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Translation of acronyms and initialisms in medical texts on cardiology

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ABSTRACT

Introduction and objectives: Acronyms and initialisms are frequently used in medical texts. Their translation is not only language-dependent, but also culture-bound. The objective of this research was to analyze the problems associated to the translation from English into Spanish of acronyms and initialisms used in medical texts on Cardiology.

Method: This is a qualitative, interpretive, descriptive, synchronic study based on the lexical analysis of acronyms and initialisms in the English source text (ST) and the Spanish target text (TT), within the framework of descriptive translation studies. An empirical textual sample of 8 medical articles on Cardiology was analyzed, as well as their corresponding translations into Spanish.

Results: In the corpus 83 acronyms and initialisms were identified. Only 15 were identified as acronyms. When analyzing the acronyms and initialisms, it was found that, in most of the cases, suitable solutions were given to the translation problems posed by their use in the TT, and such solutions coincided with the ones proposed in the reviewed literature on the topic. Some difficulties were found, however; they were related to the use of acronyms and initialisms appearing in the ST without their full form or without an explanation, especially those referring to institutions and regional or national organizations.

Conclusions: Acronyms and initialisms are not only linguistic forms, but they are also objective phenomena within scientific culture and they are cultural referents. That is why their use and translation imply linguistic as well as extra-linguistic considerations which demand from the translator the use of auxiliary sources and reference materials, including interviews to specialists, to achieve quality and precision in the translated text. This will guarantee the fulfillment of its main communicative function, that is, to provide useful information to health care-related staff.

Key words: Acronym, Initialism, Translation, Cultural Characteristics

Traducción de acrónimos y siglas en textos médicos de cardiología

RESUMEN

Introducción y objetivos: Con frecuencia en los textos médicos se utilizan acrónimos y

siglas. Su traducción no solamente constituye un problema lingüístico, sino también cultural. El objetivo fue analizar los problemas asociados a la traducción del inglés al español de acrónimos y siglas usados en textos médicos de Cardiología.

Método: Se trata de un estudio sincrónico, descriptivo, interpretativo y cualitativo que se basa en el análisis léxico de acrónimos y siglas tanto en la lengua de partida (inglés) como en la de llegada (español), dentro del marco de los estudios descriptivos de la traducción. Se utilizó una muestra textual empírica compuesta por 8 artículos médicos sobre Cardiología y los textos traducidos correspondientes.

Resultados: En el *corpus* se identificaron 83 acrónimos y siglas, del total, solo 15 fueron identificados como acrónimos. Al analizar el total de casos identificados de siglas y acrónimos, se pudo determinar que, en la mayoría de los casos, se dieron soluciones satisfactorias a los problemas de traducción impuestos por el uso de siglas y acrónimos en los textos en la lengua de llegada y estas soluciones responden a las propuestas que se hacen en la literatura. Sin embargo, se encontraron dificultades evidentes con el uso de acrónimos y siglas sin su forma desarrollada o una explicación, especialmente los que se refieren a nombres de instituciones u organizaciones regionales, nacionales o locales.

Conclusiones: Los acrónimos y siglas no constituyen meramente formas lingüísticas, sino que se refieren a fenómenos objetivos de la cultura científica y constituyen referentes culturales. Por lo que su uso y su traducción implican consideraciones lingüísticas y extralingüísticas que demandan del traductor el uso de medios auxiliares y fuentes de referencia, incluida la consulta a especialistas, para producir un texto caracterizado por su precisión y calidad, y que garantice el cumplimiento de su función comunicativa fundamental, brindar información útil al personal de la salud.

Palabras clave: Acrónimo, Sigla, Traducción, Características Culturales

INTRODUCTION

Translation is a kind of activity that inevitably involves at least two languages and two cultural traditions. This implies that translators are permanently faced with the problem of how to deal with the cultural aspects that are implicit in a source text (ST) and of finding the most appropriate way of successfully conveying these elements in the target language (TL)[1].

