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TERMINOLOGICAL CONCEPTUALIZATION IN HEALTHCARE PROFESSIONAL COMMUNICATION

The article considers healthcare terminology in the cognitive aspect of professional knowledge cognition and conceptualization by an expert. We apply the notion of frame semantics as the linguistics method introduced by Charles Fillmore as the model of professional cognition in the process of professional communication. The aim of the research is to illustrate cognition in science from the point of conceptualization of professional terminology and health care terminology in particular. For the study of healthcare texts and instructions we used the methods of conceptual analysis in combination with the practice of frame analysis, which consists in modeling the concept by combining different types of basic frames: comparative, subject, action, possessive, taxonomic. The frame that marks the conceptual structure of a healthcare terminology is also the issue of our analysis. Healthcare terminology is considered as a macro-term system, which splits into subsystems, for example: anatomical and histological nomenclature, a complex of pathological-anatomical, pathological-physiological and clinical terminology, pharmaceutical terminology, terminology in the field of reproductive medicine and so on. Following these approaches, the study of healthcare terms takes into account the frame semantics and its role in cognition and afterwards the nomination of professional knowledge in health care. Since concept represents the basic units of processing, storage and transfer of knowledge, one of the main properties of the frame is the categorical nature of the knowledge organization, i. e., formation in the concept a phenomenon, an object, symptoms of a particular diseases, and modeling its relationship with other units of professional knowledge. The method of frame analysis was also used to study the texts of healthcare, which consists in modeling the concept by combining different types of basic frames: subject, action, possessive, taxonomic, and comparative.

Keywords: conceptualization; cognitive term formation; frame semantics; professional communication; methods of nomination.

1. INTRODUCTION

Relevance of the study. Since the anthropocentric orientation of cognitive terminology takes into account not only the object of knowledge (the language of health care) but also the subject of knowledge (specialist, patient), the article aims to analyze the terminology of the professional language of healthcare in terms of cognitive representation of professional knowledge structure, i.e., the ways of interference of common and professional thinking for standardization of terminological base of health care.

Scientists who study the professional terminology argue that frame analysis requires a concept developing issue because one of the main stages of terminology formation is identifying conceptual features in the motivational potential of the term and hence to systematize basic concepts of professional knowledge by means of frame structure. The aim of the study is to illustrate cognition in science from the point of conceptualization of professional terminology and health care terminology in particular.

4. METHODS

For the study of healthcare texts and instructions we used the methods of conceptual analysis in combination with the practice of frame analysis, which consists in modeling the concept by combining different types of basic frames: comparative, subject, action, possessive, taxonomic. Since the term is the result of human cognitive activity, the terminological nomination is a way of conceptualizing professional information, so the term is not the result of random nomination. Its basis lies in the concept of everyday language, and the nature of the possible nomination determines the system-forming function of a particular terminological unit.

3. RESULTS AND DISCUSSION

Healthcare terminology is considered as a macro-term system, which splits into subsystems, for example: anatomical and histological nomenclature, a complex of pathological-anatomical, pathological-physiological and clinical terminology, pharmaceutical terminology, terminology in the field of reproductive medicine and so on. Cognitive linguistics has replaced structuralism (system-structural paradigm), which interprets language as an organized system in which each category has its place in this system. This approach had clear boundaries between linguistic synchrony and diachrony, language and speech, sound and phoneme, morph and morpheme, word and lexical item, connotation and meaning. Cognitive linguistics considers language not as a system in itself but in connection with a human being without whom the emergence and functioning of this system would be impossible (Minsky, 1974, p. 5).

Thus, cognitive linguistics (English cognition – knowledge, cognition) – considers the functioning of language as a kind of cognitive activity and, through linguistic phenomena, explores the cognitive mechanisms and structures of human consciousness (Minsky, 1974, p. 10). We will illustrate the verbalization of mental activity in the nomination of professional knowledge. Zhabotinskaya (2004) emphasizes that the advantage of cognitive linguistics and cognitive approach to language is that they open broad prospects for seeing language in all its various connections with human being, with their intellect and mind, with all their thoughts and cognitive processes (p. 7).

