
RESEARCH ARTICLE

***Un-Stroking* the Spanish Translations (and Synonyms) of “Stroke”: A Comparative Analysis**

Esther Vázquez y del Árbol

Full Professor in Translation and Interpreting, Universidad Autónoma de Madrid, Madrid, Spain

Corresponding Author: Esther Vázquez y del Árbol, **E-mail:** esther.vazquez@uam.es

ABSTRACT

Within the field English-Spanish medical translation we encounter a noteworthy list of difficulties, arising from the fact that medical English oftentimes tends to use either a single term (or a phrase) lexicalizing each concept. Considering the increasing relevance of “stroke” nowadays, we aimed at researching the Spanish renderings (and synonyms) for this issue in order to see whether the English language provides us with more or less terms and phrases. By using institutional and professional sources, in this paper, we first delve into the etymology of “stroke” in English language, as well as the stroke types and subtypes, recording a total of 10 lexical items and phrases. Then, we research into the Spanish counterparts. By referring to computer-aided translation, as well as human translation, later on we carry out the English-Spanish contrast. Overall, the findings unveil how Spanish lexical and phrase items (n=33) triple the English ones available (n=10).

KEYWORDS

Stroke, English-Spanish Translation, Medical Translation, Computer-aided Translation, Human Translation

ARTICLE INFORMATION

ACCEPTED: 20 July 2024

PUBLISHED: 05 August 2024

DOI: 10.32996/ijllt.2024.7.8.12

1. Introduction

Nowadays, the current scenario is featured by a plethora of diseases, stemming partially by the emergence of COVID-19 and the resulting vaccines. Among other pathologies, such as myocarditis, pericarditis, Guillain-Barré syndrome, fibromyalgia, multiple sclerosis, depression, and anxiety disorders (to quote some); a panorama where stroke, one of the most representative illnesses of acquired brain injury, is increasingly becoming a daily and troublesome threat to human health.

According to a research study recently published in the scientific journal called *Vaccine* (Faksova et al., 2024), unveiled the following side effects linked to COVID-19 vaccines, as quoted below,

There was a statistically significant increase in Guillain-Barré syndrome within 42 days after the first dose of the AstraZeneca vaccine—76 events were expected and 190 events were observed (observed to expected ratio 2.49; 95% confidence interval 2.15 to 2.87). A statistically significant increased risk of CVST was also observed following the first dose of the AstraZeneca vaccine (OE ratio 3.23; 95% CI 2.51 to 4.09).

The study also confirmed significantly higher risks of myocarditis following the first, second, and third doses of the Pfizer and Moderna vaccines as well as pericarditis after the first and fourth dose of Moderna vaccine, and third dose of AstraZeneca vaccine in the 42 days following vaccination.

As well as these known risks the researchers also identified a possible safety signal for acute disseminated encephalomyelitis (AEDM) and transverse myelitis with both viral vector and mRNA vaccines.

As mentioned above, quite apart from the fact that stroke is one of the most representative diseases of brain injury, this condition is also among the list of current disorders directly or indirectly linked to COVID-19, and its vaccines. As is well known, translators and interpreters are very helpful in order to convey the advances and knowledge on science and technology (among other issues), and in a worldwide situation like COVID-19, where news ought to be promptly communicated, our task was of utmost importance.

It is well known that English scientific-technical language (regarded as a lingua franca for science and technology) deals with plenty of terms with Latin and Greek origin, whereas Spanish scientific-technical language has a vast reservoir of Latin, Greek, and also English terminology, creating a complex translation situation when it comes to deciding which target term (among plenty of synonyms) fits more suitably within a specific context.

Before going into our research corpus and methodology, and since this research paper is related to medical translation, and synonymy, we will briefly tackle the most relevant matters of our topic, considering that so far, no research has been conducted anywhere linking these two issues.

2. Literature Review

As quoted by Britannica Encyclopaedia (2024), "Among the many examples of investigation for study within semantics are the sense relations between words." To this respect, Lyons brightened that "all sense relations are in principle context – dependent" (1971: 452). Overall, lexical units are researched for their relations with the system of language, whether it be either semantic relations (synonymy, hypernymy, homonymy, antonymy, etc.) or syntagmatic relationships (inflections and degrees of delicacy) or semantic ones. Let us then explain the definition of the term synonymy, by quoting several lexicographical references.

Collins Dictionary (2024) defines synonymy in grammar the following way,
(sɪˈnɒnɪmɪ IPA Pronunciation Guide)

Word forms: plural -mies

1. the study of synonyms
2. the character of being synonymous; equivalence
3. a list or collection of synonyms, esp one in which their meanings are discriminated
4. biology
a collection of the synonyms of a species or group.

Equally, Cambridge Dictionary (2024) provides us with the following definition for synonym, "a word or phrase that has the same or nearly the same meaning as another word or phrase in the same language. The words "small" and "little" are synonyms."

