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Translating Medical Terminology in English and Uzbek: A Functional-Semantic Perspective

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Abstract:

The translation of medical terminology between English and Uzbek presents unique challenges due to linguistic, cultural, and functional-semantic differences. This study examines the functional-semantic features of medical term translation, focusing on accuracy, equivalence, and contextual adaptation. The research explores key translation strategies, including direct borrowing, calque formation, descriptive translation, and semantic modification. Special attention is given to the role of medical discourse in shaping terminological choices and ensuring clarity in cross-linguistic communication. By analyzing examples from medical texts and dictionaries, this study highlights the importance of preserving both scientific precision and practical usability in translation. The findings contribute to the broader understanding of medical translation within a functional-semantic framework and offer practical insights for translators working in the medical domain.

Keywords: medical terminology, translation strategies, English-Uzbek translation, functional-semantics, medical discourse, linguistic adaptation, terminological equivalence.

Introduction. Medical terminology plays a crucial role in global healthcare communication, ensuring the accurate exchange of medical knowledge across different linguistic and cultural contexts. In the case of English and Uzbek, differences in linguistic structure, semantic categorization, and the availability of equivalent terms create challenges for translators. Medical terms often carry specialized meanings that require careful consideration of their functional and semantic properties during translation. The translation of medical terminology is not merely a lexical substitution but involves multiple linguistic and extralinguistic factors, including the standardization of terms, cultural perceptions of health and medicine, and the influence of international medical discourse. While English serves as a dominant language in medical science, Uzbek medical terminology has evolved through a combination of native formations, Russian influences, and direct borrowings from Latin and Greek.

This article explores the functional-semantic aspects of translating medical terminology between English and Uzbek, examining how translation strategies affect meaning, precision, and usability. The study aims to identify the primary methods employed in medical translation and assess their impact on ensuring effective cross-linguistic communication. By analyzing medical texts, dictionaries, and practical translation cases, this research contributes to a deeper understanding of medical terminology translation and offers insights for professional translators and linguists.

Literature Review. The translation of medical terminology has been a subject of scholarly interest due to its complexity, requiring precision and cultural adaptability. Researchers have explored various aspects of medical translation, including terminology standardization, equivalence strategies, and the role of functional-semantic approaches. This section provides an overview of key contributions to the field. Medical translation is often analyzed through the lens of terminological equivalence and functional theories of translation. Vinay and Darbelnet's model of translation strategies highlights direct and oblique translation methods, which are frequently applied in medical terminology translation. Nida's dynamic equivalence theory emphasizes the importance of meaning over literal translation, which is particularly relevant in medical contexts where patient comprehension is critical.

Newmark distinguishes between communicative and semantic translation, arguing that medical texts often require a balance between scientific accuracy and ease of understanding for practitioners and patients. Hatim and Mason further elaborate on the role of pragmatics in specialized translations, asserting that medical terminology must be both contextually accurate and terminologically standardized.

Standardization and Equivalence in Medical Terminology Terminological standardization in medical texts is a key concern in translation studies. The World Health Organization (WHO) and the International Classification of Diseases (ICD) play significant roles in maintaining medical terminology consistency across languages. In the Uzbek context, medical terminology has historically been influenced by Russian medical lexicons, leading to borrowing and calque formations in translation.

Studies by Picht and Draskau emphasize the importance of terminological consistency in specialized texts, highlighting the need for reliable reference materials such as medical glossaries and bilingual dictionaries. Montalt-Resurrecció and González-Davies further argue that standardization should not compromise contextual flexibility, particularly in cases where English medical terms lack direct Uzbek equivalents.

One of the major challenges in translating medical terms from English to Uzbek is the adaptation of Latin and Greek-based terminology. While English medical terminology is largely derived from classical languages, Uzbek medical vocabulary incorporates Turkic elements, Russian borrowings, and international medical terms. This linguistic diversity requires translators to make strategic choices regarding borrowing, calquing, or using descriptive translation. Díaz-Cintas and Remael highlight the difficulty of translating neologisms and technical jargon in medical texts, emphasizing the role of context and intended audience in determining the most effective translation strategy. In a similar vein, Sager argues that the dynamic nature of medical terminology, driven by technological and scientific advancements, complicates translation efforts and necessitates continuous updating of terminological resources.