Within the framework of the cognitive approach, units and forms of professional knowledge receive a procedural interpretation because the results of cognitive and professional activity are declared to be genuine knowledge. Therefore, the doctor should focus on how the patient conceptualizes the world around him, creating a particular concept and system. Thus, the process of transmitting information from the patient is specific. A patient expresses the main idea in a statement, which verbally conveys to the doctor's interpretation of his condition. The doctor's task is to transform the patient's verbal state into symptoms, which are then translated into scientific language for the possibility of treating the patient (Bekisheva, 2013).

In order to convey meaning, language as a sign system used for professional communication categorizes and classifies narrow concepts based on the most general concepts, and the original semantic dominants are terminologized. Knowledge of specific vocabulary helps the patient feel on a par with the doctor, which helps in the fight against the disease. For the doctor, the patient's words are a way of conceptualization information, and the patient himself creates a cognitive model of communication for the doctor because he knows more about his illness at the beginning of communication with the doctor. The doctor, interpreting the patient's statements in specific vocabulary, argues the patient's condition and his diagnosis, creates a conceptual picture using special medical lexical units – terms (Bekisheva, 2013, p. 30).

Bekisheva (2013), who studied medical terminology in the cognitive aspect, defines the language of medicine as a means of categorizing medical professional communication as a verbalized method of professional thinking (p. 262). The central concept of cognitive linguistics and, at the same time, a form of representation of knowledge is a concept – a phenomenon of a mental nature. Scientists consider the concept as ideal abstract units of meaning, which operate on human being in the process of thinking, which reflect the content of his/her experience and knowledge, the content of the results of all human activities, and processes of cognition of the world in the form of specific units. However, it includes information about what the individual knows, thinks, cogitates, and predicts for a particular fragment (Minsky, 1974, p. 90).

Linguists who support the second approach believe that the semantics of the language sign form the concept itself (Sadovnikova, 2016, p. 73). The concept is a product of human thought and is an ideal phenomenon, inherent in human consciousness in general and not just language. The concept is a construct. It is not restored but reconstructed through its linguistic expression and extralinguistic knowledge (Selivanova, 2006, p. 20).

Scientists, studying the structure of the concept, identify the following approaches:

- 1) identification of three layers of the concept: conceptual, perceptual and actional (Minsky, 1974, p. 55);
- 2) concept – a structure that has a core (vocabulary meaning of the word) and periphery (associations produced by the word);
- 3) the structure of the concept is described by: image-bearing, information content, interpretive field (Zhabotinskaya, 2004);
- 4) concept – structured in a frame knowledge that reflects the object's semantic features.

Taking into account different definitions of the concept, Minsky (1974) offers the following invariant features: 1) concept – the minimum unit of human experience in its ideal representation verbalized by word; 2) these are the basic units of processing, storage and transfer of knowledge; 3) the concept has a moving framework and specific functions; 4) the concept is social, its associative field determines its pragmatics (p. 22).

Knowledge and experience of professional communication focus on the conceptual component of the terminological concept naming, and also encode the experience gained in professional activity. Thus, the focus of our scientific research is the terminology of professional knowledge using frame semantics because the conceptual component of the concept plays the most crucial role for the terminologist (Sadovnikova, 2016, p. 55). Scientists consider the systematization of terminological knowledge of medicine within the cognitive paradigm by using a frame approach. They argue that the cognitive approach to study the term in medical discourse revealed the basic structural unit of information – frame, which reflects a particular model of reality and case (Sadovnikova, 2016, p. 48).

Frame marks the hierarchical structure of a particular term field, acting as a conceptual onomasiological category, and its nature allows us to explain the properties of professional communication. The frame is a two-level model filled with a vertex (theme) and grooves (terminals). The frames correlated with each other form a framing scheme. In the framing scheme, Zhabotynskaya (2004) describes five basic frames: subject frame, taxonomic frame, possessive frame, action frame, and comparative frame.

