

THE SEMIOTIC SYSTEM OF MEDICAL DISCOURSE IN ENGLISH AND UZBEK: A CONTRASTIVE ANALYSIS

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Abstract. The article examines the semiotic organization of medical discourse in English and Uzbek from a contrastive and interdisciplinary perspective. Medical discourse is conceptualized as a complex institutional communicative system in which verbal, visual, symbolic, cognitive, pragmatic and sociocultural codes interact to generate and transmit professional meanings. Particular attention is paid to Yuri Lotman's concept of semiosphere, Charles Sanders Pierce's classification of signs into icons, indexes and symbols as well as the concepts of interdiscursivity and intertextuality. The study demonstrates that medical discourse cannot be adequately interpreted solely through its linguistic and structural properties, since its meaning is determined by broader sociocultural, institutional, cognitive and pragmatic contexts. The analysis focuses on the terminological, institutional, popular-scientific, multimodal and dialogic dimensions of medical discourse in English and Uzbek. The findings indicate that English medical discourse is characterized by a highly institutionalized and globally standardized terminological system, extensive use of Latin and Greek-based terminology, multimodal coding, deontic constructions and metaphorical models facilitating scientific popularization. Uzbek medical discourse, by contrast, demonstrates a stronger integration of nationally adapted terminology, explanatory constructions, socially oriented pragmatic strategies, and culturally marked forms of doctor-patient interaction. The study further reveals that interdiscursivity functions as a mechanism through which specialized medical knowledge is transformed and adapted for different communicative audiences. This, medical discourse in both languages represents a dynamic, multimodal and culturally conditioned semiotic system, although the mechanisms of meaning construction and pragmatic realization display significant language-specific differences.

Keywords: medical discourse, semiotics, semiosphere, interdiscursivity, intertextuality, medical terminology, multimodality, Peircean semiotics, contrastive linguistics.

INGLIZ VA O'ZBEK TILLARIDA TIBBIY DISKURSNING SEMIOTIK TIZIMI: QIYOSIY TAHLIL

Annotatsiya. Maqolada ingliz va o'zbek tillaridagi tibbiy diskursning semiotik tashkil etilishi qiyosiy va fanlararo yondashuv asosida tadqiq etiladi. Tibbiy diskurs professional ma'nolarni shakllantirish va uzatishda verbal, vizual, ramziy, kognitiv, pragmatik hamda ijtimoiy-madaniy kodlar o'zaro ta'sirlashadigan murakkab institutsional kommunikativ tizim sifatida talqin qilinadi. Tadqiqotda Yuriy Lotmanning semiosfera konsepsiyasi, Charlz Sanders Pirsning belgilarni ikonalar, indekslar va ramzlarga ajratish tasnifi, shuningdek, interdiskursivlik va intertekstuallik tushunchalariga alohida e'tibor qaratiladi. Tadqiqot natijalari tibbiy diskursni faqat uning lingvistik va strukturaviy xususiyatlari asosida to'laqonli talqin qilish mumkin emasligini ko'rsatadi, chunki uning mazmuni kengroq ijtimoiy-madaniy, institutsional, kognitiv va pragmatik kontekstlar bilan belgilanadi. Tahlilda ingliz va o'zbek tillaridagi tibbiy diskursning terminologik, institutsional, ilmiy-ommabop, multimodal va dialogik jihatlarini yoritiladi. Natijalar ingliz tilidagi tibbiy diskurs yuqori darajada institutsionallashtirilgan va global miqyosda standartlashtirilgan terminologik tizim, lotin va yunon tillariga asoslangan terminlardan keng foydalanish, multimodal kodlash, deontik konstruksiyalar hamda ilmiy bilimlarni ommalashtirishga xizmat qiluvchi metaforik modellar bilan tavsiflanishini ko'rsatadi. O'zbek tilidagi tibbiy diskurs esa, aksincha, milliy jihatdan moslashtirilgan terminologiya, izohlovchi konstruksiyalar, ijtimoiy yo'naltirilgan pragmatik strategiyalar hamda shifokor va bemor o'rtasidagi muloqotning madaniy jihatdan belgilangan shakllari bilan ajralib turadi. Tadqiqot, shuningdek, interdiskursivlik ixtisoslashgan tibbiy bilimlarni turli kommunikativ auditoriyalar uchun o'zgartirish va moslashtirish mexanizmi sifatida namoyon bo'lishini ko'rsatadi. Shunday qilib, har ikkala tilda tibbiy diskurs dinamik, multimodal va madaniy jihatdan shartlangan semiotik tizimni tashkil etadi, biroq ma'no shakllanishi va uning pragmatik voqelanish mexanizmlarida tilga xos sezilarli farqlar

mavjud.

Kalit so'zlar: tibbiy diskurs, semiotika, semiosfera, interdiskursivlik, intertekstuallik, tibbiy terminologiya, multimodallik, Pirs semiotikasi, qiyosiy lingvistika.