Accordingly, The Free Dictionary Thesaurus (2024) illustrates the term ('The quality of being synonymous; equivalence of meaning') in relation to synonymity and semantic relations,

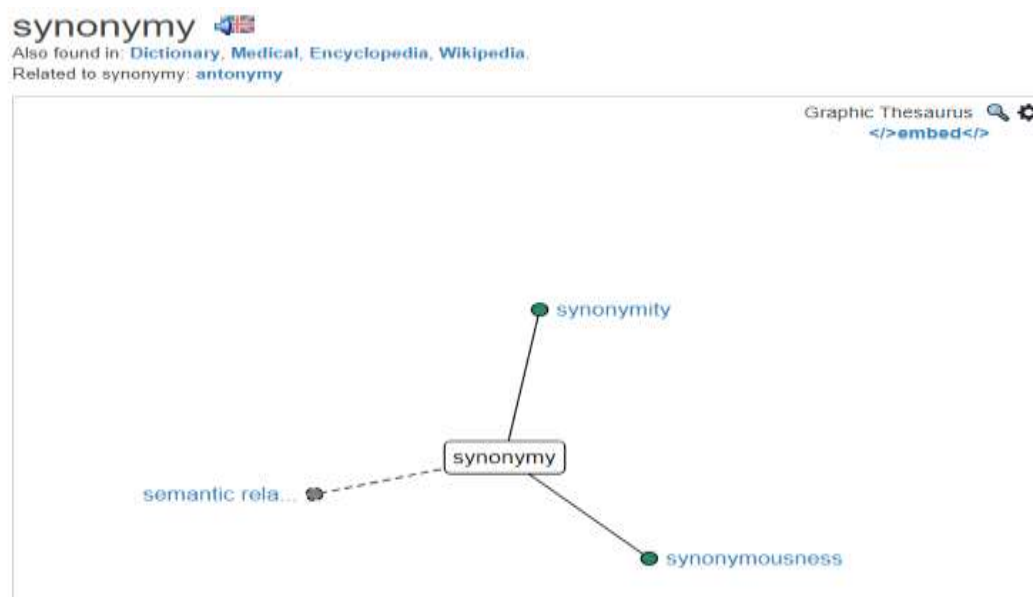


Figure 1: Flow-Chart of Synonymy Semantic Relations

Indeed, as stated by The Fine Dictionary (2024), synonymy represents "the semantic relation that holds between two words that can (in a given context) express the same meaning". In our view, the semantic relation expressed by means of synonymy might be suitable for general translation and specialized translation (as is the case of medical texts' translation, where a noteworthy amount of specialized terminology is encountered).

As stated by Austerlühl (2001: 102), the investigation carried out by Arntz and Picht (1995) calculates that, in general, terminology mining takes up to three-quarters of specialized translation time. This issue becomes even more complex when dealing with medical translation, featured by a significant ratio of neologisms.

As a result of the celerity in which medicine improves, and innovates, equivalence and synonymy represent troublesome issues substantively linked to medical translation. That problem may result in a rendering into other languages characterized by plenty of borrowings. That is our main concern: how to transfer the concept of "stroke" into Spanish by using all the terms and phrases available in Spanish language.

Hence, before delving into the research itself, let us first remember the origin, etymology, and possible meaning of the word itself.

2.1 Stroke etymology, meanings, and types

As the Online Etymology Dictionary (2024) points out, the word "stroke" has a deep origin, as quoted below,

