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Identifying and classifying translation issues in medical language

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Annotation

This article explores the complex nature of challenges faced when translating medical texts. Medical language is highly specialized, combining scientific terminology, abbreviations, and culture-specific references that require precise interpretation. The article proposes a classification framework for translation issues, dividing them into linguistic, terminological, cultural, and pragmatic categories. Linguistic issues include syntactic complexity and grammatical ambiguity, while terminological issues relate to the lack of standardized equivalents in the target language. Cultural issues arise from differences in healthcare systems, treatment approaches, and professional roles across countries. Pragmatic issues involve the intended audience, register, and purpose of communication, which can vary significantly between texts such as patient instructions, clinical trial reports, and academic articles. The article also highlights the importance of interdisciplinary knowledge, collaboration with medical professionals, and the use of multilingual databases to resolve these challenges. It emphasizes the role of training and technological tools, such as terminology management systems and machine translation post-editing, in improving translation quality. By providing a systematic classification of issues, the article offers practical insights for translators, educators, and medical practitioners involved in cross-linguistic healthcare communication. It contributes to enhancing accuracy, patient safety, and the overall effectiveness of medical translation.

Keywords

Medical translation, terminology equivalence, cultural adaptation, abbreviations, CAT tools, healthcare communication, clinical accuracy, multilingual terminology, translator competence.

Выявление и классификация проблем перевода в медицинском языке

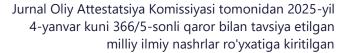
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Аннотация

Статья посвящена сложной природе трудностей, возникающих при переводе медицинских текстов. Медицинский язык отличается высокой степенью специализации, включает научную терминологию, аббревиатуры и культурно-специфические элементы, требующие точной интерпретации. В статье предлагается классификационная схема переводческих проблем, делящая их на лингвистические, терминологические, культурные и





прагматические категории. К лингвистическим проблемам относятся синтаксическая сложность грамматическая неоднозначность; терминологическим – отсутствие стандартизированных эквивалентов в языке перевода. Культурные трудности обусловлены различиями в системах здравоохранения, методах лечения и профессиональных ролях в разных странах. Прагматические аспекты связаны с целевой аудиторией, регистром и назначением текста, будь то инструкции для пациентов, отчёты о клинических исследованиях или научные статьи. В статье подчёркивается важность междисциплинарных знаний, сотрудничества с медицинскими специалистами и использования многоязычных баз данных для преодоления данных проблем. Отмечается роль профессиональной подготовки и технологических инструментов, таких как системы управления терминологией и постредактирование машинного перевода. Представляя классификацию проблем, систематизированную статья предлагает практические рекомендации для переводчиков, преподавателей и медицинских работников, способствуя повышению точности, безопасности пациентов и эффективности межъязыковой коммуникации в сфере здравоохранения.

Ключевые слова

Медицинский перевод, эквивалентность терминологии, культурная адаптация, сокращения, инструменты САТ, коммуникация в здравоохранении, клиническая точность, многоязычная терминология, компетентность переводчика.

Tibbiyot tilidagi tarjima masalalarini aniqlash va tasniflash

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Annotatsiya

Ushbu maqola tibbiy matnlarni tarjima qilishda uchraydigan murakkab muammolarni o'rganadi. Tibbiy til yuqori darajadagi ixtisoslashuvga ega bo'lib, ilmiy terminologiya, qisqartmalar va madaniyatga xos elementlarni o'z ichiqa oladi, ularni aniq tarjima qilish zarur. Maqolada tarjima muammolarini aniqlash va tasniflash uchun to'rt toifadan iborat tizim taklif etiladi: lingvistik, terminologik, madaniy va pragmatik muammolar. Lingvistik muammolar sintaktik murakkablik noaniqliklarni, terminologik muammolar esa maqsad tilida standart ekvivalentlarning yoʻqliqini gamrab oladi. Madaniy muammolar turli davlatlarda sogʻliqni saqlash tizimlari, davolash usullari va professional rollardagi farqlardan kelib chiqadi. Pragmatik muammolar esa matnning auditoriyasi, uslubi va maqsadi bilan bog'liq bo'lib, bu bemorlar uchun ko'rsatmalar, klinik tadqiqotlar hisobotlari yoki ilmiy maqolalar kabi turli matnlar uchun farq qiladi. Maqolada shuningdek, tibbiy mutaxassislar bilan hamkorlik, koʻp tilli ma'lumotlar bazalaridan foydalanish va tarjimonning soha bo'yicha bilimlari muhimligi ta'kidlanadi. Terminologiyani boshqarish tizimlari va mashina tarjimasini tahrirlash kabi texnologik vositalar sifatni



oshirishga xizmat qiladi. Ushbu maqola tarjima sifati, bemor xavfsizligi va tibbiy tarjimaning samaradorligini oshirishga qaratilgan foydali yondashuvlarni taklif etadi

