcare.

Another factor is the risk of trust in medical staff, which creates socio-psychological basis for the emergence of pseudo-medical organizations that are engaged in commercial activities exclusively, yet claim to be involved in medical activities. An example of that is an incident in the Khabarovsk Region of Russia, when offenders rented area in large shopping malls to install pseudo-medical equipment there. Specially hired call-center employees would phone common

people inviting them to a comprehensive diagnostic procedure, which was offered on a free basis. The impostors had no medical degree, yet they set some grave diagnoses further offering people treatment in their clinic [16]. This demonstrates that the emergence and expanding influence of such organizations will result in a declining authority of medical professionals, poor trust towards the medical community, and will entail the risk of further growth of distrust in the social Institute of medicine as a whole.

Along with the problems mentioned above, there is also note to be made regarding the growing commercialization of healthcare. Nowadays, primary care doctors and pharmaceutical companies/pharmacies enter some unwritten agreement on mutually beneficial cooperation, following which doctors (in many cases this happens in the primary healthcare system) will recommend or even insist openly that the patient buy a particular drug, for which the doctor will enjoy some bonus [17]. The lawmakers in this case followed the principle of prohibition, which means that anything that is not banned directly by law is allowed, thus opening up a wide path for cooperation, as well as for the development of medicine and pharmaceutical industry [18]. At the same time, according to the current legislation, there are restrictions in place concerning the following: representatives of pharmaceutical companies visiting medical staff in violation of the local order approved at the medical institution; transfer of promotional samples to medical employees; direct transfer of funds to medical professionals (which can be confirmed through e-correspondence) with no contract signed, which would imply carrying out clinical research or academic/scientific activities. The list of restrictions is quite large and the legislation implies liability for violating the above-mentioned provisions [19].

In view of the above, mutual violation of rights by both the doctor and the patient will make it complicated for medical employees to perform within their professional duties, as well as it will also increase the potential for risks, regardless of the interaction model within the doctor–patient dyad.

SOCIAL AND PSYCHOLOGICAL RISKS

While examining this category of risks within the doctor–patient interaction context, attention should be paid to the doctor–patient communication issues, which manifest themselves through the doctor's not understanding the patient. On the patient's part, it is about lack of willingness to listen, and, most importantly, to hear the doctor and to follow their recommendation [20], which then lays ground for a conflict between the expectation and the reality, and which is one of the reasons behind conflict situations.

Given the time limit on an appointment by the doctor (regulated by Order of Ministry of Health of Russia, 02/06/2015 # 290n “On approval of the standard industry time limits for the performance of activities related to one patient’s visit to the local Pediatrician, General Practitioner (family doctor), Neurologist, Otolaryngologist, Ophthalmologist, and Obstetrician-Gynecologist”, doctors fail to offer their patients as much attention and time as they would like to.

It is reasonable for medical professionals to master the skills of medical rhetoric, since this is a highly effective communication tool. The key element of rhetoric is how the doctor communicates with the patient. The doctor then has the task of correctly balancing between confidential medical data and the information that can be disclosed to the patient. When interacting with a patient, the doctor in most cases will use special terms and choose the right behavior tactics, while bearing in mind that it can cause not only a positive response, yet also provoke a psychological trauma [21].

TECHNOLOGICAL RISKS

Out of a significant number of technological issues within this study, there is a focus to be made on designing effective online communication between the patient and medical specialists. From this stance, general technological risks, both on the doctor’s and on the patient’s part, will be considered. A set of means and tools for online communication is now called telemedicine. Subject to Par. 22 Art. 2 of Federal Law # 323-FZ of 21/11/2011 “On the Basics of Public Health Protection in the Russian Federation”, telemedicine technologies include information technologies that provide remote interaction of medical workers with each other, with patients and (or) their legal representatives, identification and authentication of these persons, documentation of their actions through consultations, meetings, remote medical monitoring of the patient’s health.

The major areas to apply the regulation act are electronic prescriptions for medicines containing narcotic and psychotropic substances; obtaining voluntary consent to medical care following a simplified pattern; remote execution of the patient’s right to obtain medical data regarding themselves; updating medical care standards in view of advanced technologies; legislative validation of remote consultations.

There is basically no data available on the results of research carried out in the field of telemedicine technologies and published in peer-reviewed journals. A number of authors believe that Russia’s medical science has considerable experience in developments

within the area of telemetric medicine [22]. For medical employees such risks include: professional training, retraining of doctors to be further employed in the sphere of online communication system; legal and insurance protection for doctors involved in telemedicine; clinical practice.