СЕМИОТИЧЕСКАЯ СИСТЕМА МЕДИЦИНСКОГО ДИСКУРСА В АНГЛИЙСКОМ И УЗБЕКСКОМ ЯЗЫКАХ: СОПОСТАВИТЕЛЬНЫЙ АНАЛИЗ

Аннотация. В статье рассматривается семиотическая организация медицинского дискурса в английском и узбекском языках с позиций сопоставительного и междисциплинарного подходов. Медицинский дискурс рассматривается как сложная институциональная коммуникативная система, в которой взаимодействуют вербальные, визуальные, символические, когнитивные, прагматические и социокультурные коды, обеспечивающие формирование и передачу профессиональных смыслов. Особое внимание уделяется концепции семиосферы Юрия Лотмана, классификации знаков Чарльза Сандерса Пирса на иконы, индексы и символы, а также понятиям интердискурсивности и интертекстуальности. Исследование показывает, что медицинский дискурс не может быть адекватно интерпретирован исключительно посредством его языковых и структурных характеристик, поскольку его значение определяется более широкими социокультурными, институциональными, когнитивными и прагматическими контекстами. Анализ охватывает терминологическое, институциональное, научно-популярное, мультимодальное и диалогическое измерения медицинского дискурса в английском и узбекском языках. Результаты показывают, что английский медицинский дискурс характеризуется высоко институционализированной и глобально стандартизированной терминологической системой, широким использованием терминологии латинского и греческого происхождения, мультимодальным кодированием, деонтическими конструкциями и метафорическими моделями, способствующими популяризации научных знаний. Узбекский медицинский дискурс, напротив, демонстрирует более тесную интеграцию национально адаптированной терминологии, пояснительных конструкций, социально ориентированных прагматических стратегий и культурно маркированных форм взаимодействия между врачом и пациентом. Кроме того, исследование показывает, что интердискурсивность функционирует как механизм, посредством которого специализированные медицинские знания преобразуются и адаптируются для различных коммуникативных аудиторий. Таким образом, медицинский дискурс в обоих языках представляет собой динамичную, мультимодальную и культурно обусловленную семиотическую систему, хотя механизмы конструирования значения и его прагматической реализации демонстрируют существенные языково-специфические различия.

Ключевые слова: медицинский дискурс, семиотика, семиосфера, интердискурсивность, интертекстуальность, медицинская терминология, мультимодальность, семиотика Пирса, сопоставительная лингвистика.

Introduction. In contemporary linguistics, discourse is increasingly understood not merely as an extended sequence of linguistic units but as a complex communicative, cognitive, social, and cultural phenomenon. Discourse is produced within particular institutional and sociocultural environments and is shaped by the communicative intentions, social identities, knowledge structures, and pragmatic expectations of its participants. Medical discourse represents one of the most significant institutional forms of discourse because it is directly associated with human health, professional knowledge, clinical decision-making, and socially regulated practices.

Medical discourse encompasses a wide range of communicative genres, including clinical records, medical case reports, scientific articles, diagnostic descriptions, prescriptions, hospital documentation, health-related media texts, public health campaigns, and doctor-patient conversations. These genres differ in their communicative purposes and degree of specialization, but they share a common function: the production, organization, interpretation, and transmission of medical knowledge.

Literary review. The theoretical foundations of the present study are based on several interconnected approaches to language, discourse, semiotics, cognition, and culture. One of the fundamental theoretical perspectives is represented by Ferdinand de Saussure's theory of the linguistic sign. Saussure conceptualized the sign as a relationship between the signifier and the signified. Although his model primarily concerns the internal organization of linguistic signs, it provided the foundation for subsequent developments in semiotics and structural linguistics.

Charles Sanders Peirce subsequently developed a broader theory of signs and distinguished between icons, indexes, and symbols. An icon is related to its object through similarity; an index is connected with its object through a causal or contextual relationship; and a symbol acquires its meaning through convention. This classification is particularly useful for medical discourse because medical communication combines conventional terminology with visual and indexical signs. Yuri Lotman's theory of the semiosphere provides another important foundation for the present research. Lotman conceptualizes culture as a semiotic space in which different languages and sign systems interact. The concept of the boundary is particularly relevant to medical discourse because professional medical knowledge constantly crosses boundaries between specialist and non-specialist communication. Specialized terminology is translated, simplified, metaphorized, and reformulated when medical information is addressed to patients or the general public. Teun A. van Dijk's cognitive approach to discourse emphasizes the role of knowledge structures, mental models, context, and social cognition. Such an approach is applicable to medical communication because physicians and patients often possess different knowledge bases and interpret the same linguistic signs differently.

Theoretical and Methodological Framework. According to Lotman, the semiosphere is not a mechanical aggregate of

individual languages or sign systems but an integral cultural-semiotic space necessary for their existence, interaction, and functioning. It represents the environment within which semiosis, that is, the generation, interpretation, and transmission of meaning, takes place. Different languages, codes, and sign systems interact within this space, transform one another, and undergo functional development. The semiosphere is therefore dynamic rather than static: it is characterized by the continuous evolution, differentiation, expansion, and renewal of sign systems.