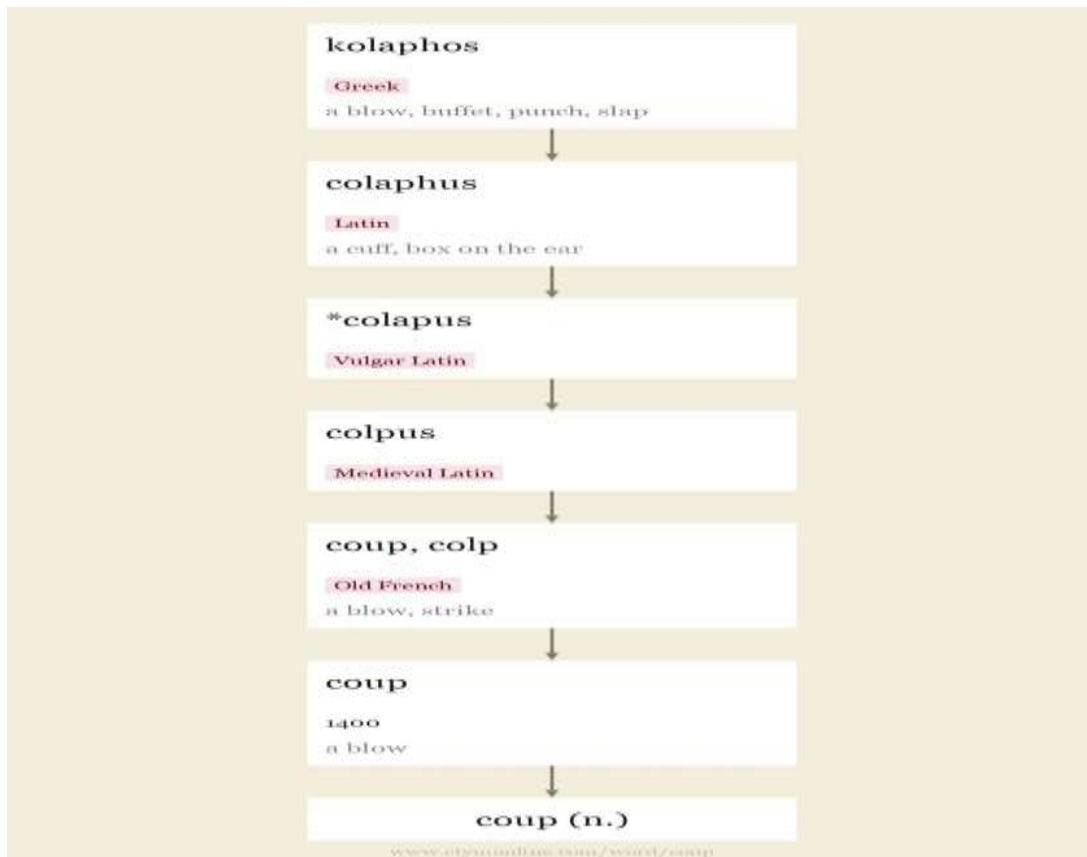
[Act of striking] c. 1300, "blow delivered with a weapon, paw, or hand," probably from an unrecorded Old English *strac, from Proto-Germanic *straik- (source also of Middle Low German strek, German streich, Gothic striks "stroke"); see stroke (v.). The meaning "mark of a pen" is from 1560s; that of "a striking of a clock" is from mid-15c. By mid-14c. of a crash of thunder. Of the heart's beating, by early 15c. The general sense of "a sweeping movement of a sustained object" is by 1610s. In reference to a single pull of an oar, by 1580s; by 1731 in reference to a single movement of machinery. Of a single arm-motion in swimming, by 1800. It also is used figuratively to suggest having been made by a sweeping movement. The meaning "apoplectic seizure" is from 1590s (originally stroke of God's hand); the notion in this sense is "sudden or special effect produced upon an object," which was particularly applied to God's chastisements or judgments. The sense of "feat, achievement, effective action" (as in stroke of luck, 1853) is by 1670s. In some senses the English word is perhaps influenced by French coup.

Accordingly, if we look at the French term "coup" in the same dictionary, the genuine Greek etymology is unveiled, as can be read below,

c. 1400, "a blow" (obsolete), from Old French coup, colp "a blow, strike" (12c.), from Medieval Latin colpus, from Vulgar Latin *colapus, from Latin colaphus "a cuff, box on the ear," from Greek kolaphos "a blow, buffet, punch, slap," "a lowly word without clear etymology" [Beekes].

Correspondingly, we are dealing with a term which dates back to the time of Ancient Greece [from kolaphos, κόλαφος], meaning "a blow, buffet, punch, slap", which passed onto the English language by means of the French term "coup", as can be identified within the following flow chart (Online Etymology Dictionary, 2024):

Figure 2: Etymology of the Word "Coup"



As a result of the research findings, we also investigated the Greek-French translation for κόλαφος within the Dictionnaire Greek-Français (1950, 1113), hence learning the following word meanings, “coup sur la joue, soufflet, EPICH.”

Nowadays, according to Britannica Encyclopaedia, “stroke” means a “sudden impairment of brain function resulting either from a substantial reduction in blood flow to some part of the brain or from intracranial bleeding.”

Accordingly, the implications of stroke may include transient or lasting paralysis on one or both sides of the body, difficulties in speaking or eating, and a loss of muscular coordination. A stroke may cause cerebral infarctions—dead sections of brain tissue. (Britannica Encyclopaedia, 2024)

The Encyclopaedia quoted above also provides us with several synonyms for the word “stroke”, such as “apoplexy”, “cerebral hemorrhage”, “cerebral vascular accident”, and “cerebrovascular accident”.

As far as the Spanish language is concerned, the most frequent term used is “ictus”, a Latinism which means “herida, golpe, choque, golpeo” (Diccionario Latino-Español, 1950, 544).

Within scientific settings, the term is currently defined as follows by Diccionario de la Real Academia Nacional de Medicina de España (2024),

ictus (lat. ictus ‘ataque súbito’; docum. en fr. en sentido actual desde 1861)

1 [ingl. cerebrovascular accident, stroke] s.m. Enfermedad cerebral aguda de origen vascular, bien isquémica, bien hemorrágica, que representa una de las causas principales de discapacidad y cuya incidencia aumenta con el envejecimiento. Los accidentes isquémicos transitorios acentúan el riesgo de ictus. Sin.: accidente cerebrovascular, accidente cerebrovascular agudo, accidente vascular cerebral, accidente vascular encefálico, apoplejía, apoplejía cerebral, enfermedad cerebrovascular aguda, enfermedad vascular cerebral aguda; coloq.: ataque cerebral, congestión cerebral, derrame cerebral; desus.: ictus apoplético. Abr.: ACV, ACVA, AVC, AVE, ECVA, EVCA. Obs.: No debe confundirse con → accidente isquémico transitorio.

2 s.m.; desus. = accidente [2].