Kalit soʻzlar

Tibbiy tarjima, atamalarning ekvivalentligi, madaniy moslashuv, qisqartmalar, CAT vositalari, sog'liqni saqlash aloqasi, klinik aniqlik, ko'p tilli terminologiya, tarjimon malakasi.

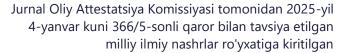
Introduction

Medical language is a highly specialized and sensitive domain of communication. In a globalized world where healthcare systems increasingly rely on multilingual communication, the role of the translator is critical. Medical translation errors can lead to patient harm, misdiagnosis, legal disputes, or treatment delays. Therefore, understanding the types of translation issues in medical language is essential for improving translation quality and ensuring clinical accuracy. This article aims to identify and classify the main types of translation issues in medical contexts and to analyze how these challenges can be addressed through training, standardization, and the integration of technology.

Linguistic and semantic issues. The first major category of problems involves linguistic and semantic mismatches. Medical terms often originate from Latin or Greek roots and may not have direct equivalents in the target language. Terms such as *myocardial infarction* or gastroenteritis can be either transliterated, translated descriptively, or adapted based on existing medical language conventions. Another challenge is polysemy, where a single term has multiple meanings. For instance, depression can refer to a psychological condition or a physical indentation. Inaccurate selection of meaning misunderstanding due to context compromise clarity. False friends also pose risks-for example, intoxication in English means alcohol or drug poisoning, while in many other languages it may imply general poisoning or infection. These nuances must be recognized and carefully rendered by the translator (Baker, 2018).

Cultural and pragmatic barriers. Medical language is not culturally neutral. Culturespecific concepts, such as traditional healing methods, reproductive health terminology, or mental health diagnoses, may carry different connotations or even taboos across cultures. Translators must balance faithfulness to the source text with cultural adaptation that preserves meaning while respecting the target audience. For example, euphemistic expressions about terminal illness or death may require different renderings in cultures where direct discourse is avoided. In addition, gender and inclusivity in language (e.g., pregnant people instead of pregnant women) have ethical implications that must be addressed sensitively in translation.

Technical abbreviation-related and challenges. Medical documents are filled with abbreviations, acronyms, and symbols, which often vary from country to country. For example, BP may refer to blood pressure, British Pharmacopoeia, or boiling point depending on context. Misinterpretation of abbreviations can have serious clinical consequences. Another issue is unit conversion and local standardsdosages, measurements, and reference ranges differ healthcare may across systems. Translators must be aware of these differences and adjust units accordingly to maintain patient safety.





Cognitive and knowledge-based difficulties. Medical translation requires a high degree of subject-matter knowledge. Translators lacking medical background may struggle with terminology, anatomical terms, or 2021). Unlike names (Li, translation, guessing is not acceptable-medical must be exact. Additionally, translators must deal with dense, technical sentence structures, particularly in clinical trials, surgical procedures, or pharmacovigilance reports. These documents often contain long noun phrases and passive constructions that require careful parsing and restructuring.

Use of technology in medical translation. Modern translators benefit from Computer-Assisted Translation (CAT) tools, terminology databases, and multilingual glossaries. Tools such as SDL Trados, MemoQ, and Wordfast help maintain consistency and manage terminology efficiently. However, reliance on machine translation (e.g., Google Translate, DeepL) without post-editing remains problematic, especially in medicine. These tools may misinterpret terms, mistranslate abbreviations, or ignore cultural nuances. Terminology management systems (TMS) and international resources like SNOMED CT, MedDRA, and WHO ICD-11 are essential for maintaining standardized translations in multilingual healthcare environments.

Proposed solutions and best practices. To improve the quality of medical translation, several strategies are recommended:

- Specialized training in medical terminology and ethics for translators.
- Use of approved, multilingual glossaries and institutional termbases.
- Interdisciplinary collaboration between translators, clinicians, and pharmacologists.
- Adherence to national and international terminology standards.