Functional approaches to translation, such as those proposed by Reiß and Vermeer in their Skopos theory, suggest that translation choices should be guided by the intended function of the target text. This approach is particularly relevant for medical translations, where precision and clarity can directly impact patient outcomes. According to Nord, a functionalist perspective ensures that translations are not only linguistically accurate but also pragmatically appropriate for different stakeholders, such as healthcare professionals and patients. Recent studies by Gotti and Salager-

Meyer explore the role of genre and discourse analysis in medical translation, noting that different types of medical texts—ranging from patient information leaflets to research articles—require different translation approaches. In the Uzbek context, research by Karimov and Rakhimov highlights the need for more standardized terminological databases and training programs for medical translators to improve the quality and consistency of translations.

Translation strategies for medical terminology vary depending on the level of equivalence between the source and target languages. Some of the most commonly employed strategies include direct borrowing, calque formation, descriptive translation, and semantic modification. Direct borrowing is frequently used for internationally recognized terms such as "diabetes," "virus," and "vaccine." Calque formation is seen in cases where literal translations can maintain meaning, such as *qon bosimi* for "blood pressure." Descriptive translation is used when an equivalent term does not exist, as in the case of "CT scan," which is translated as *kompyuter tomografiyasi yordamida tekshirish*. Semantic modification is applied when cultural or linguistic factors necessitate adjustments in meaning, such as translating "mental health" as *ruhiy sog‘lik*, which aligns better with Uzbek cultural perceptions of psychological well-being.

The translation of medical terminology between English and Uzbek is a complex process that involves linguistic, cultural, and functional-semantic considerations. Existing research provides valuable insights into translation strategies, but there is still a need for more in-depth studies focused on Uzbek medical translation. Future research should aim to refine terminological databases, establish clearer standardization guidelines, and explore the implications of functional-semantic translation models in medical discourse.

Methodology. This study employs a comparative and functional-semantic analysis of medical terminology translation between English and Uzbek. The methodology is based on both qualitative and quantitative approaches to examine the accuracy, equivalence, and usability of translated medical terms.

Medical terminology samples were collected from various sources, including:

- ✓ English and Uzbek medical textbooks and dictionaries
- ✓ Bilingual medical glossaries and online resources
- ✓ Official translations of medical documents and patient information leaflets
- ✓ Research articles and case studies related to medical translation

A corpus of 500 commonly used medical terms was compiled, with a focus on technical terminology in clinical, pharmaceutical, and diagnostic contexts. The selected terms were analyzed based on their translation strategies and functional-semantic equivalence.

The study applies a functional-semantic translation model to evaluate how medical terms are rendered in Uzbek. The analysis includes:

1. **Equivalence assessment** – Determining whether direct equivalents exist in Uzbek and analyzing how meaning is transferred.
2. **Translation strategies** – Identifying methods such as direct borrowing, calque formation, descriptive translation, and semantic modification.
3. **Contextual adaptation** – Examining how cultural and linguistic factors influence translation choices.

The study also evaluates translation consistency by comparing translations across different medical sources.

Results. The results indicate that the translation of medical terminology between English and Uzbek presents challenges due to differences in linguistic structure, terminological standardization, and cultural perceptions of medical concepts.

Equivalence and Translation Strategies. The analysis revealed four primary strategies used in translating medical terms:

1. Direct Borrowing: Some medical terms are borrowed directly from English or Latin, especially those widely used in international medical practice. These terms retain their original form with minor phonetic adjustments in Uzbek.

- **Examples:**

✓ "Virus" → *Virus*

✓ "Diabetes" → *Diabet*

✓ "Pneumonia" → *Pnevmoniya*

This strategy ensures international consistency but may pose comprehension difficulties for patients unfamiliar with foreign medical terminology.

2. Calque Formation: Certain terms are translated word-for-word, preserving their original structure while adapting to Uzbek linguistic norms.

- **Examples:**

✓ "Blood pressure" → *Qon bosimi*

✓ "Cardiovascular system" → *Yurak-qon tomir tizimi*

✓ "Immune response" → *Immun javobi*

Calque formation provides clarity and aligns medical terminology with existing Uzbek linguistic conventions.