As it has been shown, the word “ictus” presents a Latin origin. Accordingly, we searched for the term in DECEL (Diccionario Etimológico Castellano en Línea, 2024), which also provides us with a thorough return to the word origin, as described below,



Figure 3: Etymology of the Word "Ictus"

In consequence, in Spanish language we are dealing with a term which dates back to the time of Ancient Rome [from *ictus*, *ictūs*], meaning a blow, impact, shock, injury, and also meaning a word stress. Additionally, it is also related to Indo-European language (*aik-*), and Greek language (*αἰχμή* • (*aikhmē*)), all of them employed to depict a sudden attack.

As far as the Spanish synonyms are concerned, the Spanish official institution for neurology research (Sociedad Española de Neurología, 2024), offers several alternatives, such as "accidente cerebrovascular", "ataque cerebral", and "apoplejía".

Concerning the United Kingdom, the official Stroke Association (2024) distinguishes three types of strokes, depending on the stroke cause, and the duration thereof. Hence, according to the causes, two stroke types may occur:

- a) Ischaemic stroke: An ischaemic stroke happens when a blockage cuts off the blood supply to part of your brain, killing brain cells. Damage to brain cells can affect how the body works. It can also change how you think and feel. It's the most common type of stroke, and around 85% of strokes in the UK are ischaemic strokes.
- b) Haemorrhagic stroke: Haemorrhagic stroke is when you have bleeding in or around the brain. The blood supply to part of your brain is cut off, killing brain cells. Damage to brain cells can affect how the body works. It can also change how you think and feel. It's a less common type of stroke, and around 15% of strokes in the UK are haemorrhagic. The other 85% of strokes are ischaemic (due to a blockage in the blood supply to the brain).

Additionally, concerning the stroke length, there is a third type of stroke, the so-called "TIA" (Transient ischaemic attack): A transient ischaemic attack or TIA (also known as a mini-stroke) is a major warning sign of a stroke. This guide explains what you can do to reduce your risk of a stroke. A TIA is the same as a stroke, except that the symptoms last for a short time.

Regarding the United States of America, the official American Stroke Association (2024) identifies the following kinds of strokes,

- a) Ischemic Stroke (Clots): Occurs when a blood vessel supplying blood to the brain is obstructed. It accounts for 87% of all strokes.
- b) Hemorrhagic Stroke (Bleeds): Occurs when a weakened blood vessel ruptures. The two types of weakened blood vessels that usually cause hemorrhagic stroke are aneurysms and arteriovenous malformations (AVMs). The most common cause of hemorrhagic stroke is uncontrolled high blood pressure.
- c) Transient Ischemic Attack (TIA): Is a "warning stroke" caused by a temporary clot.

- d) Cryptogenic Stroke: In most cases, clots that block blood flow to the brain cause a stroke. Sometimes, the cause of a stroke can't be determined. This is called a cryptogenic stroke.
- e) Brain Stem Stroke: When stroke occurs in the brain stem, it can affect both sides of the body and may leave a person in a "locked-in" state. When a locked-in state occurs, the patient is generally unable to speak or move below the neck.

As far as the Spanish language is concerned, the official Sociedad Española de Neurología (2024) distinguishes the same three types of strokes. Nevertheless, as compared to the UK, it lists additional stroke types, as quoted below,

- a) Ictus trombótico, aterotrombótico o trombosis cerebral. Es un ictus isquémico causado por un coágulo de sangre (trombo), formado en la pared de una arteria importante, que bloquea el paso de la sangre a una parte del cerebro.
- b) Ictus embólico o embolia cerebral. Se trata de un ictus isquémico que, al igual que el trombótico, está originado por un coágulo de sangre; éste, sin embargo, se ha formado lejos del lugar de la obstrucción, normalmente en el corazón. A este coágulo lo denominamos émbolo.
- c) Ictus hemodinámico. Dentro de los ictus isquémicos es el más infrecuente. El déficit de aporte sanguíneo se debe a un descenso en la presión sanguínea; esto ocurre, por ejemplo, cuando se produce una parada cardíaca o una arritmia grave, pero también puede ser debido a una situación de hipotensión arterial grave y mantenida.
- d) Hemorragia intracerebral. Es el ictus hemorrágico más frecuente. Una arteria cerebral profunda se rompe y deja salir su contenido sanguíneo, que se esparce entre el tejido cerebral circundante, lo presiona y lo daña. La gravedad de este tipo de ictus reside no sólo en el daño local sino en el aumento de presión que origina dentro del cráneo, lo que afecta a la totalidad del encéfalo y pone en peligro la vida.
- e) Hemorragia subaracnoidea. Es una hemorragia localizada entre la superficie del cerebro y la parte interna del cráneo. Su causa más frecuente es la rotura de un aneurisma arterial (porción anormalmente delgada de la pared de una arteria, que adopta forma de globo o saco).

So far, we have dealt with the etymology of the words "stroke", and "ictus". Then, we identified the types of strokes, based upon the research of the official stroke associations in the UK (the Stroke Association), the US (the American Stroke Association), and Spain (the Sociedad Española de Neurología). Additionally, we have offered synonyms for both languages (English and Spanish). Accordingly, let us now move to the Research Methodology section.

