

Medical terminology in cognitive aspect: features of the terminological field “surgical instruments” in the German language

Sanya Madzhaeva

*Astrakhan State Medical University,
Chair of Latin and Foreign Languages
Astrakhan, Russia*

sanya-madzhaeva@yandex.ru,
<https://orcid.org/0000-0001-8478-9616>

Tatiana Lukoyanova

*Astrakhan State Medical University,
Chair of Latin and Foreign Languages
Astrakhan, Russia*

lukoyanova_tanya@mail.ru,
<https://orcid.org/0000-0002-3736-9739>

Alisa Sinitsina

*Astrakhan State Medical University,
Chair of Latin and Foreign Languages
Astrakhan, Russia*

alice694@bk.ru
<https://orcid.org/0000-0002-8922-7126>

Abstract — This article focuses on the features of the terminological field “surgical instruments” of the German language. The terminological field “surgical instruments” of the German language was analysed by means of structural, definitional and conceptual analysis. The material for the study is simple, complex terms and terminological word-combinations which belong to the studied terminological field. It was found that main features of the terminological field “surgical instruments” in the German language determined by professional specificity are: 1) Greek, Latin, European terms, as well as Greek and Latin terminoelements form the basis of the analysed terminological field; 2) there is a tendency to the usage of national terms; 3) functioning of 4 thematic groups of metaphor-terms (artefact, zoomorphic, floristic, anthropomorphic metaphors); 4) the high frequency of the terminological two-word-combinations (57.8%) and complex noun-terms with two terms in their structure (67.4%) which is associated with the fact of speech economy; 5) the use of eponyms which is explained not only by the desire to perpetuate the name of scientists who invented or modified the instrument, but also by the nominative crisis during the description of the complex construction of the surgical instrument.

Keywords—*terminology, medical terminology, cognitive terminology, terminological field, suffixation, prefixation, synonym, eponym, metaphor-term*

I. INTRODUCTION

The main reason for the appearance of new terms is the human need for communication, the transfer of person’s knowledge to others. According to E.S. Kubryakova “... without language ... it is impossible to transfer the knowledge, skills, and the whole accumulated experience ... from one person to another, and what is most important, from one generation to another ...; only existing in the form of a system of signs, language performs its main task. It objectifies all information that comes to a person from the outside with the help of material signs, provides all kinds of activities with information, either by designating its individual fragments or by serving them as analytical descriptions and their representation” [1]. Without language, it would be impossible to summarize the experience of a man, to study and understand its development.

All the time understanding and study of a language was the main task of linguistics. The main reason for the formation of cognitive linguistics, and later for the formation of cognitive terminology was the demonstration that there is a correlation between cognitive and linguistic structures. It should be noted that neurophysiology, psychology, linguistics and a number of other sciences were involved in cognitive studies. It leads to re-thinking of its basic term “cognitive”. Initially, it meant “cognitive” or “referring to cognition”, later it acquires the meaning “internal”, “mental” and finally “associated with cognition” [1].

Many scientists (E.V. Bekisheva, E.I. Golovanova, E.S. Kubryakova, V.M. Leichik, S.I. Madzhaeva, V.F. Novodranova and others) have an opinion that cognitive terminology has changed the system of views on the term [2, 3, 1, 4-6]:

- The term is “the result of a complex interaction of cognition and communication in a particular semiotic space of a specific field of knowledge and activity” [3];
- The term is a dynamic lexical unit;
- The most significant function of the term is a cognitive one. So the term reflects the cognitive experience of a specialist;
- The term represents not only scientific knowledge. At the core of the special concept there is everyday knowledge; this everyday knowledge is rethought during the process of scientific activity.

Medical terminology is also being studied in the context of the paradigms of cognitive linguistics and cognitive terminology. During its centuries-old history medical language has accumulated a large number of means for expressing scientific concepts, the understanding of which attracts the attention of terminologists. So, “the thinking of a person, his consciousness develops not only science itself, but also his language – the lexical system” [7].

It should be noted that there is not any science without the formed terminological system, terminological fields. Medicine is one of the most important and significant areas of knowledge for a person. The development of medicine,

like any other science, is associated with the cognitive development of society (with the accumulation of experience and knowledge), observed at each stage of its formation and accompanied by the formation of a large number of terms in which scientific information is recorded.

