

CHOG‘ISHTIRMA TILSHUNOSLIK VA TIL NAZARIYASI

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**UNDERSTANDING THE STRUCTURE OF MEDICAL TERMS: A
COMPARATIVE ANALYSIS OF ENGLISH AND UZBEK MEDICAL
TERMINOLOGY⁶**

Turaqulova Oysulton Normurodovna
Denau Institute
of Entrepreneurship and Pedagogy,
Teacher of Department of Foreign
Languages and Literature,
email: turaqulovaoyulton@gmail.com
ORCID ID: 0009-0007-8493-890X

ABSTRACT

This article presents a comparative linguistic analysis of the structural features of English and Uzbek medical terminology. The primary objective of the research is to provide a systematic overview of how medical terms are formed in two typologically distinct languages—analytic (English) and agglutinative (Uzbek)—as well as their semantic stability and role in the translation process. The study addresses how terminological differences often reduce translation accuracy and lead to confusion in the learning process. Drawing upon Wüster’s theory of terminology and Saussure’s semiotics, the article examines the morphemic structure, etymological roots, and semantic equivalence of terms. Using both descriptive and comparative methods, the paper explores how English and Uzbek medical terms are constructed and applied. The findings indicate that English terminology is largely standardized and rooted in Greco-Latin origins, whereas Uzbek terms are mostly descriptive or borrowed from Russian and other languages. The study concludes that a deeper understanding of the structure and origin of medical terms plays a crucial role in ensuring translation accuracy, facilitating bilingual education, and improving professional communication in the medical field.

KALIT SO‘ZLAR

Medical terminology, morphology, term formation, medical discourse, Uzbek language, English language, term transformation, etymology, Uzbek, English, comparative analysis, healthcare communication.

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TIBBIY ATAMALARNING TUZILISHI: INGLIZ VA O‘ZBEK TIBBIYOT TERMINOLOGIYASINING QIYOSIY TAHLILI

Turaqulova Oysulton Normurodovna

Xorijiy tillar va adabiyoti kafedrası o‘qituvchisi,

Denov tadbirkorlik va pedagogika instituti

email: turaqulovaoyulton@gmail.com

ORCID ID: 0009-0007-8493-890X

ANNOTATSIYA

Ushbu maqolada ingliz va o‘zbek tibbiy terminologiyasining strukturaviy xususiyatlari qiyosiy-lingvistik yondashuv asosida tahlil qilinadi. Tadqiqotning asosiy maqsadi ikki turli tipdagi (analitik va agglutinatív) tillarda tibbiy atamalarning shakllanishi, ularning semantik barqarorligi va tarjima jarayonidagi o‘rni haqida tizimli tahlil beriladi. Bunda terminologik tafovutlar ko‘p hollarda tarjima aniqligini pasaytiradi va terminlarni o‘rgatish jarayonida tushunmovchiliklar keltirib chiqaradi. Maqolada Wüsterning terminologik yondashuvi va Saussure semiyotikasiga tayanilgan holda, terminlarning morfemik tuzilishi, etimologik ildizlari va semantik ekvivalentligi tahlil qilinadi. Tavsifiy va qiyosiy tahlil metodlari yordamida o‘zbek va ingliz tibbiy terminlarining shakllanishi va qo‘llanilishi o‘rganiladi. Maqolaning ilmiy natijasi shundan iboratki, ingliz tilidagi atamalar ko‘proq standartlashtirilgan bo‘lib, grek-lotin ildizlariga asoslanganligini; o‘zbek tilida esa terminlar asosan tavsifiy yoki rus hamda boshqa tillardan olinganligini ko‘rsatadi. Maqolaning asosiy xulosasi shundan iboratki, tibbiy terminlarning tuzilishi va kelib chiqishini chuqur anglash, tarjima aniqligini ta‘minlash, ikki tilli ta‘lim jarayonini yengillashtirish va kasbiy tibbiy muloqot samaradorligini oshirishda muhim ahamiyat kasb etadi.

KALIT SO‘ZLAR

Tibbiy terminologiya, morfologiya, etimologiya, tibbiy diskurs, o‘zbek tili, ingliz tili, termin transformatsiyasi, leksik birliklar, semantik tahlil, o‘zbek tili, ingliz tili, qiyosiy tahlil, tibbiy kommunikatsiya.