3. Descriptive Translation: When no direct equivalent exists, descriptive translations are used to convey meaning.

- **Examples:**

✓ "MRI scan" → *Magnit-rezonans tomografiyasi yordamida tekshirish*

✓ "CT scan" → *Kompyuter tomografiyasi yordamida tekshirish*

✓ "Pacemaker" → *Yurak ritmini nazorat qiluvchi qurilma*

Descriptive translations improve patient understanding but can be lengthy and require simplification in non-specialist contexts.

4. Semantic Modification: Some terms undergo semantic adaptation to align with Uzbek medical and cultural perspectives.

- **Examples:**

✓ "Mental health" → *Ruhiy sog‘lik* (translated to reflect cultural perceptions of psychological well-being)

✓ "Hypertension" → *Yuqori qon bosimi* (adjusted for clarity)

✓ "Placebo effect" → *Tibbiy tasalli ta’siri* (modified for clearer understanding)

This strategy helps make medical terminology more accessible to the general public while maintaining scientific accuracy.

The study found inconsistencies in Uzbek medical terminology across different sources, particularly in the translation of newly introduced medical terms. Some terms have multiple translations, leading to confusion.

- **Example of inconsistencies:**

✓ "Radiology" appears as both *Radiologiya* and *Nurlanish tibbiyoti* in different medical texts.

✓ "Antibiotic resistance" is translated as both *Antibiotik chidamliligi* and *Antibiotikga moslashuvchanlik.*

Such variations highlight the need for greater terminological standardization in Uzbek medical translation.

The findings suggest that a standardized approach to medical translation is necessary to enhance communication in healthcare settings. Recommendations include:

✓ Developing an authoritative Uzbek medical terminology database.

✓ Encouraging the use of consistent translation strategies across all medical publications.

✓ Providing training programs for medical translators to ensure accuracy and clarity in translations.

The study demonstrates that medical terminology translation between English and Uzbek requires a combination of direct borrowing, calque formation, descriptive translation, and semantic modification. While some terms maintain international consistency through direct borrowing, others require adaptation to ensure comprehensibility and cultural relevance. The findings underscore the importance of terminological standardization to improve communication and accessibility in Uzbek medical discourse. Future research should focus on refining Uzbek medical terminology databases and evaluating the effectiveness of different translation strategies in clinical practice.

Translation Strategy	Definition	Example in English	Translation in Uzbek	Comments
Direct Borrowing	Adopting the original term without modification	Virus	Virus	Maintains international consistency but may be difficult for non-specialists
Calque Formation	Word-for-word translation preserving original structure	Blood pressure	Qon bosimi	Preserves linguistic coherence but may not work for all terms
Descriptive Translation	Providing an explanatory translation for clarity	MRI scan	Magnit-rezonans tomografiyasi yordamida tekshirish	Ensures comprehension but can be lengthy
Semantic Modification	Adapting the term to fit cultural and linguistic norms	Mental health	Ruhiy sog‘lik	Reflects cultural perceptions but may alter scientific neutrality

Discussion. The translation of medical terminology from English to Uzbek presents significant linguistic and functional-semantic challenges. The findings of this study indicate that translation strategies vary depending on the nature of the medical term, its frequency in global medical discourse, and the availability of an existing equivalent in Uzbek. The study identified direct borrowing, calque formation, descriptive translation, and semantic modification as the primary

strategies used in translating medical terminology. Each of these strategies carries advantages and limitations, impacting both medical professionals and the general public in different ways.

Direct borrowing, commonly used for internationally recognized medical terms, facilitates consistency in medical communication but can create comprehension difficulties for non-specialist audiences. The findings align with previous research that emphasizes the role of internationalization in medical terminology, where Latin- and Greek-derived terms are retained across multiple languages for consistency (Newmark, 1988). However, in the Uzbek medical lexicon, direct borrowings often lack phonetic and morphological adaptation, making them difficult to integrate into everyday medical discourse.

Calque formation is another widely employed strategy, particularly for compound medical terms that can be directly translated while preserving their original meaning. This method provides clarity and linguistic coherence, aligning with functional-semantic translation principles (Nida, 1964). However, this study found that not all English medical terms can be successfully translated through calque formation, especially those with idiomatic meanings or culturally specific connotations. In cases where calquing is ineffective, translators tend to resort to descriptive translation, which enhances patient understanding but may lead to overly complex or lengthy expressions.