Given the centrality of verbal communication to discourse, discourse may be interpreted as a particular realization of the semiosphere based on natural language and incorporating a verbal sign system. In other words, discourse is a communicative-cognitive system structurally organized through language and functioning within a broader cultural-semiotic environment.

Lotman regards natural language as one of the principal determinants in the formation of the semiosphere because it constitutes one of the most highly developed, structurally organized, and universal coding systems. At the same time, this relationship is reciprocal: natural language cannot function fully outside the semiosphere, while the semiosphere itself cannot exist without natural language as one of its central organizing mechanisms. Thus, language and semiosphere may be regarded as mutually conditioned and systematically interdependent phenomena.

A particularly important category in the organization of the semiosphere is the concept of the boundary. The boundary functions as a mechanism that maintains the structural integrity of the semiosphere by regulating the relationship between internal and external semiotic spaces. It therefore performs not only a separating function but also a stabilizing and mediating function.

The boundary can also be interpreted as a conceptual line that differentiates the culturally legitimate, familiar, secure, and ordered space identified as "ours" from the unfamiliar, potentially dangerous, hostile, or disordered space conceptualized as "theirs." In this sense, the boundary functions as a symbolic-semiotic mechanism of identification and opposition.

At the same time, the boundary is inherently bidirectional. While one of its functions is to consolidate the internal space, another is to facilitate interaction with the external space. No semiosphere exists in complete isolation; rather, it comes into contact with other semiospheres possessing their own structures and internal organization. A different semiosphere may appear chaotic or unorganized from the perspective of one's own semiotic system, yet the contact zone between them becomes an area of intensive semiotic exchange. Such interaction may result in the formation of common communicative codes, or koine, as well as hybrid and creolized semiotic systems.

The boundary zone of the semiosphere is therefore characterized by a high degree of semiotic dynamism. External influences and new sign systems continuously enter the semiotic space, leading to the reconfiguration of cultural structures and the emergence of more complex forms of organization. The resulting semiotic formation may be understood as a product of synthesis based on mutual interaction and transformation.

Results. From a theoretical perspective, the interaction of discourses may be interpreted according to the model of contact and mutual transformation between semiospheres. The interaction of different discourse types may produce a qualitatively more complex and integrative communicative structure, which can provisionally be described as a "higher-order discourse." Such discourse incorporates elements of the initial discourse systems, transforms them, and reorganizes them within a new semantic and pragmatic configuration.

This type of interaction is appropriately described through the category of interdiscursivity. Interdiscursivity has become an increasingly significant theoretical concept not only in international discourse studies but also in contemporary linguistic research. It refers to the interaction and intersection of different discourse types, their integration at semantic, pragmatic, and cognitive levels, and the intersection of different spheres of human knowledge and social activity.

From this perspective, interdiscursivity can be understood as a theoretical category describing the relativization of boundaries between discourses, the mutual penetration of communicative domains, and the emergence of new hybrid meaning spaces. This approach makes a multilayered, polymodal, and integrative methodology essential for contemporary discourse analysis.

Patient presents with acute myocardial infarction. Elevated troponin levels observed.

In this example, the signs are primarily symbolic in Peirce's classification, since their meanings are established through a conventional scientific code. Their interpretation is also restricted to a professional context and presupposes membership in a specialized medical community.

Interdiscursive linguistic units, structural models, communicative relations, and strategies may simultaneously display invariant and transferable properties characteristic of several discourse systems. Such elements are not confined to a single discourse but move between communicative domains, linking their semantic and pragmatic resources. From the perspective of interdiscursivity, popular-scientific discourse can be interpreted as a derived or "higher-order" discourse. It emerges from the interaction between two principal types of discourse: scientific discourse and everyday discourse. The terminological precision and logical consistency of scientific discourse are combined with the comprehensibility, imagery, and audience orientation of popular discourse. As a result, a hybrid discourse emerges that seeks to balance scientific complexity with communicative accessibility.

The boundary category is therefore particularly significant because it simultaneously differentiates and connects discourses or semiospheres. It belongs to both adjacent cultural spaces and ensures their interaction. According to Lotman, the boundary functions as a mechanism that translates texts belonging to an alien semiotic system into the "language of one's own" semiotic system. It operates as a filtering and transformational membrane through which external

information enters the internal semiotic space. Foreign texts are adapted to the internal semiotic organization of the semiosphere, although their alterity is not necessarily completely eliminated. The boundary therefore performs not only a differentiating function but also functions of adaptation and transformation.

Within an interdiscursive environment, this mechanism can be observed in the transformation of specialized medical knowledge into forms accessible to non-specialist audiences. Such transformation does not necessarily produce entirely new scientific knowledge; rather, existing knowledge is reconstructed, resemanticized, and reorganized within a new communicative and structural configuration.