Interest in the study of medical terminology, in our opinion, can be explained by the following facts:

- The preservation and maintenance of health is one of the most important problems for humanity;
- Terms, terminological systems, terminological fields – universal means for obtaining, storing and representing of special knowledge, the analysis of which will help to understand the evolution of medicine;
- Every time we can see evolution of medicine, and moreover, medicine is connected with other branches of knowledge, therefore the volume of its terminology is increasing.

II. MATERIALS AND METHODS (MODEL)

In this paper, the terminological field “surgical instruments” of the German language was analysed by means of structural, definitional and conceptual analysis. The material for the study is simple, complex terms and terminological word-combinations which belong to the terminological field “surgical instruments” in the German language.

III. RESULTS AND DISCUSSION

First steps of formation of surgery as a science can be found at the early stages of the existence of human society. On the one hand, surgery is the most ancient field of medicine. As soon as a man began to hunt and work he needed medical knowledge to remove foreign elements from his body, to cure wounds and diseases and to stop bleeding. On the other hand, surgery will always be a young science, because its development will not stop. In parallel with the development of this science, we have the formation of its terminology and, as a result, the formation of the terminological field “surgical instruments” in the German language. As terminological field “surgical instruments” we understand a part of a term system, a structured set of special lexical units of certain area of medicine “surgery” [8]. It is a special representational system, since “with the help of special words it encodes something that stands outside the language” [5] – special knowledge which has the specialist nominating a surgical instrument.

A. Structural and semantic features of the terminological field “surgical instruments” in the German language

The formation and development of the terminological field “surgical instruments” in the German language was influenced by *extralinguistic* (the country in which surgical knowledge develops in a certain period that explains the existence of borrowed words; the development of the purism in Germany in the 17th and 18th centuries; the specifics of the periods of science development affecting the semantics and structure of terms the specifics of the periods of science development affecting the semantics and structure of terms;

technical progress; the amount of knowledge of a specialist who nominates surgical instruments) and *linguistic* factors (the use of abbreviations, eponyms; the deepening of differentiation in the meanings of synonyms).

Analysis of the works on surgery and its terminology allowed us to identify three main stages of the formation of the studied terminological field, marked by a number of regularities:

- *First stage – the stage of formation and development of the terminological field “surgical instruments”* is characterized by the presence of words borrowed from the common lexis and other fields of knowledge. With time these words underwent a process of terminologisation, enlarged the conceptual content of lexical units. After that they are used in the studied terminological field. For example, the non-special word *der Haken* (*hook*) in the dictionary of K. Duden has the meaning *zu einem Winkel, einem Halbkreis oder s-förmig gebogener Gegenstand, an dem etwas aufgehängt werden kann* [9] – an object curved at an angle of 90° in a semicircle or having an s-form, used for catching or holding things. In the analysed terminological field, the lexeme changed the conceptual content and is used in complex noun-terms and terminological word-combinations representing a surgical instrument that looks like a hook, designed to expand and retain the edges of a wound or to fix tissues of the organism during a surgical operation. For example, *der Augenhaken* is an eye hook (a surgical instrument used to pull away and fix the wound edges of the eyelids and eye membranes, as well as to pulling off the eye muscles).

The borrowing by medical terminology of language units from non-special lexis and terms from other fields of knowledge confirms the validity of the conclusions made by V.V. Lazarev that “in the structure of thinking, scientific knowledge is only a superstructure above the everyday consciousness, which is as ancient as a man himself” [10].

- *Second stage – the stage of accumulation of terms by the terminological field “surgical instruments”* in the German language. At this stage, there is a deepening of knowledge, whose process in terminology is expressed as follows:

a) The deepening of differentiation in the meanings of synonyms. For example, the synonyms *chirurgisches Messer* (*surgical knife*) – *der Skalpell* (*scalpel*) existed at the first stage – the stage of formation and development of the surgeons' professional language, but, as a rule, doctors did not distinguish between them. However, these surgical instruments belonging to the subgroup “cutting instruments” have differences in their shape and function. A *scalpel* (*der Skalpell*) is a small surgical knife for cutting tissue with a short blade and a long handle [11], a *surgical knife* (*chirurgisches Messer*) is a single or double-blade medical tool for dissecting soft tissues, tendons and cartilage [12].