3. Methodology

Upon consultation of the definitions and synonyms offered by the three official institutions in the UK, the US, and Spain, as well as the lexicographic references investigated, and in order to provide a representative corpus, encompassing a diverse series of translation difficulties, we decided to collect 10 lexical items and phrases dealing with "stroke" in English (some are British English and others American English). All of them represent a translation challenge for both translation trainees and even professional translators, as displayed below.

Table 1: English Research Corpus

English Language
(UK and US) Stroke
(UK) Ischaemic Stroke / (US) Ischemic Stroke
Haemorrhagic Stroke / (US) Hemorrhagic Stroke
(UK and US) Transient ischaemic attack
(UK) Cryptogenic Stroke
(UK) Brain Stem Stroke
Apoplexy
Cerebral hemorrhage
Cerebral vascular accident
Cerebrovascular accident

Subsequently, we looked for their definition and (English-Spanish) translation in two monolingual dictionaries, and one bilingual dictionary, all of them were carefully selected due to the fact that they are most renowned in the field of Medical Translation:

-Farlex Medical Dictionary (2024).

-Medline Plus (2024).

-Diccionario Crítico de Dudas Inglés-Español de Medicina (2nd Edition, 2005).

Additionally, in order to add a machine translation perspective to our paper, we thought it would be interesting how DeepL [<https://www.deepl.com/translator>] and Google Translate [<https://translate.google.es/>], deal with these terms which do not have an exact equivalent in the target language.

Subsequently, the relevant synonyms (under the sub-section "Our own translation suggestions") into Spanish language were suggested. These options came from all the references consulted for this paper, along with parallel documents, as well as our own experience as professional translators. The list hereby provided was built as a combination of the solutions offered by the abovementioned dictionaries, the consultation of parallel documents, and our own professional experience as sworn and legal translators-interpreters.

Let us now summarize how each item will be displayed (by using a table with a sample entry):

Table 2: Sample Item Display

Item No.	Item Name
-	<i>Farlex Medical Dictionary (2024)</i> quotation
-	<i>Medline Plus (2024)</i> quotation
-	<i>Diccionario Crítico de Dudas Inglés-Español de Medicina (2nd Edition, 2005)</i> quotation
-	<i>DeepL (2024)</i> quotation
-	<i>Google Translate (2024)</i> quotation
-	Our own translation suggestion(-s).

When no entry was found in a particular dictionary, we added the following: [Item not defined].

After selecting the relevant lexicographic references, we will now display the results of the investigation carried out.

4. Findings

Let us now present the search results with each item's definitions, explanations, and translations into Spanish language.

1) Stroke :

-*Farlex Medical Dictionary*: A stroke is the sudden death of brain cells in a localized area due to inadequate blood flow.

-*Medline Plus*: A stroke occurs when blood flow to a part of the brain stops. A stroke is sometimes called a "brain attack." If blood flow is cut off for longer than a few seconds, the brain cannot get nutrients and oxygen. Brain cells can die, causing lasting damage. A stroke can also occur if a blood vessel inside the brain bursts, leading to bleeding inside the head.

-*Diccionario Crítico de Dudas Inglés-Español de Medicina*:

Palabra polisémica, cuya traducción depende del contexto:

1 [Neur.] Forma abreviada de apoplectic stroke. Los neurólogos siguen dudando a la hora de traducir esta palabra inglesa, stroke, que es una de las más utilizadas en neurología,

En los hospitales españoles suele traducirse por 'ictus' (forma coloquial y abreviada de 'ictus apoplético'), que es sin duda un término poco preciso y, 10 que es peor, poco conocido entre el resto de la población (en una encuesta efectuada en España el 1 de junio de 1999, el 95% de los encuestados no sabían que es un ictus, pero el 92% sabían de que les estaban hablando si se utilizaban otros sinónimos, como 'embolia cerebral', 'derrame cerebral' o 'infarto cerebral').

En ausencia de un diagnóstico más preciso, algunos abogan por la expresión más descriptiva 'accidente cerebrovascular' (nunca «accidente cerebrovascular agudo» o «ACVA», que es un pleonismo, puesto que, por definición, no existen los accidentes crónicos; -+ ACUTE CEREBROVASCULAR ACCIDENT). Otra posibilidad,

sin duda más apropiada para el lenguaje médico hablado, es recurrir a la forma clásica 'apoplejía', que había caído en desuso. La expresión little stroke corresponde al llamado 'accidente isquémico transitorio'; la expresión complete stroke corresponde a lo que nosotros llamamos 'infarto cerebral'.

-*DeepL*: Accidente cerebrovascular, ictus, derrame, derrame cerebral.