It is common to find cultural elements in any kind of text, even in specialized texts, such as medical texts. A specialized text is a product of a Language for Specific Purposes. It is often a vehicle of research, instruction, clarification, or dissemination of information[2].

Given that a cultural referent is a type of expression used to make reference to an element or particular phenomenon in a particular community and it is considered as a distinctive feature of that particular community, cultural referents in medical texts can appear in different forms[3,4]. Martinez[4] states that cultural referents in specialized texts, including medical texts, can be found in the form of metaphors, Latinisms, Spanglish, the treatment of commercial brands, linguistic variations, the combination of technical and non-technical words, and also abbreviations, such as acronyms and initialisms.

Thus, acronyms and initialisms can be considered as cultural referents in medical texts because they are used to name a wide variety of concepts and medical phenomena, which include diseases, chemical compounds, procedures, therapies, organizations, geographic places, among others.

Medicine is a field of knowledge in accelerated scientific and technological development that each year incorporates a large number of new terms into the medical lexicon, including abbreviations. In general terms, Perez Peña[5] states that there is an increasing and alarming deterioration of the medical language since specialists use abbreviations exaggeratedly, and this hinders communication in this field.

Cardiology is a branch of Medicine that has been plagued by the wide use of acronyms and initialisms, and their sometimes wrong and indiscriminate use is prevalent in many occasions as a result of inadequate translations and their indiscriminate use by specialists.

For medical translators the use of acronyms and initialisms poses a translation problem, since they are widely used to refer to diverse medical phenomena, which range from the names of diseases to health-related organizations; this means that they are cultural referents present in medical texts. Professional translators often find it difficult to deal with them, especially because finding the best solution depends not only on linguistic factors but also on extralinguistic and cultural factors.

The main translation problems associated to the use of acronyms and initialisms, identified by Pakhomov[6], Benavent e Iscla[7] and Giraldo[8], are related to the ambiguity that these elements cause when no explanations are provided, when they lack equivalents in the TT, and when they are borrowings because the TT form is the same used in the ST. Other problems associated to acronyms and initialisms are the changes that occur when translated into Spanish because they have an accepted or standardized equivalent, the inadequate use of the prepositions in the TT, and the use of the names of national institutions and organizations. Gender and plural forms of acronyms and initialisms are also problems translators have to deal with, as well as the lack of etymological derivation, the existence of more than one meaning, and the use of English abbreviations that are nominal groups with multiple modifications.

It is important to study such phenomena in medical translation because, as Lopez Espinosa[9] states, the medical translator has a professional and humane responsibility to fulfill: conveying information from a source language (SL) into a target language (TL) means not only to offer information to health-care professionals, the content of these texts may also mean "health promotion, conservation and development, and in many cases saving, recovering or prolonging a human life".

In spite of their wide use, in Cuba there is not enough literature or research concerning the use of acronyms and initialisms as cultural referents in medical texts.

Thus, considering all the above, and assuming that the translation of acronyms and initialisms is not only language-dependent but also culture-bound, and that an inadequate translation may bring about comprehension problems or misunderstandings among medical specialists, the objective of this research is to analyze the translation problems associated to the translation into Spanish of acronyms and initialisms used in English medical texts on Cardiology.

METHOD

This study is a qualitative, interpretive, descriptive, synchronic study based on the lexical analysis of acronyms and initialisms in the English ST and the Spanish TT, within the framework of descriptive translation studies.

For the purpose of the study, an empirical textual sample of 8 medical texts on Cardiology was used, as well as the translations of such texts. The source language (SL) is English and the target language (TL) is Spanish.

The source texts were selected from articles published from 1996 to 2006. They appeared in the following medical journals: Bioorganic and Medicinal Chemistry, Annals of Thoracic Surgery, American Heart Journal, Neurology, *Boletín Asociación Médica de Puerto Rico,* JAMA (Journal of American Medical Association) and Iranian Journal of Medical Sciences and Epidemiology.

The target texts were produced by translators from the Translation Department in the "Serafín Ruiz de Zárate Ruiz" Medical University (Santa Clara, Cuba). The translated texts are used as reference material by doctors, nurses, and medical students in this institution.

