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МОРФОЛОГИЧЕСКИЕ И ЛЕКСИЧЕСКИЕ ОСОБЕННОСТИ ПРОФЕССИОНАЛЬНЫХ МЕДИЦИНСКИХ НОВОСТНЫХ СТАТЕЙ

© *Хуссейн Мохаммед Брисам Аль-Лами*

Южно-технический университет Инженерно-технический колледж в Миссане, г. Миссан, Ирак; Казанский федеральный университет, г. Казань, Россия

hussein.m.brisam@stu.edu.iq

Аннотация. Анализируются морфологические и лексические особенности профессиональных медицинских новостных статей. Показано, что существительное является наиболее употребляемой частью речи в анализируемых текстах, поскольку новостные медицинские статьи сохраняют научный стиль изложения, для которого характерна номинализация. Частотность глаголов указывает на то, что в исследуемом корпусе наиболее типичными являются сложные предложения с придаточными, а их семантическая особенность позволяет авторам выстраивать логические связи внутри текста. Сравнительный анализ употребления прилагательных и наречий свидетельствует о более равномерном распределении первых, тогда как наречия отличаются большей способностью к сочетаемости с различными значимыми членами предложения.

Ключевые слова: сложность текста, профессиональный дискурс, медицинские статьи, части речи, морфологические и лексические особенности.

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PHILOLOGY

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Original article

Morphological and lexical peculiarities of professional medical news articles

© *Hussein Mohammed Breesam Al-Lami*

Sothorn Technical University, Engineering Technical College of Missan, Missan, Iraq; Kazan Federal University; Kazan, Russian Federation

hussein.m.brisam@stu.edu.iq

Abstract. The morphological and lexical features of professional medical news articles are analyzed. It is shown that the noun is the most commonly used part of speech in the analyzed texts, since medical news articles retain a scientific style of presentation, which is characterized by nominalization. The frequency of verbs indicates that complex sentences with subordinate clauses are the most typical in the studied corpus, and their semantic feature allows the authors to build logical connections within the text. A comparative analysis of the use of adjectives and adverbs indicates a more even distribution of the former, while adverbs are characterized by a greater ability to combine with various significant members of the sentence.

Key words: text complexity, professional discourse, medical articles, parts of speech, morphological and lexical peculiarities.

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Introduction

Nowadays a lot of studies conducted by various scholars are devoted to the issue of professional medical discourse. The relevance of this research is explained by the need to organize effective communication within the professional field between scholars who are conducting different research and doctors who directly cure patients. Nowadays there are a great number of

various ways of arranging dialogue between representatives of different medical specialists, therefore it is essential to analyse numerous features of medical texts that can contribute to better understanding and cooperation. Moreover, health has always been one of the greatest values for any person that makes the issues related to medicine one of the most important. Recently a lot of research has been arranged by various medical institutions and published in academic journals. Doctors whose main job is connected with treating patients generally don't have enough time to read all scientific articles and therefore special medical sites were created where authors present their key findings and results in the form of professional medical news articles. So, any doctor can briefly look through the news and find what is exactly related to his or her specialty and thus turn to the primary source for more profound reading. Therefore, it is vital to study the key features of professional medical news articles in order to highlight the main points that can contribute to a better understanding of the information.

The aim of the articles is to study the morphological and lexical peculiarities of professional medical news articles.

Theoretical foundations for the investigation of professional discourse can be found in numerous works. M. Peluso pointed that it is specific professional communication based on participants' belonging to a certain field of professional activity [5]. S. Irimiea underlined that professional discourse is not only characterized by communication between representatives of a particular field of knowledge, but it also aims at finding solutions to professionally related problems [3]. Russian scholars view professional discourse as a type of institutional or socio-oriented discourse. The idea of institutional discourse was introduced by Professor V.I. Karasik who viewed it as a conventional, culturally conditioned, normative speech interaction of people who take on certain social roles within the framework of some institutions, specially created to satisfy certain needs of society [14]. Professional discourse represents the written or oral type of professional communication that can be characterized by a certain goal, common knowledge, values, and stereotypical situations of communication. The main distinction between professional communication and any other type of communication is that it is included in the context of professional activity [13].