СТРУКТУРА МЕДИЦИНСКИХ ТЕРМИНОВ: СРАВНИТЕЛЬНЫЙ АНАЛИЗ АНГЛИЙСКОЙ И УЗБЕКСКОЙ МЕДИЦИНСКОЙ ТЕРМИНОЛОГИИ

Туракулова Ойсултон Нормуродовна

Преподаватель кафедры

иностраннных языков и литературы

Денауский институт предпринимательства и педагогики

email: turaqulovaosulton@gmail.com

ORCID ID: 0009-0007-8493-890X

АННОТАЦИЯ	КЛЮЧЕВЫЕ СЛОВА
<p>В статье представлен сопоставительный лингвистический анализ структурных особенностей английской и узбекской медицинской терминологии. Основная цель исследования – дать системное представление о формировании медицинских терминов в двух типологически различных языках – аналитическом (английском) и агглютинативном (узбекском), а также об их семантической устойчивости и роли в переводе. В исследовании подчеркивается, что терминологические различия нередко снижают точность перевода и вызывают трудности в процессе обучения. В статье на основе теории терминологии Э. Вюстера и семиотики Ф. де Соссюра анализируются морфемная структура, этимологические корни и семантическая эквивалентность терминов, с использованием описательного и сопоставительного методов рассматривается образование и использование медицинских терминов в обоих языках. Результаты исследования показывают, что английские термины в основном стандартизированы и восходят к греко-латинским корням, тогда как узбекские термины чаще всего носят описательный характер или заимствуются из русского и других языков. В заключении подчеркивается, что глубокое понимание происхождения и структуры медицинских терминов играет ключевую роль в обеспечении точности перевода, облегчении билингвального обучения и повышении эффективности профессиональной медицинской коммуникации.</p>	<p>Медицинская терминология, морфология, этимология, медицинский дискурс, узбекский язык, английский язык, трансформация терминов, лексические единицы, сравнительный анализ, медицинская коммуникация.</p>

INTRODUCTION

The complexity of medical language poses challenges not only for practitioners but also for learners and translators, particularly in multilingual contexts. Medical terminology, heavily influenced by Latin and Greek roots, serves as a universal linguistic code in English. In contrast, Uzbek medical terms often derive from a mixture of Arabic, Persian, Russian, and increasingly international sources. This situation highlights the need for a comparative linguistic analysis to gain clearer insight into how medical terms are used and taught in both compared languages.

The present study is based on deep analysis of existing scholarly literature, with a focus on the structural patterns and semantic features of medical terminology in English and Uzbek. The research draws upon theoretical frameworks, terminological databases, and previous comparative studies to examine the similarities and differences in term formation and usage across the two languages. In the context of this research, a term is defined, following Eugen Wüster's classical theory of terminology, as a linguistic unit that precisely denotes a single, well-defined concept within a specialized field. According to Wüster (1979), terms differ from general words in that they are monosemous within a given context, systematically structured, and used for unambiguous professional communication. Wüster, a former engineer, is credited with developing the general idea of nomenclature. His overall hypothesis is based on the following five key principles: (Wüster, 1979, p.14).

-In terminology, the onomasiological approach is applied (terminology studies concepts before terms);

- Concepts are strictly delineated from each other and can be placed in a concept system;

- Concepts are to be defined in a traditional definition;

- A term is assigned permanently to a concept;

- And terms and concepts are studied synchronically.

Following Wüster's (1979) theory, a term is not merely a lexical unit, but a standardized, unambiguous label for a clearly defined concept within a specific system. His five key principles - clarity, monosemy, systematicity, standardization, and concept orientation is considered as the cornerstone of modern terminology science. These principles play the vital role in the medical field, where terminological inaccuracy can lead to serious miscommunication. English medical terms are more consistent because they come from Latin and Greek and follow global rules. Uzbek terms, on the other hand, are still developing and can vary because they are being borrowed and localized. This difference emphasizes the importance of a more methodical approach to term creation and translation in Uzbek, one that fits Wüster's ideas.

Terminological systems often reveal a distinction between native English terms and those borrowed from other languages. Given that borrowed terms are typically limited medical terminology being a key exception this research concentrates on terms shaped within the English and Russian linguistic frameworks. These include simple terms, compound terms, and multi-word terminological expressions, each of which plays a unique role in shaping professional discourse. In specialized domains such as medicine, terms must function not only as labels but as precise conceptual markers. As Sultanov argues, "a scientific term is not merely a linguistic unit; it is a cognitive tool that ensures precision and consistency in specialized communication." (Sultanov, V. I. 1996). This view reinforces the idea that terminological clarity is essential for accurate knowledge transfer.

