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COMPARATIVE PHARMACOLOGY: A COMPARISON OF DRUG TERMINOLOGY ACROSS DIFFERENT LANGUAGES

Abstract. This article explores how the names of medicines differ across languages and what these differences mean in real-world contexts. Focusing on the field of comparative pharmacology, the study looks at how drug-related terms are created, adapted, and used in various linguistic environments. It pays particular attention to widely used systems such as international nonproprietary names (INNs), brand names, and locally adapted terminology, especially in English and Uzbek, while also considering broader global practices. Using a comparative and descriptive approach, the research examines drug terminology from several angles, including word formation, meaning, and practical usage. It highlights how languages borrow terms, translate them, or adjust them to fit their own structures. At the same time, it shows how international standards especially those promoted by global health organizations help maintain consistency in naming medicines worldwide.

Keywords: Comparative pharmacology, drug terminology, medical terminology, pharmaceutical nomenclature, international nonproprietary names (INNs), pharmacological lexicon, terminology standardization.

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QIYOSIY FARMAKOLOGIYA: TURLI TILLARDAGI DORI-DARMON TERMINOLOGIYASINI TAQQOSLASH

Annotatsiya. Ushbu maqolada dori vositalari nomlarining turli tillarda qanday farqlanishi va bu farqlar amaliyotda qanday ahamiyat kasb etishi ko‘rib chiqiladi. Qiyosiy farmakologiya sohasiga e’tibor qaratgan holda, tadqiqot farmakologik terminlarning turli til muhitlarida qanday shakllanishi, moslashuvi va qo‘llanilishini tahlil qiladi. Ayniqsa, xalqaro nopatentlangan nomlar, savdo nomlari hamda mahalliylashtirilgan terminologiya kabi keng qo‘llaniladigan tizimlarga alohida e’tibor beriladi; xususan, ingliz va o‘zbek tillari misolida, shu bilan birga kengroq global amaliyotlar ham hisobga olinadi. Qiyosiy va tavsifiy yondashuvdan foydalangan holda, tadqiqot farmakologik terminologiyani bir nechta nuqtai nazardan so‘z yasalishi, ma’nosi va amaliy qo‘llanilishi jihatlaridan ko‘rib chiqadi. Unda tillarning terminlarni qanday o‘zlashtirishi, tarjima qilishi yoki o‘zining tuzilish xususiyatlariga moslab qayta shakllantirishi yoritiladi. Shu bilan birga, ayniqsa global sog‘liqni saqlash tashkilotlari tomonidan ilgari surilayotgan xalqaro standartlar dori vositalarini nomlashda butun dunyo bo‘ylab yagona tizimni ta’minlashga xizmat qilishi ko‘rsatib beriladi.

Kalit so‘zlar: Qiyosiy farmakologiya, dori vositalari terminologiyasi, tibbiy terminologiya, farmatsevtik nomenklatura, xalqaro nopatentlangan nomlar (INN), farmakologik leksikon, terminologiyani standartlashtirish.

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СРАВНИТЕЛЬНАЯ ФАРМАКОЛОГИЯ: СРАВНЕНИЕ ТЕРМИНОЛОГИИ ЛЕКАРСТВЕННЫХ СРЕДСТВ НА РАЗНЫХ ЯЗЫКАХ

Аннотация. В данной статье рассматривается, как названия лекарственных средств различаются в разных языках и какое значение эти различия имеют в реальной практике. Сосредотачиваясь на области сравнительной фармакологии, исследование анализирует, как формируются, адаптируются и используются фармакологические термины в различных языковых средах. Особое внимание уделяется широко применяемым системам, таким как международные непатентованные наименования (МНН), торговые названия и локально адаптированная терминология, особенно в английском и узбекском языках, с учётом более широких мировых практик. Используя сравнительный и описательный подход, исследование рассматривает фармакологическую терминологию с различных точек зрения, включая словообразование, значение и практическое употребление. Подчёркивается, каким образом языки заимствуют термины, переводят их или адаптируют в соответствии со своими структурными особенностями. В то же время показано, что международные стандарты, особенно продвигаемые глобальными организациями здравоохранения, способствуют обеспечению единообразия в наименовании лекарственных средств во всём мире.