Consequently, interdiscursivity may be regarded as a source of internal discourse development. It facilitates the emergence of derivative discourse formations and new intradiscursive configurations. In this respect, popular-scientific medical discourse is fundamentally interdiscursive and simultaneously develops its own complex intradiscursive structure. The concept of translation has also historically been relevant to the characterization of the popular-scientific substyle. Popular-scientific discourse is generally regarded as one of the stylistic varieties of scientific discourse, distinguished from highly specialized scientific communication by its additional communicative function: the "translation" of specialized scientific information into a form accessible to non-specialist audiences. Thus, popular-scientific discourse can essentially be understood as an interdiscursive system organized through a mechanism of semiotic translation. Another important aspect of the semiotic organization of medical discourse is the interaction of iconic, indexical, and symbolic signs. According to Charles Sanders Peirce's semiotic classification, signs may function as icons, indexes, or symbols depending on the relationship between the sign and its referent. The Collected Papers of Peirce remain a major source for this tripartite framework. Consider the following popular-scientific medical statement:

Your arteries can become clogged over time.

Here, visual representations of arteries, blood flow diagrams, and color contrasts may function as iconic and indexical codes in English popular medical discourse. The semiotic mechanism can be analyzed through three principal components: the iconic image, the color code, and the graphical model. An icon is related to its object through similarity. Its essential characteristic is the reproduction or modeling of the referent in visual or structural form. For example, an image of a heart represents the biological heart; a lightning symbol may represent electrical energy; and a human silhouette may represent a person. The higher the degree of iconicity, the more immediate and cognitively accessible the interpretation tends to be.

A color code may carry several layers of semiotic meaning. Red, for example, can function as an indexical sign associated with blood, danger, warning, or an emergency condition. Smoke may indicate fire; fever may indicate illness; and blood may indicate injury. Through repeated institutional and cultural use, red becomes strongly associated with warning and danger. Thus, without explicitly verbalizing the concept of "danger," the color can signal its presence and trigger an immediate cognitive response. A diagram represents a more complex semiotic structure. It combines iconicity with abstraction and does not necessarily reproduce a real object directly. Instead, it models relationships between objects or processes. A graph can represent quantitative change; a scheme can represent functional relations; and a table can represent systematic classification. Diagrams therefore simplify complex information while making abstract relations cognitively accessible.

Table 1.

Semiotic Mechanisms of Medical Discourse

Element	Type of sign	Function
Image	Icon	Represents the referent through similarity
Red color	Index	Signals danger or a warning condition
Diagram	Structural icon/model	Models relationships and systems

The integration of these three components produces multimodal meaning. The combination of iconic, indexical, and structural signs creates a powerful semantic effect in medical visual communication.

The semiotic mechanism of discourse is closely connected with the cognitive mechanisms of sign activity. It involves the acquisition and interpretation of signs, their processing on the basis of existing knowledge structures, and the creation of new signs during communicative activity. Through these processes, meanings, concepts, conceptual structures, and attitudes toward reality are formed and verbalized.

From this perspective, discourse should not be understood merely as the reproduction of knowledge. Rather, it represents a process of cognitive-semiotic transformation.

The discourse-generating process may provisionally be divided into several interconnected stages:

Motivational stage – the emergence of a communicative need, apperception based on previous knowledge and experience, and internalization of external experience into cognitive structures.

Orientalional-research stage – internal programming, clarification of communicative intention, semantic selection, and planning of an appropriate meaning-construction strategy.

Implementational stage – the actual production of discourse through the verbal realization of meaning using selected codes and communicative resources.

Control stage – evaluation of communicative effectiveness, reinforcement of the intended meaning, and correction where necessary.

These stages should not be regarded as strictly sequential. Rather, they operate synchronically and interactively throughout the discourse process. Medical discourse can therefore be conceptualized as a dynamic, multilayered system in which cognitive, semiotic, linguistic, and pragmatic factors operate simultaneously. Theoretical attempts to explain the hierarchical organization of language have traditionally been developed within the framework of linguistic levels. In Émile Benveniste's conception, the sentence represents the highest structural level of language. His work *Problems in General Linguistics* remains important for the theoretical discussion of language, discourse, and linguistic structure. Within the semiotic paradigm, the level following the sentence can be identified as the level of the text. Yet the text should not necessarily be regarded as the final level of linguistic organization. According to approaches associated with scholars such as Leonid Murzin, a cultural level exists above the text and functions as a broader condition of the existence and interpretation of language and texts.

At the same time, the text is not an autonomous and closed semiotic unit. Within Lotman's semiosphere concept and discourse theories associated with scholars such as Nina Arutyunova, the text can be interpreted as a component of discourse operating within a broader sociocultural and semiotic environment. From a semiotic perspective, discourse is therefore a dynamic, multilayered, and open system. The text constitutes its internal structural component, while continuously interacting with the external sociocultural dimension of discourse. This produces a bidirectional process of determination: on the one hand, the text is conditioned by sociocultural factors; on the other hand, it generates new meanings and values within the same sociocultural environment. Consequently, discourse may be regarded as a broader phenomenon than text because it incorporates the interaction between internal linguistic organization and the external cultural-semiotic environment.