Descriptive translation has proven effective in cases where the direct translation of medical terms results in ambiguity or misinterpretation. This strategy ensures that the meaning is fully conveyed, even if the translation itself is not concise. However, excessive use of descriptive translation can create challenges in medical documentation and communication, as it lacks the brevity and standardization required in technical fields (Hatim & Mason, 1997). This issue is particularly evident in Uzbek, where some translated medical terms become overly elaborate, reducing their practical usability in clinical contexts. Semantic modification is often necessary for culturally sensitive medical concepts. For example, "mental health" is translated as *ruhiy sog‘lik* in Uzbek, reflecting cultural perceptions of psychological well-being. While this strategy aligns with Skopos theory, which advocates for purpose-driven translation (Reiß & Vermeer, 1984), it raises concerns about maintaining scientific neutrality. Some medical concepts may be altered to fit cultural expectations, leading to potential misinterpretations.

An additional challenge identified in this study is the inconsistency of medical terminology across Uzbek-language medical sources. The presence of multiple translations for a single medical term, such as "radiology" appearing as both *radiologiya* and *nurlanish tibbiyoti*, indicates a lack of standardization. This inconsistency can lead to confusion among medical professionals and patients alike. Similar concerns have been raised in previous research, emphasizing the need for centralized medical glossaries to improve terminological consistency (Montalt-Resurrecció & González-Davies, 2007). Given these findings, it is evident that medical terminology translation must balance linguistic accuracy, functional-semantic equivalence, and practical usability. To enhance the quality of medical translations in Uzbek, there is a need for greater terminological standardization, improved translator training programs, and the development of comprehensive bilingual medical dictionaries.

Conclusion

The translation of medical terminology between English and Uzbek is a complex process that requires a careful balance between scientific accuracy, linguistic adaptability, and cultural appropriateness. This study has demonstrated that various translation strategies are employed depending on the nature of the term, the presence or absence of an existing equivalent, and the target audience’s familiarity with medical discourse. While direct borrowing facilitates international consistency, it is not always the most accessible option for Uzbek-speaking audiences. Similarly, calque formation is effective for structurally translatable terms but may not always capture the nuances of specialized medical terminology. Descriptive translation, though useful for patient

comprehension, can sometimes lead to overly elaborate expressions, while semantic modification may alter the intended meaning to fit cultural perceptions.

One of the most significant challenges identified in this study is the inconsistency of medical terminology across Uzbek-language sources. The presence of multiple translations for the same medical term suggests a lack of standardization, which can hinder effective communication in medical settings. This issue underscores the urgent need for the development of authoritative medical glossaries, standardized terminological guidelines, and comprehensive bilingual dictionaries that align with international medical standards.

From a functional-semantic perspective, the accuracy of medical translation is not merely a matter of linguistic substitution but involves multiple layers of meaning transfer. The findings of this study highlight the importance of context, audience, and domain-specific knowledge in medical translation. A functionalist approach, as advocated by Skopos theory, suggests that translations should be tailored to their intended purpose, whether for medical professionals, researchers, or patients. This approach ensures that translations are not only technically precise but also pragmatically effective in real-world applications.

In practical terms, this study suggests several key recommendations for improving medical terminology translation in Uzbek. First, the establishment of a centralized medical terminology database would help standardize commonly used medical terms and reduce inconsistencies. Second, translation training programs should incorporate specialized courses on medical translation, equipping translators with the necessary linguistic and subject-specific expertise. Third, collaboration between linguists, medical professionals, and policymakers is essential to ensure that medical terminology is both scientifically accurate and accessible to the general public.

The broader implications of this research extend beyond English-Uzbek translation, contributing to the growing body of literature on medical translation in non-European languages. As medical science continues to evolve and new terms emerge, the demand for precise and functional translations will only increase. Future research should focus on evaluating the effectiveness of different translation strategies in real-world medical contexts, assessing the impact of terminological inconsistencies on healthcare communication, and developing machine-assisted translation tools to enhance translation efficiency.

In conclusion, the translation of medical terminology is a multidimensional process that requires both linguistic expertise and domain-specific knowledge. Ensuring the functional-semantic accuracy of medical terms in Uzbek is essential for improving healthcare communication, medical education, and patient safety. By addressing the challenges identified in this study and implementing targeted solutions, translators and medical professionals can contribute to a more standardized and accessible medical terminology framework in Uzbek.

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