In educational and translation contexts, understanding term structure is crucial. Students often struggle to memorize specialized vocabulary in isolation. However, if they can identify word-building elements such as roots, prefixes, and suffixes they are better equipped to decode and use medical terminology. This research analyzes how English and Uzbek medical terms are structurally formed, explores semantic equivalence, and considers implications for bilingual terminology teaching.

MAIN PART

This study employs a descriptive and comparative linguistic approach to analyze medical terminology in English and Uzbek. The analysis focuses on key linguistic parameters such as root structure, affixation patterns, etymological origins, and morphological composition. English medical terms were sourced from established medical dictionaries and academic textbooks, while Uzbek equivalents were drawn from translated clinical texts and specialized Uzbek–Russian–English glossaries. Grounded in the theoretical frameworks of Danilenko (Даниленко, В. П., Волкова, И. Н., Морозова, Л. А., Новикова, Н. В.1993.) and Sager (Sager, J. C.1990), the study explores the morpho-semantic patterns that enhance cross-linguistic recognition and understanding of medical terms. These comparative insights aim to reveal structural regularities and translation challenges, ultimately contributing to more effective terminology management in bilingual medical contexts. From the author’s perspective, the integration of both descriptive and comparative methods is essential when dealing with two languages that differ typologically one being predominantly analytic (English) and the other agglutinative (Uzbek). In the course of the analysis, it became evident that while English medical terms often display a compact and etymologically layered structure rooted in Latin and Greek, Uzbek equivalents tend to reflect a hybrid character sometimes retaining original loan elements, and other times undergoing adaptation with native affixation. The research shows that these differences in structure and origin not only make translation harder, but also reveal how different cultures think about and express medical knowledge.

A.I. Komarova aptly points out that “terminology should not be treated as an isolated aspect, but rather as a special type of semantics within a given language system.”(Комарова, А. И. 2004). In reality, studying terminology as an alone field independently from grammar, syntax, and general semantics can limit our understanding of how terms actually function within communication. Medical terms,

like all lexical units, are formed within the broader linguistic framework which they belong to.

The current scientific and technical terminology in the Uzbek language is reflected in a wide range. Terminology, which is an integral part of the lexicon of the Uzbek medical language, is one of the most rapidly and dynamically developing categories of the current Uzbek linguistics, playing the role of an inexhaustible source of the continuous growth and expansion of the vocabulary of the language (Дадабоев, X. 2019).

Throughout this study, it became increasingly clear that terminology is not just a list of specialized words; it's a dynamic system that interacts closely with the core components of language. Root structures, affixation, word class behavior, and even syntactic compatibility all contribute to how a term is formed, used, and interpreted. A holistic linguistic approach is essential especially when comparing languages with different typological features, such as English and Uzbek. This approach helps uncover not only how terms are constructed, but also how knowledge is conceptualized and transferred across linguistic and cultural boundaries.

“A term is not just a word, but a lexical unit that represents a concept defined in a specialist field and used with a precise meaning within that field.” (Sager, J. C. (1990).

Medical terminology covers highly specialized and narrowly defined concepts that reflect the growing complexity of the field. As medicine advances, new subfields emerge each developing its own system of terms tailored to its focus. Many of these terms originate from Latin, which explains the formal similarity between English and Uzbek versions. However, differences still exist due to pronunciation, adaptation, and translation choices. “Lexicology is a branch of linguistics concerned with the study of vocabulary, the origin of words, their development, and their current meaning and use. (Arnold, I. V. (1959).

Structuralist linguistics views vocabulary not as a collection of isolated units, but as a system of interrelated signs. As Saussure famously stated, “in language there are only differences, without positive terms,” highlighting that meaning emerges

from opposition rather than substance. (Saussure, F. de. (1916). This is particularly relevant in medical terminology, where precise distinction between similar terms ensures communicative clarity. Semiotic approaches to terminology emphasize that terms do not merely denote objects or processes, but act as signs within a broader communicative system. As Eco defines, “a sign is everything which can be taken as significantly substituting for something else,” which is highly relevant when interpreting medical vocabulary as a system of codified meaning. (Eco, U. 1976).

In this research we have analyzed how the understanding these terms plays the key role in not for clear communication between professionals, but also for accurate translation and standardization. For researchers and translators alike, studying medical terms helps ensure precision, avoid inaccuracy, and helps to transfer across languages. To achieve this goal, we set out to categorize medical terms into lexical groups and examine their structural and semantic properties as a central focus of this research.