Medical discourse represents one of the main types of professional discourse. Early medical traditions were founded on a scholastic approach according to which doctor's ideas were taken for granted as absolute truth and were not subjected to any discussions. Medicine that we know nowadays, started its development in the 17th century when old scholastic thinking was replaced by new ideas based on reliable testable findings and new methodology grounded on observations and investigations in the field of physical phenomena [7]. At the same time, a great change in medical text formation led to certain transformations of medical style in writing. Earlier most printed materials represented simple translations of treatises and general guides with accounts of typical cases. In the 18th century, new types of medical publications started to be introduced: anatomical observations, book reviews, journal articles, and experimental essays [2].

In our days professional medical news articles have received great popularity among doctors. They are related to the field of professional discourse as they are published on specialized medical sites and reveal key academic findings. These texts can be characterized by their hybrid nature. Specific attention to hybridity in various humanitarian sciences has become especially relevant due to the digitalization of our society, which has significantly simplified the interaction of different languages and cultures. The study of hybridity in linguistics is conducted mainly on the material of institutional discourse, which is seen as subject of hybridization in response to the demands of a globalized society [15]. The term hybrid discourse we understand as a combination of characteristics of two or more different types of discourse, that generates a completely new format of discourse, in which the features inherent in its components are modified, formalized, and consolidated. At the same time, these features can be identified both on the level of text and structure; and the level of its linguistic design [9]. In

our case on the structural level professional medical news articles are related to media texts while their linguistics features are close to scientific style.

As long as texts under consideration aim at simplifying information presented in academic articles it becomes vital to understand how these articles are arranged from the point of their complexity organization. M. Solnyshkina et al. view text complexity as a complex of factors affecting and contributing to text comprehension, in other words, they are a set of features that make understanding of a text challenging for a group of people or a particular person [1]. Complexity can be studied quantitatively, qualitatively and on the level of reader's comprehension. The linguistic components of the text are objective values, calculated independently of the abilities, competencies and psychotype of readers [10]. Therefore, in our research we are to concentrate attention on some objective aspects of text complexity on morphological and lexical levels that can be calculated and interpreted by means of software tools.

Methods and Material

The material for the analysis was collected from various specialized Russian medical sites. The compiled corpus consisted of 81.463 tokens and included news articles on different topics: cardiology, dentistry, gastroenterology, neuroscience, oncology, pediatrics, immunology, genetics, surgery, and others. The main methods were discourse analysis, methods of corpus linguistics, and complexity analysis. To achieve accurate data the following software tools were applied: LanksBox [4], RuLingva [6].

Results and discussion

The overall complexity of the Russian professional medical text was estimated through the Flesh-Kincaid Grade Level Readability Formula [12] and equals 10,44. It indicates that professional medical news articles are rather difficult for comprehension and require a certain level of background knowledge. In the given article we are to view the quantitative characteristics of the analysed corpus that influence the overall text understanding.

The basic statistical indicators are: 1) Average number of characters per word: 6.67 characters; 2) Average number of syllables per word: 2.79; 3) Average number of words per sentence: 17.41; 4) Average number of nouns per sentence: 7.56; 5) Average number of verbs per sentence: 1.93; 6) Average number of adjectives per sentence: 2.31; 7) Average number of adverbs per sentence: 0.41.

On the word level Russian texts are characterized by a quite difficult morphological organization as the general number of word length and syllables per word exceed the length of a short word (5 characters, 2 syllables). This overlap can be explained by the fact that Russian is a highly inflectional language where various morphemes are characterized by great functionality. The most frequent words in the collected corpus can vividly illustrate the tendency to the usage of long inflectional words: *пациентов* (frequency 563), *исследование* (frequency 361), *развития* (frequency 341), *ученые* (frequency 314). Moreover, the general index of word length rises due to the usage of various long terminological units that are specific to medical discourse: *гипергликемия*, *панкреонекроз*, *атеросклероз*, *тестостерон*.