The recognition of an external level beyond the text makes it possible to conceptualize the text not as a closed and autonomous structure governed exclusively by intratextual relations but as a phenomenon interconnected with a broader semiotic space. Text production may therefore be understood as an interactive relationship between sign systems and as a multilayered mechanism of meaning generation. One of the ontological properties of the text is its relationship with other texts, which ensures dialogicity within discourse. This relationship is described through the concept of intertextuality. According to Julia Kristeva, a text may be conceptualized as a mosaic of quotations, produced through the absorption and transformation of other texts. This approach challenges the understanding of a text as a closed and isolated entity and instead conceptualizes it as an open system that constantly enters into relations with other texts. Kristeva's semiotic work is closely associated with this conception of textual interaction.

Roland Barthes similarly emphasizes the intertextual nature of textuality: texts contain traces of other texts at different levels, sometimes explicitly and sometimes implicitly. These traces may include earlier cultural texts, historical discourses, and sign systems characteristic of a particular sociocultural environment. Image, Music, Text remains one of the major English-language collections associated with Barthes's semiotic and textual theory. Thus, intertextuality establishes the continuous dialogic relationship of texts within discourse and demonstrates that meaning production is collective, historical, and culturally conditioned.

One of the most significant characteristics of English medical discourse is its reliance on a highly developed terminological system based largely on Latin and Greek elements. This terminology performs not only a nominative function but also functions as a mechanism for encoding and systematizing specialized knowledge and ensuring precision in professional communication. Consider the following examples:

The patient exhibits signs of myocardial infarction.

Metastatic carcinoma was detected during histopathological examination.

The prognosis remains guarded due to systemic complications.

In these examples, myocardial infarction, metastatic carcinoma, histopathological examination, and prognosis constitute a highly specialized terminological code. Their morphological structure incorporates classical roots and affixes and contributes to the international character of medical terminology. From a semiotic perspective, these terms perform two principal functions. First, they perform a cognitive function by representing complex pathological processes in a compact and precisely defined form. For example, myocardial infarction encodes a complex pathological process within a single standardized terminological unit. Second, they perform a social-selective function by differentiating participants according to professional competence. Such terms are fully comprehensible within a professional medical community but may remain inaccessible to non-specialists.

English medical discourse is consequently characterized by a significant degree of epistemic asymmetry. The addresser, typically a physician or researcher, presupposes a shared professional knowledge base on the part of the addressee. The terminological code operates precisely on the basis of this shared competence. At the discourse-structural level, passive constructions such as *was detected* and impersonal evaluative constructions such as *remains guarded* contribute to the objectification of medical information. The focus is shifted from the individual actor toward the pathological process, diagnostic result, or clinical condition. This contributes to the impersonal and institutional character of English medical discourse.

The Latin- and Greek-based terminological system also contributes to the global character of English medical discourse. Classical medical terms circulate across national and linguistic boundaries with relatively limited formal modification, facilitating international knowledge transfer. Thus, English medical terminology represents a highly specialized semiotic code that encodes clinical reality in a compact, precise, and standardized form while simultaneously defining the boundaries of professional communication and maintaining epistemic and social differentiation.

Another constitutive characteristic of English medical discourse is its strong institutional and legal-normative dimension. This normativity is linguistically expressed through modal constructions, standardized formulas, and formal syntactic models, linking medical discourse to legal and regulatory semiotic systems. Consider the following examples:

Failure to comply with treatment may result in adverse outcomes.

The procedure was performed in accordance with NHS clinical guidelines.

Confidentiality must be maintained under HIPAA regulations.

The constructions must be maintained, in accordance with, and failure to comply express deontic modality. They transform communication from the mere transmission of information into a domain of obligation, responsibility, and institutional regulation. The construction must be maintained expresses an obligatory requirement. The modal verb must does not function as a personal recommendation but rather as an institutional requirement. The source of authority is therefore not necessarily an individual speaker but the regulatory system itself.

The formula in accordance with NHS clinical guidelines explicitly connects medical discourse with an external normative document. It presents the medical procedure as a regulated institutional activity rather than an isolated communicative act. The expression failure to comply activates a mechanism of consequence and potential sanction. It functions as a semiotic signal regulating behavior within institutional boundaries.

An important component of English medical discourse is its popular-scientific layer. When scientific knowledge is addressed to a broad audience, highly specialized terminology is simplified and reorganized through metaphorical and cognitive models. This process can be interpreted as interdiscursive transformation occurring at the boundary between scientific and everyday discourse.

Cancer cells trick the immune system into ignoring them.

Your arteries can become clogged over time.

The brain acts like a command center for the body.