Medical Terms Reflecting Specific Fields of Specialization

Table 1

№	English Term	Uzbek Term	Specialization
Internal Medicine - Ichki kasalliklar			
1	<i>therapy</i>	<i>terapiya</i>	<i>ichki a'zolar kasalliklarini tashxislash va davolash</i>
2	<i>endocrinology</i>	<i>endokrinologiya</i>	<i>ichki sekretiya bezlari va gormonlar kasalliklari</i>
3	<i>pulmonology</i>	<i>pulmonologiya</i>	<i>o'pka va nafas olish tizimi kasalliklari</i>
4	<i>gastroenterology</i>	<i>gastroenterologiya</i>	<i>oshqozon-ichak tizimi kasalliklari</i>
5	<i>cardiology</i>	<i>kardiologiya</i>	<i>yurak va qon tomirlari kasalliklari</i>

Numerical Prefixes in English and Uzbek Medical Terminology

Furthermore, in order to facilitate a deeper and more accessible understanding of medical terminology, the study also addresses numerical-based medical terms,

examining their structure, meaning, and functional usage within clinical discourse. A notable feature in the morphological structure of medical terms is the use of numerical prefixes, which convey quantitative aspects such as the number of parts, lobes, cusps, or occurrences in anatomical structures and pathologies. These prefixes, derived primarily from Latin and Greek, are widely used in English and often borrowed into Uzbek either directly or through Russian intermediaries.

The following analysis presents a set of commonly used numerical prefixes found in both English and Uzbek medical terms:

Table 2

Numeral Prefixes	Origin	Meaning	English Example	Uzbek Equivalent	Uzbek Usage
<i>mono-</i> , <i>uni-</i>	Greek/Latin	one	<i>monocyte</i> , <i>unilateral</i>	<i>monositar</i> , <i>bir</i> <i>tomonlama</i>	Used in pathology and clinical settings
<i>bi-</i> , <i>di-</i>	Latin/Greek	two	<i>bicuspid</i> , <i>diplopia</i>	<i>bikuspid</i> , <i>ikki</i> <i>tomonlama</i> <i>ko'rish</i>	Common in anatomical descriptions
<i>tri-</i>	Latin	three	<i>tricuspid</i> , <i>trimester</i>	<i>trikuspid</i> , <i>uch oylik</i> <i>davr</i>	Used in cardiology and obstetrics
<i>quadri-</i> , <i>tetra-</i>	Latin/Greek	four	<i>quadriceps</i> , <i>tetraplegia</i>	<i>kvadriseps</i> , <i>to'rt tomon</i> <i>falajligi</i>	Seen in muscular and neurological terminology
<i>multi-</i> , <i>poly-</i>	Latin/Greek	many	<i>multicellular</i> , <i>polyuria</i>	<i>ko'p</i> <i>hujayrali</i> , <i>ko'p siyish</i>	Applied in cell biology and symptomology

This table illustrates both the morphological transfer and the semantic equivalence of medical numerical prefixes across English and Uzbek. In English, the prefixes are concise and consistently integrated into compound terms, whereas in Uzbek, usage often fluctuates between transliterated forms (*monositar*) and descriptive equivalents (*bir tomonlama*).

Furthermore, in teaching medical terminology bilingually, highlighting these prefixes helps learners quickly recognize and retain structural information. For example, recognizing that *di-* or *bi-* implies “two” across both languages allows Uzbek speaking students to correctly infer meanings without rote memorization. These numerical prefixes not only support clarity in expression but also serve as essential cognitive anchors in building complex medical terms across both English and Uzbek systems.

Besides that, semantically, terms that express conclusions and suggestions expressed in medical practice. Such terms are widely used and actively used among doctors in the medical field. Because the doctor gives his conclusion and recommendation to his patient. This directly enhances the formation of terms and the improvement of communication. Disease terms can be divided into the following groups: *easy-to-treat diseases*, *difficult-to-treat diseases*, *extremely difficult-to-treat diseases*, and *incurable diseases*.

Infectious diseases: these are mainly infectious diseases, for example: *plague*, *cholera*, *typhoid fever*, *typhoid fever*, *paratyphoid*, *dysentery*, *viral hepatitis*, *diphtheria*, etc.

Dangerous tumor diseases: *ovarian tumor*, *mammary tumor*, *oral cavity tumor*, *brain tumor*, *kidney tumor*, *bladder tumor*, etc.

Socially significant: *tuberculosis*, *oncological diseases*, *new malignant tumors*, *sexually transmitted diseases*, *AIDS (acquired immunodeficiency syndrome)*, *leprosy*, *mental diseases*.