Graphically, the frame presents a grid, which consists of nodes and connections between them. Each node carries a specific concept, which may or may not be explicitly specified. The unspecified concept can be defined as coordinating this frame with the situation, which takes place in the surrounding world. Unspecified nodes are called terminals that form the lower levels of the graphical structure. In turn, at the upper levels are concepts that are always appropriate to the situation presented by this frame. The set of explicitly given nodes-concepts forms the basis for understanding any specific situation. Such understanding reflects the specification of terminals and the coordination of possible for each concept a particular, actual situation in the outside world (Zhabotinskaya, 2004).

Given the different definitions of the term “frame”, the following definition is relevant for

our work: frame – a typical structure designed to organize and name professional information. The frame represents the compressed information expressed by language signs, which provides the recipient with the minimum knowledge (Zhabotinskaya, 2004).

Since the restriction feature unites the term and the frame, it confirms the frame nature of the term, as noted above. A distinctive feature of a term is a definition, which forms a particular scheme, i.e., the frame nature of the term rests in its definition. Schemes-definitions consolidate with the help of various connections and relations. The following examples of several definitions will allow us to trace the frame character of the term:

Definition 1: Coronaviruses are a large family of viruses that can infect both animals and humans, first identified in the mid-1960s. They are a respiratory virus named for the crown-like spikes on their surface (Centers for Control and Disease Prevention).

Definition 2: Coronaviruses are a large family of viruses that usually cause mild to moderate upper-respiratory tract illnesses, like the common cold. However, three new coronaviruses have emerged from animal reservoirs over the past two decades to cause serious and widespread illness and death (World Health Organization, 2020).

The definition is a stereotypical situation recorded in the human brain, inherent in a particular field of knowledge: virusology, infectious diseases, pandemic.

The node of the upper level of these definitions is the concepts that define the general meaning of the disease: *COVID pandemic, infection, virus*.

These generic concepts of the upper level call the situation and define the task for the nodes of the lower level, i.e., species characteristics. Lower-level nodes are terminals that fill the definition with specific data: *results in discharge and soreness, caused by an imbalance in the types of bacteria in the body; caused by excessive growth of bacteria; caused by the virus Corona simplex, causes cold sores; virus (HSV)*.

In cognitive linguistics, attention is focused on consciousness, the structure of knowledge in the human brain. Therefore, one of the main properties of the frame is the categorical nature of the organization of knowledge, i.e., formation of the concept with phenomenon, object, symptoms of a particular illnesses, and its relationship with other units of knowledge in the field of healthcare.

Thus, the method of frame analysis was also used to study the texts of medical instructions, which consists in modeling the concept by combining different types of basic frames: subject, action, possessive, taxonomic, and comparative (Zhabotinskaya, 2004).

The subject frame in the instructions for drugs indicates the relationship [N :: L], where “N” means “something” (i.e., concept, phenomenon, symptom), and “L” – the location of “N”, in turn “::” is deciphered as is/exists/belongs. Let us analyze this type of frame based on pneumonic inflammation - inflammation of the lungs. The value of “N” in the study is inflammation, and the value of “L” – lung, so we can determine the following relationship [“inflammation” :: “lungs”] because “inflammation” occurs in a specific place – the “lungs”, we can talk about the localization of inflammation. This approach determines the separation of the next slot of the subject frame [object / disease / phenomenon / symptom – body part / organ], for example: tubal pregnancy – tubal pregnancy; blood poisoning – infection of the blood, brain tissue – coronary artery disease.

The researched texts also reveal terms that refer to **the possessive frame**. Possessive relations combine the owner (possessor) and the possessive (possessed), where the owner acts as a reference point and belonging – the target concept set relative to the reference point. Thus, the possessive frame determines the definition of such a relationship [Pr :: Pd], where “Pr” denotes the owner (something), and “Pd” acts as a property (i.e., means what the owner owns or has), “::” this relationship has received practical confirmation based on one of the selected terms: Wagner syndrome – Wagner’s syndrome, where the owner (Pr) is Wagner, and in the role of belonging (Pd) – syndrome, so we can define the following possessive slot [Wagner :: syndrome], i.e., the syndrome is the “property” of the scientist because this particular scientist discovered this syndrome. Examples of the possessive frame in our study were also:

Rett syndrome, Klinefelter syndrome, overgrowth syndrome – a syndrome proliferation, lentigo maligna melanoma – spot malignant melanoma, and others.