-*Google Translate*: Golpe, accidente cerebrovascular, trazo, derrame cerebral [reparar mi puntuación entre opciones en las 10 entradas]

-Our own translation suggestion(-s): Ictus, ACV, accidente cerebrovascular, accidente vascular cerebral, accidente vascular encefálico, enfermedad vascular cerebral aguda, ataque cerebral, apoplejía, apoplejía cerebral, enfermedad cerebrovascular aguda, congestión cerebral, ictus hemorrágico, derrame cerebral, hemorragia cerebral, hemorragia intracerebral (when it is because of the rupture of a blood vessel), main types of haemorrhage: 1) hemorragia (intra)parenquimatosa (a bleed that occurs within the brain parenchyma, the functional tissue in the brain), 2)hemorragia subaracnoidea (bleeding in the space between the brain and the

surrounding membrane), 3) hemorragia intraventricular (also known as intraventricular bleeding, is a bleeding into the brain's ventricular system), 4) hematoma subdural (because of an abnormal collection of blood under the dura mater. This represents one of the intracranial injuries associated with abusive head trauma, especially in pediatric patients), 5) hematoma epidural (an extra-axial collection of blood within the potential space between the outer layer of the dura mater and the inner table of the skull); ictus isquémico, ictus trombótico, ictus aterotrombótico, trombosis cerebral, isquemia cerebral (due to an interruption of the blood flow to the brain), infarto lacunar (small deep infarcts caused by occlusion of a single penetrating branch of a large cerebral artery), ictus/infarto/ACV talámico (when there is a disruption in blood flow to the thalamus), ictus embólico, embolia cerebral (when a blood clot, usually from the heart, travels to the brain), ictus hemodinámico (due to a drop in blood pressure), hemiplejia (the stroke aftermath: complete loss of strength leading to paralysis on one side of the body), hemiparesia (the stroke aftermath: partial loss of strength leading to paralysis on one side of the body).

2) Ischaemic/Ischemic Stroke:

-*Farlex Medical Dictionary*: the most common kind of stroke; caused by an interruption in the flow of blood to the brain (as from a clot blocking a blood vessel).

-*Medline Plus*: A stroke is a medical emergency. There are two types - ischemic and hemorrhagic. Ischemic stroke is the more common type. It is usually caused by a blood clot that blocks or plugs a blood vessel in the brain. This keeps blood from flowing to the brain. Within minutes, brain cells begin to die. Another cause is stenosis, or narrowing of the artery. This can happen because of atherosclerosis, a disease in which plaque builds up inside your arteries.

-*Diccionario Crítico de Dudas Inglés-Español de Medicina*: [Item not defined]

-*DeepL*: Ictus isquémico, accidente cerebrovascular isquémico, apoplejía isquémica, derrame isquémico.

-*Google Translate*: Accidente cerebrovascular isquémico.

-Our own translation suggestion(-s):

Ictus isquémico, ACV isquémico, accidente cerebrovascular isquémico, accidente vascular cerebral isquémico, enfermedad vascular cerebral isquémica, ataque cerebral isquémico, enfermedad cerebrovascular isquémica, congestión cerebral isquémica, ictus trombótico, ictus aterotrombótico, trombosis cerebral, isquemia cerebral, infarto lacunar, ictus/infarto/ACV talámico, ictus embólico, embolia cerebral, ictus hemodinámico, hemiplejia isquémica, hemiparesia isquémica.

3) Haemorrhagic/Hemorrhagic Stroke:

-*Farlex Medical Dictionary*: stroke caused by the rupture of a blood vessel in the brain.

-*Medline Plus*: Hemorrhagic stroke is the less common type. It happens when a blood vessel breaks and bleeds into the brain. Within minutes, brain cells begin to die. Causes include a bleeding aneurysm, an arteriovenous malformation (AVM), or an artery wall that breaks open.

-*Diccionario Crítico de Dudas Inglés-Español de Medicina*: [Item not defined]

-*DeepL*: Ictus hemorrágico, accidente cerebrovascular hemorrágico, apoplejía hemorrágica, ACV hemorrágico.

-*Google Translate*: Accidente cerebrovascular hemorrágico.

-Our own translation suggestion(-s):

Ictus hemorrágico. ACV hemorrágico. accidente cerebrovascular hemorrágico. accidente vascular cerebral hemorrágico. enfermedad vascular cerebral hemorrágica. ataque cerebral hemorrágico. apoplejía hemorrágica, apoplejía cerebral hemorrágica. enfermedad cerebrovascular hemorrágica. derrame cerebral, hemorragia cerebral (main types of haemorrhage: 1) hemorragia (intra)parenquimatosa, 2)hemorragia subaracnoidea, 3) hemorragia intraventricular, 4) hematoma subdural, 5) hematoma epidural); hemorragia intracerebral, hemiplejia hemorrágica, hemiparesia hemorrágica.

4) Transient Ischaemic Attack:

-*Farlex Medical Dictionary*: A stroke causing minor and temporary symptoms.

-*Medline Plus*: A transient ischemic attack (TIA) is a stroke that lasts only a few minutes. It happens when the blood supply to part of the brain is briefly blocked. Symptoms of a TIA are like other stroke symptoms, but do not last as long.

-*Diccionario Crítico de Dudas Inglés-Español de Medicina*: Accidente isquémico transitorio.

-*DeepL*: Ataque isquémico transitorio, accidente isquémico transitorio, infarto isquémico transitorio.

-*Google Translate*: Accidente isquémico transitorio.