The expressions trick, clogged, and command center function as metaphorical-semiotic devices that explain complex biological processes through cognitive models derived from everyday experience. In Cancer cells trick the immune system, cancer cells are represented through an anthropomorphic model associated with intentional human behavior. Although the underlying process is based on complex molecular mechanisms of immune evasion and immunosuppression, popular-scientific discourse conceptualizes it as intentional "deception." In Your arteries can become clogged, blood vessels are conceptualized through the pipe/container model. The verb clogged draws on everyday experience with blocked pipes and therefore makes the process of atherosclerotic obstruction cognitively accessible. In The brain acts like a command center, neurophysiological processes are conceptualized through a management and control model. The expression command center evokes notions of coordination, control, organization, and regulation.

This metaphorical code is not a direct equivalent of scientific terminology but a resemanticized form of specialized knowledge. The transformation can be represented as follows:

scientific concept → everyday experiential model

terminological precision → cognitive accessibility

specialized code → general communicative code

From an interdiscursive perspective, popular medical discourse is therefore a derivative form of scientific discourse that preserves essential conceptual content while reorganizing it within a new communicative configuration.

Thus, metaphor functions as one of the principal semiotic mechanisms for popularizing medical knowledge. Expressions such as trick, clogged, and command center represent linguistic manifestations of interdiscursive transformation and facilitate the recontextualization of scientific meaning.

English medical discourse is also characterized by a highly multimodal and polycode structure. Clinical notes, discharge summaries, electronic health records, and other professional documents employ abbreviations, graphical symbols, numerical indicators, and Latin formulas alongside verbal language.

HR: 110 bpm

↑ CRP levels

Rx: Amoxicillin 500 mg t.i.d.

These expressions demonstrate the integration of verbal and non-verbal sign systems.

BP = blood pressure

HR = heart rate

CRP = C-reactive protein

Rx = prescription

These abbreviations constitute a highly compressed professional code. They represent shortened forms of medical terminology and facilitate rapid information exchange. Numerical indicators such as: 150/95, 110 bpm, 500 mg encode diagnostic information with a high degree of precision. Here, linguistic and mathematical systems operate simultaneously, producing a quantitatively structured form of discourse. The symbols ↑ and ↓ represent visual-semiotic codes indicating increase and decrease. Thus, ↑ CRP levels combines verbal information with a graphical indicator, accelerating the cognitive processing of clinical information. The abbreviation t.i.d., derived from the Latin *ter in die* ("three times a day"), represents the historical and semiotic Latin layer of medical discourse. Such Latin-based formulas have traditionally served standardization and precision in medical and pharmaceutical communication.

English clinical discourse is therefore not a purely verbal system but a polycode semiotic structure integrating

abbreviations, numerical indicators, graphical signs, and Latin formulas. This integration reinforces its professional, institutional, and operational character.

The terminological layer of Uzbek medical discourse functions as a specialized scientific-semiotic code. It has developed through interaction with Russian- and Latin-based medical terminology while being integrated into the grammatical and lexical system of Uzbek.

Terms such as *miokard distrofiyasi* ("myocardial dystrophy"), *gemorragik insult* ("hemorrhagic stroke"), and *nevrologik defitsit* ("neurological deficit") are not merely lexical combinations but coded signs indexing specific clinical concepts. They encode the type of pathological process, its etiology, and its clinical consequences in a concise professional form.

Signs of myocardial dystrophy were identified in the patient.

Neurological deficit is observed as a consequence of hemorrhagic stroke.

The rehabilitation process requires a comprehensive approach.

These units provide semantic precision among physicians and medical specialists and reduce ambiguity in professional communication. Consequently, the terminological layer constitutes one of the principal semiotic mechanisms determining the referential precision and institutional character of Uzbek medical discourse. The institutional and formal style of Uzbek medical discourse is largely based on communicative neutrality and objectivity. Passive and impersonal constructions such as *tavsiya etildi* ("was recommended"), *tasdiqlandi* ("was confirmed"), and *qabul qilinishi lozim* ("must be taken/accepted") shift the human agent into the background and foreground the medical action or decision.

The patient was recommended inpatient treatment.

The inflammatory process was confirmed based on laboratory test results.

The medication should be taken under medical supervision.

Such grammatical models foreground the official status of the medical decision rather than the individual physician. Consequently, the utterance may be perceived as representing institutional authority rather than merely individual professional opinion. These constructions therefore function as important semiotic indicators of the normative and regulated character of Uzbek medical discourse. They establish responsibility, precision, institutional distance, and professional formality. The communicative-pragmatic function of popular-scientific medical discourse in Uzbek is to represent complex clinical and pathophysiological concepts in cognitively accessible forms for a broad social audience. Explanatory constructions and normative-warning units occupy a dominant position in this discourse. For example:

During diabetes, the amount of sugar in the blood rises above the normal level.

The sentence represents scientific information in an explicit and accessible form while minimizing terminological complexity. The following examples demonstrate the prevalence of preventive and deontic meanings:

A healthy lifestyle is important for preventing heart attacks.

Proper nutrition is necessary for strengthening the immune system.