Syntactic simplicity of the Russian sentence corresponds to 48%. This level of simplicity is reached firstly by a medium number of words per sentence and secondly by the small number of verbal constructions that are typical for long complex and compound sentences with several clauses.

As long as Russian professional medical texts can be described through their nominal features let's view in detail the peculiarities of noun case usage: 1) the usage of nominative case per sentence: 1.31; 2) the usage of genitive case per sentence: 3.88; 3) the usage of dative case per sentence: 0.21; 4) the usage of accusative case per sentence: 0.98; 5) the usage of instrumental case per sentence: 0.55; 6) the usage of prepositional case per sentence: 0.6.

As we can observe, in the analysed medical articles, the majority of nouns are used in the genitive case, then comes the nominative case that is followed by the accusative one. According to some research scientific articles are generally characterized by 43%–53% of nouns in the genitive case; 16%–21% of the nominative case and 9%–17% of the accusative case [8]. As professional

medical texts under consideration are based on academic articles, the same percentage distribution of noun cases can be applied to them as they combine elements of scientific style with the generic framework of media text.

Another important aspect related to our analysis is connected with a relatively high number of nouns per sentence. This tendency can also be explained by the fact that professional medical texts are related to original medical articles published in various journals. Therefore, they pervert the scientific style of narration, the main feature of which is a high level of nominalization. In the Russian language nominalization is achieved by means of various suffixes: suffix *ние* 76%; suffix *ство* 11%; suffix *ота* 8%; suffix *ция* 4%; suffix *изм* 3%.

In our case, the most productive among them is *-ние*. This suffix is used in numerous frequent nouns that constitute the foundation for the analysed discourse: *исследование* (563), *развитие* (380), *заболевание* (341), *лечение* (195), *влияние* (135), *наблюдение* (114), *сравнение* (95), *снижение* (80), *участие* (72). They indicate the scientific foundation of the studied texts, their topic orientation as well as reveal the general aim of the articles.

Quantitative characteristics of the collected corpus indicate a low number of verbs per Russian sentence that are generally used in the following tenses: 1) average number of verbs in present tense per sentence: 0.36; 2) average number of verbs in past tense per sentence: 1.28; 3) average number of verbs in present tense per sentence: 0.01.

Distribution of verb tense illustrates that the analyzed corpus is mainly written in Past tense which seems logical because the key issue of professional medical news articles is to give a general overview of the conducted research and to highlight the essential findings:

The most frequent verbs in the compiled corpus can be semantically distributed into several groups:

- Semantic group of stating verbs: *может, было, был, была, могут, быть, можно*.
- Semantic group of research conducting: *составила, связано, приняли, принимали, снижают, составило, повышает, перенесли, диагностировали, повышался, следует, удалось, связаны*.
- Semantic group of analysis: *анализировали, проанализировали, изучили*.
- Semantic group of result evaluation: *оценивали, оценили*.
- Semantic group of highlighting results: *выявили, выявлено, оказался, оказалась, оказалось, оказались, показал, показало, выяснили, показали, считают, отметили, обнаружили*.
- Semantic group of result representation: *опубликованы, представлены*.

Repetitions and variations of verbs belonging to the same semantic groups allow to construct lexical cohesion within the studied texts and thus to ease the overall comprehension. Moreover, these verbs serve as a kind of signal word for the audience while skimming the text. They help a specialist to make a decision whether to study the given information in more detail and refer to the original academic article or just briefly look through the news article.

Another aspect of verb analysis is connected with the aspect. The distribution of active and passive verbs in Russian professional medical discourse is illustrated by the following proposition: average number of verbs in active voice per sentence 1.25; average number of verbs in passive voice per sentence 0.34.

Passive constructions are generally more difficult for overall understanding, as they arrange more complex relations between a noun and a verb. Their application is typical for the scientific style where the point is to concentrate attention on the analysis and findings.