-Our own translation suggestion(-s):

Ictus transitorio, ACV transitorio, accidente cerebrovascular transitorio, accidente vascular cerebral transitorio, accidente vascular encefálico transitorio, enfermedad vascular cerebral aguda transitoria, ataque cerebral transitorio, ataque isquémico transitorio, apoplejía transitoria, apoplejía cerebral transitoria, enfermedad cerebrovascular aguda transitoria, congestión cerebral transitoria,

ictus isquémico transtitorio, ictus trombótico transtitorio, ictus aterotrombótico transtitorio, trombosis cerebral transtitoria, isquemia cerebral transitoria, ictus embólico transitorio, embolia cerebral transitoria, ictus hemodinámico transitorio.

5) Cryptogenic Stroke:

-*Farlex Medical Dictionary*: [Item not defined]

-*Medline Plus*: [Item not defined]

-*Diccionario Crítico de Dudas Inglés-Español de Medicina*: [Item not defined]

-*DeepL*: Ictus criptogénico, accidente cerebrovascular criptogénico, derrame cerebral criptogénico, ACV criptógeno

-*Google Translate*: Accidente cerebrovascular criptogénico.

-Our own translation suggestion(-s):

Ictus criptogénico/criptógeno, ACV criptogénico/criptógeno, accidente cerebrovascular criptogénico/criptógeno, accidente vascular cerebral criptogénico/criptógeno, accidente vascular encefálico criptogénico/criptógeno, enfermedad vascular cerebral aguda criptogénica/criptógena, ataque cerebral criptogénico/criptógeno, apoplejía criptogénica/criptógena, apoplejía cerebral criptogénica/criptógena, enfermedad cerebrovascular aguda criptogénica/criptógena, ictus hemorrágico criptogénico/criptógeno, derrame cerebral criptogénico/criptógeno, hemorragia cerebral criptogénica/criptógena, hemorragia intracerebral criptogénica/criptógena, ictus isquémico criptogénico/criptógeno, ictus trombótico criptogénico/criptógeno, ictus aterotrombótico criptogénico/criptógeno, trombosis cerebral criptogénica/criptógena, isquemia cerebral criptogénica/criptógena, ictus embólico criptogénico/criptógeno, embolia cerebral criptogénica/criptógena.

6) Brain Stem Stroke:

-*Farlex Medical Dictionary*: [Item not defined]

-*Medline Plus*: [Item not defined]

-*Diccionario Crítico de Dudas Inglés-Español de Medicina*: [Item not defined]

-*DeepL*: Derrame cerebral, Accidente cerebrovascular, ictus del tronco encefálico, ictus del tronco cerebral

-*Google Translate*: Accidente cerebrovascular del tronco encefálico

-Our own translation suggestion(-s):

Ictus del tronco encefálico/del tronco cerebral, ACV del tronco encefálico/del tronco cerebral, accidente cerebrovascular del tronco encefálico/del tronco cerebral, accidente vascular cerebral del tronco encefálico/del tronco cerebral, accidente vascular encefálico, enfermedad vascular cerebral del tronco encefálico/del tronco cerebral, ataque cerebral del tronco encefálico/del tronco cerebral, apoplejía del tronco encefálico/del tronco cerebral, apoplejía cerebral del tronco encefálico/del tronco cerebral, enfermedad cerebrovascular aguda del tronco encefálico/del tronco cerebral, ictus hemorrágico del tronco encefálico/del tronco cerebral, derrame cerebral del tronco encefálico/del tronco cerebral, hemorragia cerebral del tronco encefálico/del tronco cerebral, hemorragia intracerebral del tronco encefálico/del tronco cerebral, ictus isquémico del tronco encefálico/del tronco cerebral, ictus trombótico del tronco encefálico/del tronco cerebral, ictus aterotrombótico del tronco encefálico/del tronco cerebral, trombosis cerebral del tronco encefálico/del tronco cerebral, isquemia cerebral del tronco encefálico/del tronco cerebral, ictus embólico del tronco encefálico/del tronco cerebral, embolia cerebral del tronco encefálico/del tronco cerebral.

7) Apoplexy:

-*Farlex Medical Dictionary*: 1. Sudden impairment of neurological function, especially that resulting from a cerebral hemorrhage; a stroke.

-*Medline Plus*: Apoplexy is bleeding into an organ or loss of blood flow to an organ. For example, Adrenal apoplexy -- bleeding into the adrenal glands; Pituitary apoplexy -- bleeding into the pituitary gland.

Apoplexy most often refers to stroke symptoms that occur suddenly. Such symptoms occur due to bleeding into the brain. It can also occur by a blood clot in a brain blood vessel. Conditions such as subarachnoid hemorrhage or stroke are sometimes called apoplexy.

-*Diccionario Crítico de Dudas Inglés-Español de Medicina*: Apoplejía.

-*DeepL*: Apoplejía, apoplejia.

-*Google Translate*: Apoplejía

-Our own translation suggestion(-s):

Ictus hemorrágico, ACV hemorrágico, accidente cerebrovascular hemorrágico, accidente vascular cerebral hemorrágico, enfermedad vascular cerebral hemorrágica, ataque cerebral hemorrágico, apoplejía hemorrágica, apoplejía cerebral hemorrágica, enfermedad cerebrovascular hemorrágica, derrame cerebral, hemorragia cerebral, hemorragia intracerebral, hemorragia subaracnoidea, hemiplejia hemorrágica, hemiparesia hemorrágica.