In these constructions, preventive discourse and deontic modality, represented by expressions such as *important* and *necessary*, constitute central semantic components. Compared with English popular-scientific medical discourse, metaphorical modeling appears to be less dominant in the Uzbek examples under consideration. It is frequently replaced by explicit causal relationships and logically structured explanatory constructions. Consequently, Uzbek popular-scientific medical discourse performs not only an informative function but also a sociopragmatic regulatory function aimed at influencing health-related behavior and promoting socially approved patterns of healthy living.

The cultural-semiotic component occupies an important position in Uzbek medical discourse, where ethical norms and socially shared values are frequently incorporated into communication.

Particular attention should be paid to the patient's psychological condition.

Parental responsibility is of great importance.

It is necessary to strictly follow the physician's recommendations.

Such constructions represent health not exclusively as a biological phenomenon but also as a socially and psychologically embedded condition. Individual health is frequently conceptualized within a broader framework of social responsibility, family involvement, collective values, and normative discipline.

This cultural orientation constitutes an important difference between the two discourse systems. Whereas English medical communication frequently foregrounds individual autonomy, institutional procedures, standardized protocols, and professional terminology, Uzbek medical communication may demonstrate a stronger orientation toward interpersonal responsibility, social solidarity, family involvement, and culturally embedded forms of support.

The contrastive analysis demonstrates that medical discourse in both languages constitutes a multilayered and complex semiotic system. However, the organization and pragmatic realization of its semiotic resources differ significantly. English medical discourse is characterized by a high degree of institutionalization, global standardization, terminological density, Latin- and Greek-based vocabulary, multimodal compression, and explicit integration with legal and regulatory systems.

Uzbek medical discourse, by contrast, demonstrates stronger integration with national-cultural values, explanatory constructions, socially oriented pragmatic strategies, and formal institutional language. Interdiscursive transformation is present in both linguistic systems. However, its realization differs according to communicative purpose and cultural context. When specialized scientific knowledge is transformed into popular-scientific discourse, English tends to rely more extensively on metaphorical cognitive models, whereas Uzbek frequently employs explicit explanations, causal

constructions, and normative formulations.

The multimodal sign system is also differently realized. In English clinical discourse, abbreviations, numerical codes, graphical symbols, and Latin formulas are extensively used as compressed professional codes. Uzbek medical discourse tends to rely more heavily on verbal explanation and nationally adapted terminology.

Doctor–patient communication represents one of the most dynamic forms of medical discourse because scientific, institutional, and everyday communicative layers intersect within it.

Doctor: What brings you in today?

Patient: I've been experiencing persistent chest tightness and shortness of breath.

Doctor: Do you have any history of cardiovascular disease?

Patient: My father had a heart attack at 55.

Doctor: We'll run an ECG and some blood tests to rule out acute coronary syndrome.

The expressions persistent chest tightness, cardiovascular disease, ECG, and acute coronary syndrome constitute a specialized terminological code that defines the professional layer of clinical communication. These terms possess a restricted semantic range and precise referential meanings, allowing medical diagnoses and diagnostic procedures to be expressed concisely and systematically. Such terminology creates a degree of epistemic asymmetry between physician and patient because the full interpretation of the terms presupposes specialized knowledge. Consequently, terminology moves the interaction beyond ordinary conversation and establishes it as an institutional professional encounter. The expressions What brings you in today? Do you have any history...? represent the epistemic and diagnostic strategies of the orientation stage of doctor–patient interaction. Open-ended questions such as What brings you in today? elicit the patient's subjective complaints, whereas questions concerning medical history function to collect and systematize clinical information.

The question–answer structure therefore enables the physician to construct diagnostic probability progressively. Linguistic signs serve as the basis for forming clinical hypotheses and preparing the epistemic foundation for subsequent diagnostic procedures. The construction We'll run an ECG to rule out... is also pragmatically significant. The inclusive pronoun we creates an impression of cooperation and shared decision-making. Nevertheless, epistemic control and diagnostic initiative remain primarily in the physician's hands. The future form we'll implicitly expresses professional authority and institutional legitimacy. English doctor–patient communication also frequently employs mechanical metaphors. Expressions such as: "Your heart isn't pumping efficiently", "The arteries may be blocked" conceptualize the human organism as a mechanical system. Such metaphors transform complex physiological processes into cognitively accessible models and increase communicative efficiency.

The following dialogue illustrates the corresponding features of Uzbek medical discourse:

Doctor: What complaints have brought you here?

Patient: Over the past week, I have frequently felt dizzy and it seems that my blood pressure has been increasing.

Doctor: Have you measured your blood pressure? Have you previously been diagnosed with hypertension?

Patient: Yes. I was told two years ago that my blood pressure was high, but I have not taken my medication regularly.

Doctor: We will check your blood pressure now. You will also have a complete blood count and biochemical tests. Based on the results, we will determine the treatment plan.