The presence of synonyms is associated with the progress of science. The synonyms give the opportunity to name the selected categories and concepts in different ways. For example, *das Doppelspekulum – das Scheidenspekulum – das Vaginalsepekulum (vaginal speculum)*. In the term *das Vaginalsepekulum*, the lexical unit *vaginal* indicates the organ for inspection of which this tool is used. Its synonymous term *das Scheidenspekulum (scheiden – to widen)* reveals the principle of its use (the instrument is a movable tool with hollow blades used to widen the opening of the vagina), the term *das Doppelspekulum (doppel – double)* explains the structure of the vaginal speculum – bivalve instrument.

b) The “genus” term has the “species” terms. With the development of medical instruments, the term *das Scheidenspekulum (vaginal speculum)* has become “genus” term. It has now a number of “species” terms – *das Leuchtscheidenspekulum (luminous vaginal speculum) – das zweiteiliges Scheidenspekulum (bivalve vaginal speculum) – das löffelförmiges Scheidenspekulum (spoon-shaped vaginal speculum)*. The presence of genus-species relations allows us to conclude that complex noun-terms (50.8%) represent the multi-stage mechanism of understanding of the functions of a surgical instrument by a medical specialist and helps to improve it. In addition, the stem-composition is accompanied by a reduction of the syntactic structure and requires the effort of mental activity.

Genus-species relations represent terminological word-combinations in which the main word expresses a genus feature that is characterized by a word that defines the species feature of a surgical instrument. At the same time, if we speak about cognition, the leading role is played by the lexical unit marking the species feature. For example, *a button-shaped knife (knopfförmiges Messer) – a spear-shaped knife with a spherical button at the end used for suturing during external rhinostomy; a spear-shaped knife (lanzeförmiges Messer)* is a knife for incisions of the eye membranes with a blade in the form of the triangle with two equal sides.

An adjective in such terminological word-combinations has special scientific information; it is a “terminological marker-specifier”. Because of it, specialist can divide the instruments into subgroups, so he can distinguish a surgical instrument in its group.

It is necessary to note the high frequency of terminological word-combinations (34.4%) in the studied terminological field. The reason of it is the fact that this type of terms, verbalizing the result of professional thinking and language activities of a medical specialist, is able to reflect the required number of cognitive features of a surgical instrument, the accumulation of which occurs as a result of the development of science and technology and leads to increase in the number of components in terminological word-combinations. For example,

straight scissors (gerade Schere) are used to cut tissue of superficial wounds; *pointed scissors (spitze Schere)* are used for correction of wound lips during cosmetic operations; *straight pointed scissors (gerade spitze Schere)* are used both for dissection of thin tissue and for cutting the meninges during neurosurgical operations;

c) The use of eponyms. The middle of the XIX and early XX century is a period of great discoveries. A great contribution during this period was made in invention of surgical instruments. These surgical instruments are used in surgery nowadays. They were named after their “creators”, so these terms are realonyms (the term of G.A. Abramova) not only in German language but also in world medical terminology.

According to the results of the research, the use of eponyms in the nomination of surgical instruments is explained not only by the desire to perpetuate the names of scientists who invented or modified the instrument, but also because the specialist needs time to distinguish the cognitive features of the surgical tool and to fix them in the linguistic sign. For example, in 19th-century French creator of tools designed a needle-holder with curved handles called *der Matye's Nadelhalter (Mathye's needle-holder)*. Further, in medical terminology we have the synonymous terminological word-combinations *der Nadelhalter mit gebogenen Griffen (needle-holder with curved handles)*.

- *Third stage – the stage of development of the terminological field “surgical instruments” of the German language* is characterized by further progress of knowledge and practice, determined not so much by the anatomical and physiological development of surgery, as by more sophisticated technical support of operating rooms, the use of nanotechnology, that entails a change in the consciousness of the specialist and in his thinking.

The development of surgery is reflected in the terminological field in the form of new lexemes:

a) Complex terms with components indicating the international nature of terminology (*der Roboterarm*);

b) Terminological word-combinations with and without abbreviation component (*dreidimensionales chirurgisches Instrument*);

c) Terms borrowed from other fields of knowledge (*das Kamerasystem*).

Analysis of the medical books demonstrated the presence of metaphor-terms in the terminological field “surgical instruments” of the German language. It’s a well known fact that surgery is a field of medicine that deals with the treatment of acute and chronic diseases by means of surgical procedures. Most of them refer to emergency care and require a quick decision from the surgeon. One would think that during an emergency situation the surgeon does not have time to compare the instruments with household items, plants, animals. However, we have identified the

frequency of metaphors-terms (8.5%) in the studied terminological field.