First acronyms and initialisms were identified in the STs. Their identification was based on the criteria that abbreviations, or lexical reductions, are formed by taking just the initial or any other letter from a group of words. According to Kasprowicz[10], an abbreviation is understood as a shortened form of a word or phrase, spelled according to the rules of a particular language.

There are different types of abbreviations. They can appear in the form of clippings, blends, acronyms and initialisms. In this research, only acronyms and initialisms are the focus of attention. Once acronyms and initialisms were identified, the TTs were analyzed in order to determine how the translators dealt with this translation problem, and later conclusions are drawn as to the correct or incorrect use of acronyms and initialisms.

Another feature of the descriptive translation approach is that it requires a *tertium comparationis* that will serve as the basis of comparison for the description of the ST and the TT. In the case of the present study, the *tertium comparationis* comprises

abbreviations and initialisms in medical articles, considered as cultural referents, based on the fact that their use is not only language-determined, but also culture-bound.

Acronyms and initialisms were drawn from STs and TTs and grouped according to the criteria provided by SNOMED clinical terminology[11,12], which allowed defining their pragmatic function. Afterwards, acronyms and initialisms were analyzed and classified taking into account their grammatical category and the correspondence between them and their developed forms. Gender and number were taken into account as well. As for syntax, acronyms and initialisms were divided into total, partial or nil correspondence with their full form.

Another type of analysis took into account the presence of the equivalent or the explanation of the acronym or initialism, or the lack thereof, and it was also analyzed if letters and numbers were combined to form them. Finally an analysis of the problems they represent to translators was made and possible solutions were proposed.

Other analyses were based on the presence or absence of the acronym or initialism along with their full explanation, and their formation by combining letters and numbers. Finally, an analysis of the problems they represent for translators of specialized texts was made and solutions to those problems were proposed.

RESULTS

The identification of acronyms and initialisms was based on the criteria of Kasprowicz[10] and Crystal[13] who state that those terms describe a lexical entities formed from one to several capitalized initial letters. The difference between them is that acronyms are pronounced as one word, and form a new word, while initialisms are articulated as separate sounds.

In the corpus, a total of 83 acronyms and initialisms were identified, and only 15 of them were identified as acronyms.

When analyzing these acronyms and initialisms according to the SNOMED medical terminology, their behavior was the following (Chart).

No representative cases of Clinical findings (signs and symptoms), Living organisms (bacteria, virus, animals, plants), Specimens and Events (adverse events, accidents) were found.

According to Giraldo[8], acronyms and initialisms were also clasiffied as proper or mixed. Proper acronyms and initialisms are exclusively formed by the initial letters of the lexical units they are derived from. In this research 43 initialisms and 13 acronyms were classified as proper, such as TIA: transient ischemic attacks and TIMI: Thrombolysis In Myocardial Infarction. Mixed acronyms and initialisms are formed by figures, by symbols, by the omission of the main parts of the words they are derived from or by any letter of the words they are derived from, but the initials.

In the sample 23 mixed initialisms and 3 mixed acronyms were found, for example, MPO: myeloperoxidase and NSAIDs: nonsteroidal anti-inflammatory drugs. A small part of the mixed acronyms and initialisms was represented by chemical symbols, where letters and numbers are combined.

In the sample all the acronyms and initialisms were classified as nouns; however, when their grammatical function was analyzed, 19 out of the 83 abbreviations performed as adjectives in the texts in English, for example, AD effect and GUSTO III study. The rest of them functioned as nouns.

In the case of the source texts, that is, the texts written in English, it was not possible to determine gender marks in the identified acronyms and initialisms. In the case of number, plural marks in English is represented by a lowcase ‘s’ after the acronym or the initialism. Only 4 cases of addition of the plural mark suffix were detected in the sample, for example, EEGs; however it is important to mention that some cases where the plural marks are not used were identified, but it was possible to determine that they were plural nouns because their full form was also given, that is the case of LDL (low density lipoproteins).