The possessive frame has a somewhat varied form of relations in syntactic structures with the preposition of. This frame structure coexists with the syntactic structure that includes the verb have. In this structure, the logical subject is the owner (possessor), and the sign of the subject is the possessive (possessed), respectively. We get a structure that schematically looks like [Pr has / of P-d], which in the texts will have the following form [N 1 + of + N 2], where the belonging (N 2) is more accentuated than the owner (N 1), for example, symptoms of peripheral neuropathy. However, the owner (N 1) plays a key role, inherent in the more important member of the couple. Thus, we can say that the owner (N 1) can exist separately from the belonging.

The relationship between the members of the possessive frame (owner and owner) can be divided into the following subframes, in which the owner may have different limits of influence:

1) [core :: part] - in this case, the belonging-part is within the influence of the owner-core (Fig. 1), for example, risk of vision loss.

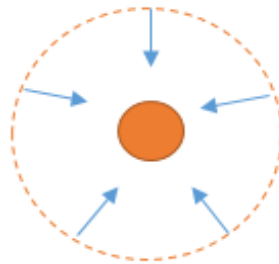


Fig.1. Possessive relationship “core :: part”

2) [boxing :: content] – belonging (content) can be both within and outside the owner (boxing), i.e., the content can be separated (removed) from the box (Fig. 2): organs of a stomach, additional components of anti-HIV drugs, symptoms of vision loss.



Fig.2. Possessive relationship “boxing :: content”

3) [owner :: belonging] – the combination of objects takes place within the external framework of the owner, i.e., within the surrounding space where the property is located (Fig. 3), for example, clinical studies of adults, the stopper of the tube.



Fig.3. Possessive relationship “owner :: belonging”

Another type of frame is action, characterized by the fact that several participated objects in the event are endowed with argumentative roles. In the specified frame, the following slots are characteristic of the studied texts:

1) [A :: R], where “A” acts as an agent (i.e., the subject of action), and “R” is the result (which forms the agent), “::” denotes the action/influence of “A” on “R”. For example, Sabril increases the risk of suicidal thoughts, agent “A” is Sabril, and the role of “R” in this example is increasing. In this example, the subject of the action is Fluoxetine, which is used for treatment, i.e., in the role of “P” is treats.

2) [A:: P], where “A” is an agent (subject of action), and “P” is the purpose (with which the agent acts), “::” denotes the action/influence of “A” on “R”. For example, Fluoxetin treats depression, panic attacks, obsessive-compulsive disorder. Examples such as antiepileptic drugs, antifungal drugs are also part of the action frame, in which drugs are “A”, which acts to prevent epilepsy (antiepileptic), and to treat the fungus (antifungal), which act as “P”.

It is significant to notify that **taxonomic and comparative** frames are not found in the healthcare language (in the studied texts) (the latter arises based on taxonomic frame). It follows from the taxonomic frame nature, which has such relations that are not inherent in the professional language of medicine: 1) [A :: N (species)] – the agent is an individual, and N (species) means the species that is inherent in the agent. As already mentioned, the comparative frame forms are based on taxonomic and represent the subframes of identity, similarity, and similarity: “as if, as though”, which is not typical of the medical field, especially of instructions for medicines.

4. CONCLUSIONS AND SCOPE FOR FURTHER RESEARCH

Conceptual analysis enabled to form the concepts used in healthcare texts. The separation of the basic frames of concepts will make it possible to determine the most appropriate features of the object or phenomenon. As such, the analysis will help to identify the specifics of medical terminology. Thus, from the point of view of cognitive linguistics, an essential task of the study of medical terminology is the analysis of relevant concepts and their frame organization, with which it is possible to form terminology of the professional communication.