In the terminological field “surgical instruments” of the German language there are following thematic groups of metaphors:

- Artefact metaphors;
- Zoomorphic metaphors;
- Floristic metaphors;
- Anthropomorphic metaphors.

In group “*artefact metaphors*” there are surgical instruments, in the names of which there is a number of similarities with objects created by man:

- Household items: *die Nadel mit Vorbeugungsglasperle (bulb-guard needle)*. Such a needle has an insertion depth limiter — a thick part closer to the tip of the needle, similar to a small bead (in the German language it is compared with the pearl);
- Instruments from other fields: *der Messer-Spatel (knife-spatula)* is a double-sided dental instrument used to work with wax in the manufacture of dental prostheses, it is a knife at one end, and a spatula at the other end, *die Guillotinenrippenschere (guillotine rib-cutting forceps)* – scissors for cutting through ribs and their cartilage, it has long handles without rings and two working parts: cutting, bladed part and hooked blunt, what is placed under the dissected rib. The working principle of the working parts of these scissors is similar to the work of the guillotine when the cutting movable part works by pressing the scissors' handles;
- Weapons: *das Augenlanzenmesser (spear-shaped ophthalmic knife)* – a surgical knife used for incisions of the eye membranes, it has a spear-shaped blade with two sharp cutting edges.

Zoomorphic metaphors are created by comparing the form of surgical instruments with animals, insects and their body parts. For example, *die Moskitoklemme (hemostatic “mosquito” forceps)* has long and very thin working parts, which the specialist compared with mosquito antennae and proboscis.

In the group “*floristic metaphors*” there are surgical instruments whose form can be compared with plants or their parts. For example, *die Bougie mit oliventförmiger Spitze (bulbous (-end) bougie)* is a tool with a metal, rubber or plastic tube that a physician inserts into hollow body organs for their dilatation, that’s why it has a bulb-shaped tip. The shape of the bulb-shaped tip of the bougie looks like an olive.

There are two subgroups in the group of “anthropomorphic metaphors”:

- Physical actions: *medizinischer Abkneifer (abkneifen – bite off) – medical cutting-off pliers* – a tool similar to the forceps with ring-shaped part for finger on the handle for cutting of a piece of tissue for biopsy analysis or for removal of tumors; *die Knochenhaltezange (halten – hold) – bone (-*

holding) forceps – clamping instrument used for grasping and holding objects tubular bones;

- Parts of the body and organs: *die Klemmbacke (beaks of a clamp)* – the working part of a dental instrument used to grasp and occlude the vessel during its bleeding; in German language this part of the instrument is compared with the cheek; *der Instrumentenkopf (upper part of the instrument)* – the specialist compares the upper part of the instrument with the head (*der Kopf*) – the upper part of the human body.

According to E.A. Nikulina, the metaphor-term has “a high degree of motivation ..., which can be explained by the fact that the medicine, its objects and concepts have a direct connection with a person, his feelings and emotions” [13].

Metaphor-term is not only a means of cognition but it, forming new concepts based on the already formed ones, “guides the thinking of a person” [14]. These terms create an image of the surgical instrument by means of imagination, that makes the concept more “clear” [13] or understandable and therefore a person remembers them easier. For example, a “*bulldog*” forceps (*die Bulldog-Klemmen*) is used for the work with superficial blood and lymphatic vessels. The working parts of the forceps, which are compared with the chaps of the bulldog, provide a soft pressing of tissues without its sliding; as a result a vessel is not traumatized. However, improper use of these forceps can lead to rupture of the vessel and bleeding.

Consequently, metaphor is a way to catch the individuality of a particular object. Metaphor-term is a tool of thinking; it is linked with the conceptual experience of a specialist and allows him to organize his cognitive activity.

B. *Affixal fund of the terminological field “surgical instruments” of the German language*

The analysis demonstrated that Greek, Latin, European terms, as well as Greek and Latin terminoelements form the basis of the terminological field “surgical instruments” in the German language.

The terminological field “surgical instruments” of the German language is characterized by its own fund of suffixes (-or (-tor, -ator), -orium, -er, -e, -tom, -skop, -klast, -ektom, -chen). They mark not only surgical instruments (-or (-tor, -ator), -orium, -er, -e), but also cognitive features associated with the assignment of a surgical instrument, dividing surgical instruments (-tom, -skop, -klast, -ektom) into functional groups (cutting, special surgical instruments for examining of the body cavities, special surgical instruments for perforation, etc.).