From the syntactic point of view the correspondence between the acronyms and the initialisms with their full forms was analyzed. The criterion taken into account was that of Giraldo[8]; this author make a distinction among total correspondence (when each of the initial letters of the full form is present in the acronym or initialism), partial correspondence (when one of the initial letters or any other letter of the full form is not present in the acronym or initialism), and the nil correspondence (it is given by the absence of the initial or any other letter of the full form).

There was total correspondence in 54 cases, partial correspondence in 25 cases, and 4 cases of nil correspondence.

During the analysis it was detected that many

Chart. SNOMED classification of acronyms and initialisms.

Hierarchies	Amount of Acronyms/Initialisms	Example
Pharmaceutical/biologic product	29	PMS (phenazine methosulfate)
Procedures	13	CPB (cardiopulmonary bypass)
Environment or geographical location	13	UCI (intensive care unit)
Social context	13	NHANES (National Health and Nutrition Examination Survey)
Diseases	12	CHD (congenital heart disease)
Qualifier values	7	BMI (body mass index)
Body structures	3	VSMC (vascular smooth muscle cells)
Physical objects and record artifacts	2	SAS (statistical analysis system) statistical software
Physical forces	2	QRS axis

authors chose to use acronyms and initialisms without the corresponding full forms; though it is advisable, even among specialists of a given field of expertise, to include their full forms when they appear for the first time, so as to make comprehension possible thus avoiding misunderstanding or confusion

DISCUSSION

Many of the translation problems found in the texts were associated to the phenomena described above. The identification of such problems was based on the proposals given by Pakhomov[6], and Benavent and Iscla[7].

The first problem detected was the absence of the full form of the acronym or initialism in the ST. Sometimes the translator is not a medical expert. This means that he or she may not know the meaning of the acronym or initialism, and as a result there is a tendency to keep it just as it is used in English, to use a non-standardized equivalent or to use of the standardized equivalent in Spanish, without including its full form, which is the suggested procedure for both the author and the translator. For example,

- **PDA** subjects included 2 premature infants.
- *Los sujetos con Ductus Arteriosus Permeable (**DAP**) incluyeron 2 niños.*

In the example the translator included the full form of the initialism to ensure a better understanding.

The second problem detected was related to those cases where the Spanish form is the same as the English form, that is, when Spanish acronyms and initialism are borrowings from English. For example,

- The **ORAC** values for pindolol and propranolol were 0.62 respectively.
- *Los valores **ORAC** para el pindolol y el propranolol fueron 0,62, respectivamente.*

In this case the initialism in English is kept when translated into Spanish but it is advisable, not only to include its full form the first time it is used, but also to explain that the initialism comes from the English language. In this case the Spanish translation must has been as follows: *"Los valores ORAC (Capacidad de Absorción de Radicales de Oxígeno, por sus siglas en inglés) para el pindolol y el propranolol fueron 0,62, respectivamente."*

The third problem appears when there is a standardized equivalent in Spanish that is different from the English initialism or acronym. As in the previously mentioned cases, the translator must resort the auxiliary resources (dictionaries, glossaries, databases, books, among others), and even interview medical

experts to find the accepted or standardized equivalent in the target text. For example, in the case shown below, the translator uses the English initialism in the Spanish text (*MI*); however, there is a well-known standardized equivalent in Spanish (*IM*), which the translator should have used.

- Background Prompt restoration… improves survival in patients with acute myocardial infarction (**MI**).
- *Una rápida restauración… aumenta la supervivencia en pacientes con infarto de miocardio (**MI**).*

When the acronym or initialism refers to the names of national institutions, groups or organizations or places, problems can also appear because it is not only a problem from a linguistic point of view, but also form a cultural point of view since these institutions, organizations or groups may have a local character. The translator must be capable of conveying information to the reader so that he/she can fully understand the text that is reading. For example,

- It may be more difficult to detect an association that actually exists, particularly in an insured **HMO** population.
- *Puede ser más difícil detectar una asociación que realmente existe, particularmente en una población **HMO** asegurada.*