The scope for further research lies in the study of the main ways of translating English-language medical terminology into Ukrainian.

REFERENCES

- Bekisheva, E. V. (2013). Nivyye napravleniia v issledovanii meditsynskoi terminologii [New directions in the study of medical terminology]. *Bulletin of the Nizhny Novgorod University named after N. I. Lobachevskiy*, 4(2), 260–264. [in Russian]
- Centers for Control and Disease Prevention. (n. d.). *Human Coronavirus Types*. <https://www.cdc.gov/coronavirus/types.html>
- Minsky, M. (1974). *A framework for representing knowledge*. Cambridge.
- Sadovnikova, G. V. (2016). *Kognitivno-informatsiyna pryroda terminiv avtomobilebudivnytstva v anhliyskiy, nimetskiy ta ukrayinskiy movakh. DySSERTatsiya na zdobuttya naukovoho stupenya kandydata filolohichnykh nauk* [Cognitive and informational nature of the terms of the automotive industry in English, German and Ukrainian languages. Dissertation for the degree of Candidate of Philological Sciences]. Kyiv. [in Ukrainian]
- Selivanova, O. O. (2006). *Suchasna linhvistyka: terminolohichna entsyklopediia* [Modern linguistics: terminological encyclopedia]. Poltava-Kyiv. [in Ukrainian]
- World Health Organization. (2020). *Coronavirus disease (COVID-19)*. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
- Zhabotinskaya, S. A. (2004). Kontseptualnyi analiz yazyka: freymovyye seti [Conceptual analysis of the language: frame networks]. *Mova. Naukovo-teoretichnyy chasopis z movoznavstva – Language. Scientific-theoretical journal of linguistics*, 9, 81–92. [in Russian]

Ірина Волощук, Олена Муханова. Термінологічна концептуалізація у фаховій комунікації охорони здоров'я. У статті розглянуто медичну термінологію в когнітивному аспекті пізнання та концептуалізації фахових знань експертами цієї галузі. Мета дослідження – проілюструвати пізнання в науці з точки зору концептуалізації професійної термінології та термінології охорони здоров'я зокрема. Термінологія галузі охорони здоров'я розглядається як макротермінологічна система, яка розбивається на підсистеми (анатомо-гістологічна номенклатура, комплекс патолого-анатомічної, патолого-фізіологічної та клінічної термінології, фармацевтична термінологія, термінологія у галузі репродуктивної медицини тощо). Оскільки антропоцентрична спрямованість когнітивного термінотворення бере до уваги не лише об'єкт пізнання (мову медицини), але й

суб'єкт пізнання (спеціаліста, пацієнта) метою статті є проаналізувати термінологію фахової мови медицини з погляду когнітивної лінгвістики, що дозволяє виявити способи лінгвістичної репрезентації структур фахового знання, тобто вираження шляхів взаємодії звичайного та фахового мислення, задля унормування термінологічної бази медицини. Мова як знакова система, яка використовується для фахової комунікації, категоризує та класифікує вузькі поняття на основі найбільш загальних понять, і вихідні смислові домінанти термінологізуються. В статті зазначено, що саме фрейм маркує ієрархічну структуру конкретного медичного термінополя, а його структура дозволяє термінологізувати фахові медичні знання. Відповідно до цих принципів медичні терміни досліджують із урахуванням фреймової семантики та її ролі у фаховому пізнанні й фаховій комунікації. Структура фрейму розглядається як дворівневу модель із вершиною (теми) і пазами (терміналами), що заповнюються. Фрейми, співвіднесені між собою, формують фреймову схему. У фреймовій схемі за Жаботинською окреслено п'ять базових фреймів: предметний фрейм, таксономічний фрейм, посесивний фрейм, акціональний фрейм і компаративний фрейм. Виокремлення базових фреймів концептів дозволяє визначити характерні ознаки тих чи інших предметів або явищ, визначити типи зв'язків між ними.

Ключові слова: фреймова семантика; фахова комунікація; когнітивне термінотворення; способи номінації.

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