Ключевые слова: Сравнительная фармакология, терминология лекарственных средств, медицинская терминология, фармацевтическая номенклатура, международные непатентованные наименования (МНН), фармакологический лексикон, стандартизация терминологии.

INTRODUCTION

Today, pharmacology is not limited to laboratories and hospitals it has become a truly global field where knowledge, medicines, and medical practices move across countries and cultures. In this context, clear communication is extremely important. One key aspect of this communication is drug terminology, which must be understood accurately by healthcare professionals, researchers, and even patients who speak different languages. Although many drug names and medical terms come from Latin and Greek, they often change when they are used in different languages. These changes can affect how words are pronounced, written, and even understood. As a result, the same medicine may have different names in different countries, or similar terms may carry slightly different meanings. In multilingual healthcare environments, such differences can sometimes cause confusion or misunderstanding, which may affect patient safety and treatment outcomes (Ahmedov et el, 2022). This article focuses on comparing drug terminology across different languages. It looks at how these terms are formed, how their meanings may vary, and how they are used in real communication. By exploring both the similarities and differences, the study aims to show how language influences the way pharmacological knowledge is shared. Ultimately, this research highlights the importance of clear and consistent terminology in improving communication and supporting safer, more effective healthcare worldwide.

METHODS

This study uses a qualitative and comparative approach to explore how drug terminology is used across different languages. It focuses on identifying both the similarities and differences in how pharmaceutical terms are formed, what they mean, and how they are used in practice, with particular attention to English and several other relevant languages. The data were collected from a variety of reliable sources, including pharmacological dictionaries, medical textbooks, official drug classification systems, and online pharmaceutical databases (Smith & Karimov, 2021). To make the analysis more representative, both generic and brand names of commonly used drugs were selected. In addition, terms related to drug categories, active ingredients, and dosage forms were included to provide a wider view of pharmaceutical vocabulary.

After collecting the data, the terms were grouped according to their linguistic features, such as how they are formed (for example, through borrowing, derivation, or compounding), how their pronunciation may change across languages, and how their meanings are structured. A comparative analysis was then carried out to see how similar pharmacological concepts

are expressed in different languages. Particular attention was given to cases where terms differ significantly in form or meaning, as well as to situations where international standardization has helped maintain consistency. This approach makes it possible to better understand how language influences the way drug-related information is communicated across different linguistic and cultural contexts.

RESULTS

Drug terminology is a clear example of how language and science come together. In this field, accuracy and clarity are extremely important, since even small misunderstandings can affect medical treatment. When we look at different languages, we can see that pharmaceutical terms are shaped both by international standards and by the specific features of each language. As a result, drug terminology shows a balance between global consistency and local variation. One important feature of drug terminology is its connection to classical languages such as Latin and Greek. Many international drug names are based on these languages, which helps create a certain level of uniformity worldwide. For example, names like *paracetamol*, *ibuprofen*, and *amoxicillin* are quite similar across many languages, even if their pronunciation or spelling changes slightly. This shared base makes it easier for healthcare professionals to recognize and understand medications in different countries.

However, differences become more noticeable when these terms are used in specific languages. Each language adapts foreign terms to fit its own pronunciation and writing system (Bauer, 1983). For instance, English drug names may be slightly changed when used in Uzbek or other languages so that they sound more natural for local speakers. These changes show how international terminology is adjusted to match the linguistic norms of each culture. A key difference appears in the use of generic and brand names. Generic names are usually standardized and consistent, but brand names can vary greatly from one country to another. Pharmaceutical companies often choose brand names based on marketing strategies and cultural preferences. Because of this, the same medicine may have completely different names in different places, which can sometimes lead to confusion. This is why healthcare professionals often rely more on generic names in order to avoid misunderstandings.