There is no internal connection between the meanings of these words, which are actually polysemantic. From these examples it can be seen that word formation by the semantic method has a diachronic nature, and also that term formation by this

method is more widely used in medical terminology than in the terminology of other fields. The main reason for this is that medical terms were formed in the past on the basis of the vernacular and were improved in close connection with the language of communication. Therefore, many metaphorical uses typical of the vernacular are reflected in them. For example, the units “bowl”, “cup”, “box” in such compounds as “head cup”, “eye cup”, “kidney cup”, “head box” in the vernacular mean a container used to put something. In medicine, there are organs or parts of them that resemble these vessels, which, in turn, has led to the creation of the following terms based on metaphorical analogy. For example, a basin is a chamber of a basin. In the old Turkic language, it is a wooden carved salt cellar and the like, a *bowl*. As a result of the development of meaning, the meaning of this word - *bowl* - has evolved into the meaning of eye cup and other bowl-like things, gfincluding each chamber of a bowl. The meaning of *eye cup* appeared before the above meaning. To make easier the understanding of medical language the research provides some explanations of the originality of the terms. Such as, the use of metaphor in medical terminology reflects a deep-rooted connection between everyday language and specialized medical vocabulary. Many terms originated from concrete, familiar objects and were metaphorically extended to describe anatomical structures based on visual or functional similarity. This linguistic phenomenon not only enriches the lexicon but also provides insight into the cultural and historical processes through which medical knowledge has been conceptualized and transmitted. Understanding these metaphorical foundations is essential for both accurate translation and deeper cross-cultural comprehension of medical discourse.

In English, terms such as *cardiomyopathy* or *neurology* reflect Greek-Latin roots (*cardio-* = heart, *myo-* = muscle, *-pathy* = disease). These terms are compact, systematic, and semantically transparent. Uzbek equivalents often take descriptive or borrowed forms: e.g., *yurak mushak kasalligi* (disease of the heart muscle) or borrowings like *kardiomiopatiya*, showing the influence of internationalization.

While English heavily relies on affixation, Uzbek forms often favor **analytic word combinations** (e.g., *buyrak yetishmovchiligi* for *renal failure*), though borrowing is increasing in scientific registers.

Theoretical Foundations. Medical terms across both languages exhibit semiotic regularity. According to Saussure's semiotics and Wüster's theory of terminology, medical terms should ideally be monosemous, domain-specific, and translatable. Uzbek medical terminology is still undergoing standardization as Dadaboyev mentioned in his researches, which creates translation challenges and multiple equivalents for the same English term.

A comparison also shows differences in **productivity**. For example, English allows neologisms like *telehealth*, *cytogenetics*, while Uzbek equivalents often require paraphrasing or loanwords (*masofaviy tibbiyot*, *sitogenetika*). This has pedagogical consequences in terminology instruction.

Implications for Teaching and Translation

A comparative teaching approach using structural analysis improves bilingual understanding. For instance, the root *hepat-* (liver) can be directly linked to Uzbek *jigar* or *gepat-* depending on the register. Educators can use contrastive exercises to link medical terms with their Uzbek counterparts, improving retention and functional usage.

Moreover, translators must navigate between using internationalisms and native equivalents, balancing clarity, precision, and acceptability. Thus, awareness of term formation across both systems is key to ensuring effective communication in medical settings.

CONCLUSION

Medical terminology in English and Uzbek reflects distinct historical, morphological, and semiotic features. While English exhibits a more unified Greco-Latin system, Uzbek terminology combines native roots, Russian influence, and global borrowings. Teaching and translating medical terms in a bilingual context benefit from focusing on structural analysis, semantic transparency, and context-

driven equivalence. This comparative approach supports linguistic accuracy, learner autonomy, and professional competence.

The etymological and semantic properties of medical terms are closely intertwined with their formation, meaning systems, and historical development. A significant portion of medical vocabulary is derived from Ancient Greek and Latin, with these terms acquiring rich semantic layers over centuries of use. Etymological roots play a crucial role in understanding medical terminology, as they provide insights into the conceptual structure of terms and enable their accurate interpretation and application. While medical terms tend to maintain semantic stability, they also evolve to encompass new domains as science and technology advance. Breakthroughs in medical research and novel treatment methods continuously give rise to new terms, which are then integrated into the global medical lexicon. Therefore, a thorough investigation of the etymological and semantic features of medical terminology is essential for accurately grasping medical concepts, interpreting specialized language, and effectively conveying scientifically grounded information.

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