As for patients, these risks include: protection for patient databases and the overall lack of security for personal data and information that constitutes medical and any other professional secrecy. This issue may be solved through blockchain technologies enabling to confirm transactions of a counseling offered by a medical specialist, as well as to issue medical documents [26]. To date imperfect telemedicine and diagnostic technologies presents a risk in diagnosis and delivering diagnostic data to the doctor with inaccuracies and critical errors [23].

Nowadays, the Internet of medical things has been developing actively; this is a network that combines devices into a computer network and allows them to collect, analyze, process and transmit data to other objects through software, applications or technical devices [24]. This area is a concept of a network that joins together *connected devices* and devices that monitor the status of the human body and its environment, including medical devices that can have an interactive influence on the prevention, treatment and rehabilitation.

One of the options to achieve this goal is the concept of *Geographical information system (GIS) of a human being*, which offers a whole new approach to collecting most comprehensive data concerning a person, which would offer the basis for drawing conclusions regarding the body status. GIS collects information about the person’s status as well as about their environment (both from an ecological point of view and from a social one) [25]. The Internet of medical things will take explanation with the clinical efficacy and safety evaluated, which would require clinical studies. Rapid and large-scale introduction of advanced technologies takes training medical professionals and patients to develop respective user skills [26].

The context of the doctor–patient interaction involves three groups of issues: ethical and legal, socio-psychological, and technological. Now, further comprehension of the issues under consideration, will take analyzing the existing interaction models within the patient–doctor dyad, as well as examining a risk analysis as per each model. First of all, it is important to have a quick overview of the already available doctor–patient interaction models.

Now, it is to be seen that the main model is the contract system and its evolutionary development — equal responsibility for the treatment outcome shared by the doctor and the patient. Each of these issues

involves risks that should be taken into account when arranging and offering medical care, as well as when planning programs for the development of the health sector (Table 1).

— digitization of healthcare has not just changed the conventional configuration of the doctor–patient communication, yet also brought around its

Table 1. Communication risk analysis and possible options to prevent them within various doctor–patient interaction models

Model	Features	Communication risks and possible ways to prevent them		
		Ethical & legal	Social & psychological	Technological
Technical	The patient is a mechanism that has broken down. The patient's personality and individual features are not taken into account.	The doctor is responsible for the negative outcomes that occurred due to their fault, which creates the risk of reputational loss. Potential use of technologies without prior consent from the patient. Risk prevention is ensured through a documented consent from the patient agreeing to accept medical assistance, and the doctor's liability disclaimer in case of force majeure. There is a need to convey to patients as much information as possible in a respectively comprehensible language.	Dissatisfaction with the treatment quality due to lack of emotional contact with the doctor. Risk prevention is based on informing the patient as much as possible regarding the content of the medical assistance and its effects for a particular patient.	Reduced potential for effective feedback while monitoring long-term effects of medical care. Risk prevention is based on interactive online communication services introduced in medical practice.
Paternalist (sacral)	The doctor is the parent, and the patient is an unreasonable child	The patient bears no responsibility for their own health. It is the doctor who is fully responsible for the patient's health. Possible use of technologies without obtaining the patient's consent. The basic foundation for both the doctor and the patient is ethical regulation (deontology).	Risk, either intentional or not, of the doctor's working harm to the patient. Compliance with ethical (deontological) principles guarantees the patient's safety. Risk prevention is associated with reaching psychological comfort for the patient and depends on the traditions of medical care, as well as on the role and authority that the doctor enjoys in the society.	The patient has little, if any, access to the examination outcomes. Possible use of technologies with unproven efficiency. Risk prevention is based on the introduction into medical practice of methods with proven effectiveness and technologies for interactive communication with patients.
Collegial	This model is patient-centered. The patient's role is active, and all the decisions that the doctor makes are to be discussed with the patient.	The patient and the doctor share equally the responsibility both for the course and results of treatment. The major risk within this model is lack of a properly designed contract for medical services. Ethical risks are minimal, yet depend on the degree of the contact between the doctor and the patient. Risk prevention is based on reaching a balance between the interests of the patient and those of the doctor, subject to a contract.	As of today, this is the most attractive model from a psychological point of view. However, there is a risk of the patient's independent selecting the treatment strategy never taking the doctor's advice. Professional support for the doctor's decisions offered by the medical community would be reasonable as part of risk prevention, especially in complex and conflict situations.	The patient may reject the use the necessary technologies. Possible neglect of the doctor's recommendations and deliberate disconnection of health monitoring devices. Potential disclosure of personal data when used through remote counseling and data exchange; Risk prevention is associated with interactive technologies introduced to ensure communication between patients and medical experts.