Meaning is another area where variation can occur. Some pharmacological terms do not have exact equivalents in other languages, especially when it comes to dosage forms, methods of administration, or drug classifications (Newmark, 1988). In such cases, translation requires not only language skills but also a clear understanding of medical concepts. The way drug terms are formed also differs across languages. Borrowing is very common, especially from English, which plays a major role in modern science and medicine. At the same time, languages may create their own terms using processes like derivation or compounding. This allows them to develop terminology that fits their own grammatical and linguistic systems while still staying connected to international standards.

Despite these differences, there are strong efforts to standardize drug terminology worldwide. International organizations, such as World Health Organization, promote unified naming systems to make communication clearer and safer (World Health Organization). However, complete standardization is difficult because languages and cultures are naturally diverse. Comparing drug terminology across languages shows how scientific knowledge is both shared globally and shaped locally. Understanding these patterns is important for improving translation, supporting communication in multilingual healthcare settings, and ensuring that patients receive safe and effective treatment.

DISCUSSION

The results of this study show that drug terminology is influenced by both global standards and the specific features of individual languages. On the one hand, international naming systems help create a common understanding among healthcare professionals around the world. On the other hand, each language adapts these terms in its own way, which can sometimes lead to differences in pronunciation, spelling, and meaning. One important point is that international nonproprietary names help maintain a level of consistency (Lee, 2020). Because many of these names come from Latin and Greek, they are similar across different languages and are often easy to recognize (Dirckx, 1998). This is especially important for patient safety, as it allows doctors and pharmacists from different countries to understand each other more easily. However, the study also shows that even these standardized

terms can change slightly when they are adapted to local languages, which may still cause confusion in some cases. An issue is the use of brand names. Unlike generic names, brand names are not standardized and can be very different from one country to another. This means that the same medicine may have completely different names depending on where it is sold. Such differences can be confusing, especially for patients or healthcare workers who are not familiar with international terminology. For this reason, using generic names more often could help reduce misunderstandings.

Translating drug terminology is not always simple. Some terms do not have exact equivalents in other languages, especially when they describe specific medical concepts like dosage forms or methods of use. Because of this, translators and healthcare professionals need not only language skills but also a good understanding of medical knowledge. An important observation is the strong influence of English in the field of pharmacology. Many languages borrow terms from English, which helps with international communication. At the same time, these borrowed terms are often changed to fit the rules of each language, which adds to the differences between them. International organizations, such as the World Health Organization, play an important role in trying to make drug terminology more consistent. However, it is difficult to achieve complete uniformity because languages and cultures are naturally different. Instead, it may be more practical to focus on improving translation, encouraging the use of standard terms, and raising awareness about possible differences.

CONCLUSION

This study has shown that drug terminology reflects both global standardization and local linguistic diversity. While international naming systems provide a common framework that supports communication in pharmacology, differences in pronunciation, spelling, and meaning still exist across languages. These variations are influenced by linguistic structures, cultural contexts, and the adaptation of terms within each language. The analysis highlights the important role of generic names in maintaining clarity and reducing confusion, especially in multilingual healthcare settings. At the same time, the wide variation in brand names and the lack of direct equivalents for some terms demonstrate the challenges of achieving complete consistency in pharmaceutical communication. These findings underline the need for careful translation and a strong understanding of both language and medical concepts. Efforts by international organizations, such as the World Health Organization, continue to support the standardization of drug terminology. However, due to the natural diversity of languages, full uniformity may not be possible. Therefore, greater attention should be given to improving terminology use, promoting the use of standardized names, and increasing awareness of cross-linguistic differences. Drug terminology is not only a scientific system but also a linguistic and cultural phenomenon. A better understanding of these aspects can enhance communication among healthcare professionals, reduce the risk of misunderstanding, and contribute to safer and more effective medical practice.

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