The mental activity of the medical specialist associated with the perception and analysis of suffixes allows him to organize the concepts of the terminological field “surgical instruments” into a certain system based on the meaning of the suffixes. For example, the instruments the names of which are formed by means of suffixes **-tom** (“to cut”) and **-ektom** (“to exsect”) are referred by a specialist to a group of cutting tools, given the possibility of defining them to two subgroups: 1) tools for dissection of the cavity are formed by the suffix **-tom** (*das Tenotom* – tendon knife), 2) tools for removing (or excision) of tissue are formed by

suffix **-ektom** (*das Tonsillektom* (tonsillectome) – a surgical instrument to remove the tonsils). Instruments in the names of which there is the suffix **-skop** (with the meaning “visual examination”) form a group of instruments for visual examination (*das Ösophagoskop* (for examination of the esophagus); instruments with the suffix **-klast** (with the meaning “break”) form a group of clamping tools (*der Kranioklast* – forceps for crushing the head of a foetus to facilitate delivery in difficult cases).

At the same time, suffixes orient the specialist to the function of the surgical instrument. For example, the suffix **-skop** means “visual examination”, therefore, *das Pharyngoskop* (*pharyngoscope*) is a tool for examination of the inside part of the pharynx; and *das Pharyngotom* (*pharyngotome*), because it has the suffix **-tom** with the meaning “to cut” is a knife for incision throat (pharyngeal) abscesses. So, in the mind of a specialist the suffixes orient him to do examination or incision of the pharynx. However, very often there is not only one feature in the semantics of the term. Since any phenomenon or object of reality somehow has a certain number of features [15]. E.g.: *das Resektoskop* (*resectoscope* (in Latin *re-seco* – “dissect away”, where *seco* – “to cut”) – endoscope for tissue excision.

Prefixes are also capable to determine surgical instruments to a particular group. For example, *der Protraktor* (*protractor*) (a special tool) is a surgical instrument for removing of a foreign object from a wound (in Latin *prō* – forward + *traho, tractum* – to pull), *der Retraktor* (*retractor*) (pushing instrument) is a surgical instrument used to pull away and hold back organ or the edges of an incision to maintain exposure of the underlying anatomical parts, particularly during surgery (in Latin *retraho* – to retract; to pull away). These examples prove that the terms verbalize the result of professional thinking and language activity of the medical specialist. Changed structure of the terms and their new meanings is the result of a cognitive operation which takes place in the mind of a specialist. In addition, derivation is a factor of the terms ordering.

Suffixation and prefixation are morphological mechanisms for the semantic transformation of the meaning of a term: *das Pharyngotom* – *pharyngotome* (a knife for incision throat (pharyngeal) abscesses), *das Pharyngoskop* – *pharyngoscope* (a tool for examination of the inside part of the pharynx). The root of these terms verbalizes the organ with which medical procedure will be performed; the suffix, specifying the type of medical procedure, changes the semantics of the term. In this case, it is an example of the evolution of medical knowledge, cognitive processes in the mind of a medical specialist; moreover, it is an example of the interplay between everyday and scientific knowledge in the nomination of surgical instruments.

However, the main feature of the terminological field “surgical instruments” is a great number of the national terms (45.1% of the studied lexical units are the national terms): *der Acus* – *die Kanüle* – *die Nadel* (*surgical needle*), *das Enterotom* – *die Darmschere* (*intestinal scissors*). This is due to the fact that the Germans are extremely careful with their language and seek to use and increase their national lexis.

IV. CONCLUSION

The environment in which a person lives has an influence on him; it forms his thinking, worldview. The analysis of the terms gives the possibility to understand and recreate the evolution of the specialist’s thinking, that is possible because the term is a verbalized result of human thought that passes information “through the unity of its form and content” [16].

The main ways of formation of terms of the terminological field “surgical instruments” in the German language are:

- Complex terms (50.8%), terminological word-combinations (34.4%), derived terms (10.5%) have been identified in the studied terminological field;
- The frequency of metaphor-terms is 8.5%;
- Semantic way. There are synonyms (13.7%) and eponyms (12.3%) in the terminological field “surgical instruments” of the German language.