 Peer review and post-editing by subjectmatter experts before publication or clinical use.

In high-risk settings, such as emergency medicine or pandemic communication, the implementation of clear language principles and patient-friendly phrasing is crucial.

Legal and regulatory translation healthcare. Medical translation is often intertwined with legal and regulatory documents such as informed consent forms, patient rights charters, pharmaceutical packaging, and clinical trial protocols (Byrne, 2012). These documents must meet not only linguistic clarity but also juridical compliance. For example, terms in consent forms must be understandable by non-specialist patients but also legally binding in court if disputes arise.

Furthermore, the translation of national health legislation, insurance policies, or cross-border health agreements adds complexity due to the need for alignment with international health law, such as GDPR (for patient data) or the Declaration of Helsinki (2002 for clinical trials). Translators working with such texts must:

- Follow strict legal equivalents where available.
- Use consistent terminology across jurisdictions.
- Avoid interpretation or paraphrasing in places requiring legal precision.

Differentiation based on target audience. Another underexplored but critical challenge is the adjustment of medical language translation to the intended audience. The same source document may need different versions for:

- Medical professionals (e.g., radiologists, surgeons);
- Pharmacists or clinical staff:
- Patients with varying levels of health literacy;
- Regulators or ethics committees.



Each group requires a different lexical register, tone, and level of technical detail. For instance, a pharmaceutical leaflet may have both:

- A professional section with chemical composition and interactions.
- A lay summary with dosage instructions and side effects in plain language.

Translators must balance accuracy with accessibility, choosing when to simplify, explain, or retain technical terms based on user needs.

Typology of translation errors in medical contexts. Medical translation errors can be systematically categorized using an error typology framework, which is essential for translator training and quality assurance. Some types include:

- Terminological errors incorrect or inconsistent use of medical terms.
- Omission errors leaving out critical elements like dosage or warnings.
- Addition errors inserting explanations not present in the source.
- Transfer errors mistranslation due to false friends or ambiguity.
- Pragmatic errors failure to adapt to the cultural or institutional context.
- Formatting/layout errors misplaced tables or headings that affect readability or interpretation.

Documenting and analyzing these error types helps establish best practices and provides data for developing automated quality checks in CAT tools.

Multimodal and audiovisual medical content. With the rise of telehealth, instructional videos, and eHealth apps, medical communication is increasingly multimodal. Translation is no longer confined to printed text but includes:

- Subtitling for surgical tutorials.
- Voiceover for patient instructions.
- App interface localization.

- Infographics and visual aids in public health campaigns.
 - Each format presents unique challenges:
- Timing constraints in subtitles.
- Synchronization and clarity in voiceover.
- Space limitations in UI elements.
- Visual-semantic harmony in localized infographics.

Translators must be trained not only in text but in media localization principles, requiring collaboration with designers and developers.

Quality control and risk management in medical translation. Given the life-or-death consequences of medical translation errors, institutions are increasingly adopting structured quality control systems. These include:

- Back translation: the target text is translated back into the source language by an independent translator to identify discrepancies.
- Bilingual review by subject-matter experts.
- Terminology audits to ensure alignment with databases like MedDRA or SNOMED CT.
- Use of ISO-certified translation services (e.g., ISO 17100 for translation quality, ISO 13485 for medical devices).

Additionally, risk management tools like Failure Mode and Effects Analysis (FMEA) are being adapted from engineering to translation workflows to assess where potential misunderstandings might occur.

Ethical translation in public health messaging. Medical translation is also pivotal in public health, especially during pandemics or vaccine campaigns. Here, translators face ethical decisions such as:

- Choosing between scientific precision and urgent accessibility.
- Translating emotionally charged content (e.g., mortality data, quarantine orders).



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 Navigating political or cultural sensitivities while delivering essential information.

Failure to communicate clearly can lead to vaccine hesitancy, non-compliance with public measures, or panic. Thus, public health translators need training in health communication strategies, not just terminology.

Conclusion

The accurate translation of medical language is vital to global healthcare and patient safety. By identifying and classifying the

different types of issues-linguistic, cultural, cognitive, and technical-this article emphasizes the complexity and responsibility inherent in medical translation. Translators must be equipped not only with language skills but also with medical knowledge, cultural sensitivity, and technological proficiency. A typological approach to these challenges supports the development of targeted solutions that improve communication, reduce risks, and ensure ethical standards in healthcare delivery worldwide.

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