In this particular case the solution given by the translator is incomplete and unsatisfactory. The equivalent or full form of the initialism is not included and the idea of the text in English is not conveyed. Even for specialists it can be difficult to identify what does HMO stands for. Once more, the use of reference and auxiliary sources is crucial to provide a solution that works from the communicative point of view. In this case it is about an institution that is set in the the United States health care system context; thus, as it is a very specific context, it is advisable not only to include its full form or its Spanish equivalent, if there was any, but also a brief explanation in Spanish, as in *"Puede ser más difícil detectar una asociación que realmente existe, particularmente en una población asegurada por la HMO (Health Managament Organization, una organización estadounidense que brinda atención médica mediante pagos mensuales)".*

Another translation problem found was the use of multiple modification of a noun, for example, when nouns are used to modify other nouns in the full form; this is not a common syntactic structure in Spanish. In these cases it is necessary for the translator to identify the relationship among the different elements forming the nominal phrase that constitutes the full form of the acronym or initialism. This requires not only linguistic knowledge but also cultural knowledge, since the essence of translation here is to find the relationship among the elements from a pragmatic point of view. The following example illustrates this problem:

- Scavenging activities of pindolol may contribute for enhancing and/or accelerating selective serotonine specific reuptake inhibitors (**SSRI**).
- *Las actividades de depuración del pindolol pudieran contribuir a incrementar los inhibidores específicos en la reabsorción de la serotonina selectiva (**IERSS**).*

In this case the translator was able to find the relationship among the various modifiers and the phrase nucleus, in spite of the fact that there are no connecting elements between them. Several prepositions were used in the Spanish full form to convey these relationships.

Conveying gender is also a problem when translating from English into Spanish since gender in English many times is not a grammatical category, but a pragmatic one, and it is assigned on the basis of natural gender, that is why, for example, adjectives have no gender marks, and many nouns either. Thus, gender is identified in Spanish based on the gender marks of the semantic nucleus of the initialism or acronyms, as it is seen in the following cases, where the translator finds a suitable solution.

- The confidence intervals (**CI**) for chest pain associated with migraine were calculated from the ratio of proportions.
- *Los intervalos de confianza (**IC**) para el dolor precordial asociado con migraña fueron calculados de la relación entre las proporciones.*
- Many of these problems have been attributed to cardiopulmonary by-pass (**CPB**)…
- *Muchos de estos problemas han sido atribuidos a la derivación cardiopulmonar (**DCP**)…*

Another problem the translator has to face when working with acronyms and initialisms is the use of plural forms. In English the presence or absence of plural marks (-s) is accepted, but not in Spanish, where acronyms and initialisms do not accept the plural morpheme –s, and if the number of the abbreviation is

not made explicit in the context, it is stated by the use of the singular or plural articles, and in some cases through duplication (EE.UU.). For example, in the following case the translator was not able of finding a proper solution. He or she does not add a plural marks nor the corresponding article:

- In the lab randomized controlled trials (**RCTs**) have critically analyzed…
- *En el laboratorio **RCTs** han analizado rigurosamente…*

It should have been: *"En el laboratorio, los ensayos clínicos aleatorizados (RCT, por sus siglas en inglés) han analizado rigurosamente…"*

When analyzing the total cases of identified acronyms and initialisms it was determined that in most of the cases suitable solutions were given to the translation problems posed by the use of acronyms and initialisms in the target texts, and those solutions coincided with the those proposed in literature[6,10,14,15]. However, some difficulties in relation to the use of acronyms and initialisms without their full form or without an explanation were found, specifically those referring to the names of regional, national or local institutions or organizations.

CONCLUSIONS

It is important for both authors and translators to bear in mind that acronyms and initialisms are not solely linguistic forms, but they also refer to objective phenomena which are part of a scientific culture and they are cultural referents. That is why their use and translation implies linguistic as well as extralinguistic considerations that demand from the translator the use of reference materials and auxiliary resources, as well as resorting to experts, in order to produce a text characterized by its precision and quality, a text that guarantees the fulfillment of its main communicative function, that is, to provide useful information to health care professionals.

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