CONCLUSION

Summarizing the above can be boiled down to the following key points:

new format, while modifying the axiological field of the interaction occurring between the doctor and the patient. First, there is an intermediary between

the doctor and the patient – the medical content of the Internet. Second, online services for patients are developing. The progress of digital healthcare is transforming modern medicine, which will take change in the way the roles of doctors and patients are perceived. New risk factors are associated with the patient's active involvement in the treatment process, the constant availability of social network support, rapid data transmission and an open two-way dialogue. Blogs, social networks, online counseling, etc., all these generate new interaction models between doctors and patients, medical organizations and other medical subjects, which creates a new interaction environment that has yet to be studied. They will not, of course, replace the traditional doctor–patient interaction. The potential they offer, though, acting as platforms for shaping personalized medicine (offering patients respective information, access obtaining counseling with another specialist), contribute to making better decisions concerning health;

— the doctor–patient communication viewed within the digital healthcare system features the following advantages: instant feedback, access to the most up-to-date medical information in a real time mode, stable access through social networks, transparency of information for the patient, its availability at a distance, two-way dialogue in real time. However, while there are advantages, the doctor–patient interaction in the e-health system gives rise to additional risks related to personal data protection, as well as to the quality and reliability of medical information. Therefore, communication between a doctor and a patient, seen as a special type of social activity, includes a risk component, which can not only harm the major actors involved in the process of providing medical care, yet can shape a whole set of healthcare practice issues of varying complexity;

— the contract system and its evolutionary development is currently considered to be the basic model of doctor–patient interaction. This is a model where the doctor and the patient share the equal responsibility of for the treatment outcome. Ethical, legal and socio-psychological risks are reduced to the minimum through employing an agreement as the major document regulating the communication between the doctor and the patient. At the same time, the humanistic component of medical activity remains intact — technicism as an ethical and legal risk is actually leveled by the provisions of the agreement. The main risk in this case is the refusal to enter or follow the agreement, especially in cases requiring emergency medical assistance. Besides, there is also a significant risk of the patient's refusal to employ advanced technologies when it may be necessary;

— nowadays, there are a number of issues involving the safety of health workers, namely, ambulance medical workers. Given this context, it appears urgent to have a parliamentary discussion concerning allowing medical employees using special means of protection, as well as regulating the procedure to use them;

— online communication technologies have gained legislative support and are actively progressing now. However, implementing them faces a number of serious issues related to the protection of personal and other legally protected data; socio-psychological features of the doctor–patient interaction when using them.

The analysis of doctor–patient interaction models has allowed us to identify three major communication risk groups (ethical & legal, social & psychological, technological) and to propose some solutions. We assume that this approach should be used to make healthcare more professional, efficient and personalized.

REFERENCES

1. **ERMASOVA N.B.** Risk management of the organization. N.B. Ermasov. – M.: Alfa-Press, 2005 239 p.
2. **USTYANTSEV V.B.** Topos of modern society: reflection of ways of informatization // *Izvestiya Saratov University. New episode. Series: Philosophy. Psychology. Pedagogy.* 2019. Vol. 19, no. 4. P. 403–408. Ustyantsev V.B. The concept of risk in the problem field of the social sciences. *Bulletin of the Saratov University. New episode. Philosophy Series. Psychology. Pedagogy.* 2016. Vol. 16. Iss. 2. P. 165–170.
3. **KUCHERENKO V.Z., ECKERT N.V.** Organizational and managerial problems of risks in health care and safety of medical practice. *Bulletin of the Russian Academy of Medical Sciences.* 2012. Vol. 67. No. 3. P. 4–9.
4. **MAGEE M.** Relationship Based Health Care in the United States, United Kingdom, Canada, Germany, South Africa and Japan: A Comparative Study of Patient and Physician Perceptions Worldwide. *The Journal of Biolaw and Business*, Vol. 7, 2003. – P. 89.
5. **GRISHECHKINA N.V., FAKHRUDINOVA E.R.** Model of interaction between doctor and patient as a factor in the formation of compliance. *Sociology of Medicine - Health Care Reform. Scientific works of the IV All-Russian Scientific and Practical Conference (with international participation).* Scientific editor N.N. Sedova. 2013 P. 183–188.
6. **TISHAKIN A.P.** Features of coverage of scandals in the medical media. Part 2 // *Science, education and culture.* 2019. No. 5 (39). [electronic resource] URL: <https://cyberleninka.ru/article/n/osobennosti-osvescheniya-skandalov-v-meditsinskih-smi-ch-2> (date accessed: 01.06.2020). P. 42–44.