The Uzbek medical dialogue contains such units as bosh aylanishi ("dizziness"), bosim ko'tarilishi ("increased blood pressure"), gipertoniya ("hypertension"), qon tahlillari ("blood tests"), and biokimyoviy tahlil ("biochemical analysis"). These expressions denote precise clinical concepts while remaining relatively accessible to a broader audience. Compared with the highly Latinized terminology characteristic of English medical discourse, Uzbek medical communication demonstrates a greater degree of lexical adaptation, explanatory structure, and national linguistic integration. The terminological layer therefore performs a dual function: it maintains scientific precision while also facilitating communicative accessibility. Constructions such as Sizni ... yuboramiz ("We will refer/send you to...") and topshirasiz ("you will undergo/give [tests]") represent softened forms of institutional instruction. Although they are relatively polite, they preserve the hierarchical structure of the doctor–patient relationship.

Uzbek doctor–patient communication may also contain culturally marked expressions such as:

Xavotir olmang. "Do not worry."

Alloh xohlasa, tuzalib ketasiz. "God willing, you will recover."

Parhezga qat'iy amal qiling. "Strictly follow the prescribed diet."

These expressions constitute important indicators of the cultural-semiotic dimension of Uzbek medical discourse. They simultaneously provide emotional support and introduce culturally meaningful cognitive and normative models into the interaction. The doctor–patient dialogue can therefore be regarded as an interdiscursive space in which scientific, institutional, everyday, ethical, and cultural codes intersect. For example, a highly specialized term such as acute coronary syndrome may be reformulated into a more accessible expression such as ko'krak siqilishi ("chest tightness") in patient-oriented communication. This transformation may be interpreted through Lotman's concept of the boundary mechanism: at the boundary of semiotic systems, a complex scientific code is simplified and adapted to another sign system. Consequently, scientific information becomes cognitively accessible through semantic transformation.

Discussion. The comparative findings demonstrate that doctor–patient interaction represents one of the most dynamic and interdiscursive forms of medical discourse. Scientific terminology, institutional authority, everyday language,

cognitive metaphor, ethical values, and cultural expectations interact within the same communicative space.

In the English model, institutional regulation, professional terminology, and mechanical-cognitive metaphors are particularly prominent. Disease is frequently conceptualized as a malfunction of a system, while clinical communication is organized through standardized terminology and diagnostic procedures.

In the Uzbek model, interpersonal proximity, reassurance, normative recommendations, and culturally embedded forms of support are more salient. Medical communication may therefore acquire an additional ethical and sociocultural dimension. Nevertheless, both systems share a fundamental characteristic: epistemic asymmetry. The physician possesses specialized knowledge and controls the diagnostic process, while the patient primarily provides experiential and subjective information. This asymmetry is managed through linguistic and semiotic mechanisms that transform specialized knowledge into forms appropriate to the patient's cognitive and communicative needs. Accordingly, doctor-patient communication should not be reduced to the transmission of medical information. It represents a process of meaning construction, semiotic translation, cognitive adaptation, and pragmatic negotiation.

Conclusion. The contrastive analysis confirms that medical discourse in English and Uzbek constitutes a complex, dynamic, multimodal, and institutionally conditioned semiotic system. Its organization is determined by the interaction of linguistic, cognitive, pragmatic, sociocultural, institutional, and visual-semiotic resources. The theoretical application of Lotman's semiosphere concept demonstrates that medical discourse cannot be adequately analyzed independently of its broader cultural-semiotic environment. The concepts of boundary, translation, and semiotic transformation provide an effective theoretical framework for explaining how specialized medical knowledge moves between professional and non-professional communicative spaces.

Peirce's classification of signs further demonstrates that medical communication involves not only symbolic linguistic signs but also iconic, indexical, numerical, graphical, and multimodal codes. These signs interact to produce integrated communicative meanings. The analysis also establishes the central role of interdiscursivity. Medical discourse is not homogeneous: scientific, institutional, popular-scientific, everyday, legal, and cultural discourses intersect within it. Popular-scientific discourse represents a particularly significant interdiscursive formation because it translates specialized knowledge into cognitively accessible forms through metaphor, explanation, visualization, and pragmatic adaptation.

English and Uzbek medical discourses share common institutional and professional characteristics but differ in the organization of their semiotic resources. English medical discourse demonstrates a stronger tendency toward terminological standardization, Latin- and Greek-based vocabulary, multimodal compression, and regulatory institutionalization. Uzbek medical discourse demonstrates greater reliance on adapted terminology, explanatory constructions, interpersonal support, normative formulations, and culturally embedded values.

The findings therefore suggest that the semiotic organization of medical discourse is simultaneously universal and culture-specific. Universal professional codes ensure the transnational circulation of medical knowledge, whereas language-specific and culture-specific semiotic resources determine how that knowledge is interpreted, transformed, and communicated within particular social environments. Thus, medical discourse should be conceptualized not merely as a specialized variety of language but as a multilevel cognitive-semiotic and sociocultural system in which knowledge, professional authority, institutional norms, cultural values, and communicative intentions are continuously transformed and negotiated.

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