Medical news published on official medical sites represents an example of hybrid discourse with the information presented in a scientific way and structured according to the rules of mass media. Therefore, we can find a lot of evidence of passive usage through the following verbs stating the process of analysis and highlighting the results: *опубликованы, анализировались, установлена, получены, использована, включены, представлены*.

Adjectives and adverbs are crucial elements of scientific writing as they aim to detail information and make it more precise. Although previous studies argued that the use of adjectives and adverbs cluttered writing and made academic texts less readable [9].

Analysis of adjectives indicates that though their average number per sentence is higher (2.31) than for verbs (1.93) their overall frequency in the investigated discourse is lower. It can be explained by the fact that most of the adjectives in the collected texts describe particular issues that are typical for unique research and therefore are of low occurrence: *безрецидивный, дифференциальной, перинатальная, гистологический, гепатобилиарные*.

As for the adverbs they are less frequent in a sentence (0.41) due to the fact that they are generally applied to characterize verbs that are of relatively low usage in comparison with nouns in professional medical news articles.

However, during the analysis, we noticed an interesting tendency. Though the average number of adverbs per sentence is quite low, the frequency of the first ten adverbs is higher than the first ten adjectives in the compiled corpus:

– adjectives: *средний* (100), *сердечно-сосудистых* (91), *высоким* (49), *старше* (48), *общей* (44), *когнитивных* (42), *медицинской /медицинского* (36), *низким* (34), *больше* (34), *повышенным* (33).

– adverbs: *выше* (152), *ниже* (106), *ранее* (53), *чаще* (48), *значительно* (47), *менее* (45), *наиболее* (44), *существенно* (43), *соответственно* (41), *необходимо* (31).

At the same time, data indicates that although initially adverbs have a higher level of usage, later their frequency reaches the point of adjectives and then decreases faster. While adjectives demonstrate smooth decline and are more equally distributed in the studied discourse.

Also, if we concentrate attention on the co-occurrence of the most frequent adjectives and adverbs within the span -5/ +5 and threshold 6, we can view that adverbs construct more collocations with various meaningful frequent nouns and verbs. Therefore, their combinability in the analysed texts is higher:

1) co-occurrence of the most frequent adjectives:

– *средний*: *возраст, составил, года, участников, лет, год, человек, наблюдения, составлял, пациентов, момент*.

– *сердечно-сосудистых*: *заболеваний, риск, серьезных, появления, развития, риска, событий мужчин, оказалась, пациентов*.

2) co-occurrence of the most frequent adverbs:

– *выше*: *риск, вероятность, деменции, был, была, значительно, заболеваний, уровень, оказалась, оказался, частота, раза, развития, пациентов, группе, контрольной, женщин, людей, участников*.

– *ниже*: *риск, значительно, оказалась, оказался, давления, был, была, рака, развития, вероятность, группе, получали, участников, пациентов*.

Conclusion

In conclusion, we can state that professional medical news articles can be characterized by a rather difficult level of complexity.

First of all, professional medical news articles have a high degree of noun usage that makes these texts sound scientific and profound. Nominalization is mainly achieved by means of the suffix – *(н/м)ие* and leads to the rise of a complex structure of the articles. Distribution of cases indicates that the majority of nouns are used in genitive, nominative, and accusative cases that is also considered to be the key feature of academic texts.

Secondly, the average number of verbs per sentence indicates that most of the sentences in professional medical news articles are complex or compound. As long as news articles are secondary sources of information and present the key findings of academic research most of the verbs used there are in past tense. Moreover, their semantic grouping helps to arrange lexical cohesion within the studied texts and thus to ease the overall comprehension.

Finally, a comparison between adjectives and adverbs shows that the first are more general in the complied corpus. Therefore, adjectives are more equally distributed within professional medical news articles. As for the adverbs, their initial frequency is higher than for adjectives, however, later their decline in usage is faster.

Further research in this area would let us compare the peculiarities of morphological and lexical complexity between professional medical news articles as a secondary source of information and academic articles published in official medical journals as a prime source.

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