7. The head of the Investigative Committee named the number of cases of medical errors sent to the court / [electronic resource] URL <https://russian.rt.com/russia/news/724386-bastrykin-vrachebnye-oshibki> (date of treatment 05/31/2020).
8. **STARCHENKO A.A.** Health Authorities: The average physician needs an independent assessment of the quality of care. *Healthcare manager*. 2012. No. 2. P. 50–66.
9. ONF will send to the State Duma proposals on tougher punishment for attacks on health workers [electronic resource] URL: <https://medvestnik.ru/content/news/ONF-napravit-v-Gosdumu-predlozheniya-po-ujestocheniu-nakazaniya-za-napadeniya-na-medrabotnikov-2.html> (date of access 04/17/2020).
10. The doctor did not help: how the negligence of doctors ruins the lives of their colleagues [electronic resource] URL: <https://iz.ru/945918/mariia-rubnikovich/doktor-ne-pomog-kak-khalatnost-vrachei-gubit-zhizni-ikh-zhe-kolleg> (date of treatment 06/01/2020).
11. **PLATOVA N.I., SMYSHLYAEV A.V., MARTIROSYAN T.E.** Violation of the rights of patients in the provision of medical care and methods of their settlement in the Russian Federation (theoretical foundations and judicial practice). *Problems of economics and legal practice*. 2018. No. 6. P. 193–197.
12. **CHIRIKOVA A.E., SHISHKIN S.V.** Interaction of doctors and patients in modern Russia: vectors of change. *The world of Russia. Sociology. Ethnology*. 2014. Vol. 23. No. 2. P. 154–182.
13. Ministry of Health: doctors should not use traumatic means of self-defense. 2016 [electronic resource] URL: <https://tass.ru/obschestvo/3803154> (date of treatment 04/17/2020).
14. Federal Law of July 26, 2019 N 206-FZ "On Amendments to the Criminal Code of the Russian Federation and Article 151 of the Criminal Procedure Code of the Russian Federation in terms of protecting the life and health of patients and medical workers."
15. Determination of the Supreme Court of November 12, 2019 [electronic resource] URL: http://vsrf.ru/stor_pdf.php?id=1850664 (date of treatment 04/17/2020).
16. Pseudo-medical centers in the Far Eastern Federal District deceived people for 100 million rubles [electronic resource] URL <https://rg.ru/2020/03/19/reg-dfo/psevdomedicinskie-centry-v-dfo-obmanuli-liudej-na-100-mln-rublej.html> (date of access 05/31/2020)
17. **BALAKIREVA K.V.** Interaction between the medical and pharmaceutical communities: limitations, exclusions and liability. *Domestic jurisprudence*. 2017. No. 5 (19). P. 64.
18. **MOROZOVA N.A.** Issues of interaction and cooperation of medical workers with pharmaceutical companies. *Ophthalmol. statements*. 2013. No. 3. P. 4–8.
19. **BORZOVA M.A.** Restrictions on the interaction of doctors and pharmaceutical companies: practice of proceedings. *Remedium*. 2014. No. 3. P. 8–11.
20. **KOKENOVA Z.K., TURYSBEKOVA G.ZH., ARKABAEVA G.S.** The culture of a doctor's professional speech. *KazNMU Bulletin*. 2014. No. 4. P. 195–199.
21. **MADZHAIEVA S.I., KASIMTSEVA L.M.** Speech behavior of the doctor when communicating with the patient. *KalmSU Bulletin*. 2019. No. 2 (42). P. 46–52.
22. **MAKSIMOV I.B., DIASHEV A.N., SINOPALNIKOV V.I., SEMIKIN G.I., LUKYANOV P.A., PONOMAREV A.A., OVAKIMYAN G.S.** History, analysis of the state and development prospects of telemedicine. *The Journal of Telemedicine and E-Health*. 2018. No. 3 (8). P. 103–110.
23. **MAKSIMOV I.B., DIASHEV A.N., SINOPALNIKOV V.I., SEMIKIN G.I., LUKYANOV P.A., PONOMAREV A.A., OVAKIMYAN G.S.** History, analysis of the state and development prospects of telemedicine. *The Journal of Telemedicine and eHealth*. 2018. No. 3 (8). P. 103–110.
24. **ZARAMENSKIKH E.P., ARTEMIEV I.** Internet of Things. Research and field of application. M. 2017. 188 p.
25. **SHOKIN YU. I., POTAPOV V.P.** GIS today: state, prospects, solutions. *ZhVT*. 2015. No. 5. P. 175–213.
26. **LEBEDEV G.S., SHADERKIN I.A., FOMINA I.V., LISNENKO A.A., RYABKOV I.V., KACHKOVSKY S.V., MELAEV D.V.** The Internet of Medical Things: First Steps in Systematization. *The Journal of Telemedicine and eHealth*. 2017. No. 3. P. 128–137.