It was found that the main features of the terminological field “surgical instruments” in the German language determined by professional specificity are:

- Greek, Latin, European terms (46%), as well as Greek and Latin terminoelements form the basis of the analysed terminological field;
- There is a tendency to the usage of national terms (45%);
- The frequency of the terminological two-word-combinations (57.8%) and complex noun-terms with two terms in their structure (67.4%). The frequency of these terms is associated with the fact of speech economy;
- The use of eponyms is explained not only by the desire to perpetuate the name of scientists who invented or modified the instrument, but also by the nominative crisis during the description of the complex construction of the surgical instrument.
- Functioning of 4 thematic groups of metaphor-terms (artifact, zoomorphic, floristic, anthropomorphic metaphors).

The results of the study confirm that the development of the medical field leads to the evolution of scientific knowledge. As a result we see not only an increase in the number of terms in the terminological field but the complication of their structure.

REFERENCES

- [1] E.S. Kubryakova, “In search of the essence of language: cognitive research,” M: Sign, 2012. (in Russian)
- [2] E.V. Bekisheva, “Forms of language presentation of gnoseological categories in clinical terminology. Abstract of thesis of doctor of philology,” Moscow, 2007. (in Russian)
- [3] E.I. Golovanova, “Cognitive terminology: problems, tools, directions and prospects for development,” in Bulletin of Chelyabinsk State University, Philology Sciences, Study of Art, issue 82, no. 24 (315), pp. 13-18, 2013. (in Russian)

- [4] V.M. Leichik, "Terminology: subject, methods, structure," 3rd ed., M: Book House "LIBROKOM", Publishing House LCI, 2007. (in Russian)
- [5] S.I. Madzhaeva, "Term as a cognitive unit of scientific text," in Terms in the communicative space: materials of the scientific-practical conference with international participation "Modern problems of the ecology of language" (February 10, 2017), S.I. Madzhaeva, Astrakhan: Publishing House of Astrakhan State Medical University, pp. 237-241, 2017. (in Russian)
- [6] V.F. Novodranova, "Terminology and knowledge," materials of the 2nd International Symposium, Moscow, pp. 24-30, 2010. (in Russian)
- [7] L.A. Kiseleva, "Dynamic phenomena of medical terms," in Ecology of language: a collection of scientific papers, Penza: PGU Publishing House, issue IX, E.N. Serdobintseva, 2016. (in Russian)
- [8] S. Madzhaeva, and T. Lukyanova, "Terminological Field "Surgical Instruments" of German Language as Result of Cognitive Activity of Specialist," the International Scientific and Practical Conference "Current Issues of Linguistics and Didactics: The Interdisciplinary Approach in Humanities and Social Sciences" (CILDIAH-2018), SHS Web of conference, vol. 50, 2018. URL: <https://www.shs-conferences.org/articles/shsconf/abs/2018/11/contents/contents.html> DOI: <https://doi.org/10.1051/shsconf/20185001099> / (date of access: 25.03.2019).
- [9] Duden, "Defining dictionary", 3rd ed., Mannheim: Duden Press, vol. 10, 2002.
- [10] V.V. Lazarev, "To the theory of an everyday/cognitive cognition (From Copernicus to Ptolemy)", in Bulletin of the Pyatigorsk State Linguistic University, Pyatigorsk, Issue 2, pp. 28, 1999. (in Russian)
- [11] B.V. Petrovsky, "Encyclopedic dictionary of medical terms," M: Soviet Encyclopedia, vol. 3, 1984. (in Russian)
- [12] B.V. Petrovsky, "Encyclopedic dictionary of medical terms," M: Soviet Encyclopedia, vol. 2, 1983. (in Russian)
- [13] E.A. Nikulina, "About the metaphoric nature of some English terms of emergency medicine", in Terms in the communicative space: materials of the scientific-practical conference with international participation «Discoursology, terminology, language ecology in modern linguistics», S.I. Madzhaeva, Astrakhan: Publishing House of Astrakhan State Medical University, pp. 259-264, 2018. (in Russian)
- [14] A. Richards, "Philosophy of rhetoric", in Theory of metaphor: a collection of scientific papers, N.D. Arutiunova and MA Zhurinsky, M: Progress, pp. 44-68, 1990. (in Russian)
- [15] A.O. Sinitina, "Nomination principles of phytonyms of Polygonum genus" in Terms in the communicative space: materials of the scientific-practical conference with international participation «Discoursology, terminology, language ecology in modern linguistics», S.I. Madzhaeva, Astrakhan: Publishing House of Astrakhan State Medical University, pp. 270-276, 2018. (in Russian)
- [16] T.V. Drozdova, "Problems of understanding of the scientific text", Astrakhan: ASTU, 2003. (in Russian)