8) Cerebral Hemorrhage:

-*Farlex Medical Dictionary*: Bleeding from a ruptured blood vessel in the brain.

-*Medline Plus*: [Item not defined]

-*Diccionario Crítico de Dudas Inglés-Español de Medicina*: En español no decimos «hemorragia intracerebral», sino 'hemorragia cerebral'.

-*DeepL*: Hemorragia cerebral, hemorragias cerebrales.

-*Google Translate*: Hemorragia cerebral.

-Our own translation suggestion(-s):

Ictus hemorrágico, ACV hemorrágico, accidente cerebrovascular hemorrágico; accidente vascular cerebral hemorrágico, enfermedad vascular cerebral hemorrágica, ataque cerebral hemorrágico, apoplejía hemorrágica, apoplejía cerebral hemorrágica, enfermedad cerebrovascular hemorrágica, derrame cerebral, hemorragia cerebral (main types of haemorrhage: 1) hemorragia (intra)parenquimatosa, 2)hemorragia subaracnoidea, 3) hemorragia intraventricular, 4) hematoma subdural, 5) hematoma epidural), hemorragia intracerebral; hemiplejia hemorrágica, hemiparesia hemorrágica.

9) Cerebral Vascular Accident:

-*Farlex Medical Dictionary*: Cerebrovascular accident.

-*Medline Plus*: [Item not defined]

-*Diccionario Crítico de Dudas Inglés-Español de Medicina*: [Item not defined]

-*DeepL*: Accidente vascular cerebral, accidente cerebrovascular, Accidente Cerebro Vascular, accidente vascular encefálico.

-*Google Translate*: Accidente vascular cerebral.

-Our own translation suggestion(-s):

Ictus, ACV, accidente cerebrovascular, accidente vascular cerebral, accidente vascular encefálico, enfermedad vascular cerebral aguda, ataque cerebral, apoplejía, apoplejía cerebral, enfermedad cerebrovascular aguda, congestión cerebral, ictus hemorrágico, derrame cerebral, hemorragia cerebral, hemorragia intracerebral, hemorragia subaracnoidea, ictus isquémico, ictus trombótico, ictus aterotrombótico, trombosis cerebral, isquemia cerebral, infarto lacunar, ictus/infarto/ACV talámico, ictus embólico, embolia cerebral, ictus hemodinámico, hemiplejia, hemiparesia.

10) Cerebrovascular Accident:

-*Farlex Medical Dictionary*: Cerebral vascular accident.

-*Medline Plus*: [Item not defined]

-*Diccionario Crítico de Dudas Inglés-Español de Medicina*: [Under Acute Cerebrovascular Accident:] Recomiendo evitar el calco «accidente cerebrovascular agudo» (ACVA), muy utilizado en España, pero que en realidad es un pleonasma, puesto que, en medicina, por definición, los accidentes son siempre agudos (así define la RAE 'accidente' en su cuarta acepción: "Indisposición o enfermedad que sobreviene repentinamente y priva de sentido, de movimiento o de ambas cosas"; en su octava acepción: "Síntoma grave que se presenta inopinadamente durante una enfermedad, sin ser de los que la caracterizan"). Basta, por tanto, con decir 'accidente cerebrovascular': otra posibilidad es recurrir a la denominación clásica, 'apoplejía', que había caído en desuso.

-*DeepL*: Accidente cerebrovascular, accidente cerebral, accidente vascular cerebral.

-*Google Translate*: Accidente cerebrovascular.

-Our own translation suggestion(-s):

Ictus, ACV, accidente cerebrovascular, accidente vascular cerebral, accidente vascular encefálico, enfermedad vascular cerebral aguda, ataque cerebral, apoplejía, apoplejía cerebral, enfermedad cerebrovascular aguda, congestión cerebral, ictus hemorrágico, derrame cerebral, hemorragia cerebral, hemorragia intracerebral, hemorragia subaracnoidea, ictus isquémico, ictus trombótico, ictus aterotrombótico, trombosis cerebral, isquemia cerebral, infarto lacunar, ictus/infarto/ACV talámico, ictus embólico, embolia cerebral, ictus hemodinámico, hemiplejia, hemiparesia.

5. Conclusion

Once we have gathered the results of the research carried out, we will now present the most significant issues linked to them by means of 2 tables.

First, we will display a table containing the frequency of occurrence of Spanish synonyms coined by the 5 references we have researched.

Table 3: Spanish Synonymity as provided by the References Researched

Number of Entry in the Corpus	Farlex Medical Dictionary	Medline Plus	Diccionario Crítico de Dudas (...)	DeepL	Google Translate
1	Only a definition	Only a definition	11 Synonyms	4 Synonyms	4 Synonyms
2	Only a definition	Definition + 2 Synonyms	Item not defined	4 Synonyms	1 Synonym
3	Only a definition	Only a definition	Item not defined	4 Synonyms	1 Synonym
4	Definition + 1 Synonym	Definition + 1 Synonym	1 Synonym	3 Synonyms	1 Synonym
5	Item not defined	Item not defined	Item not defined	4 Synonyms	1 Synonym
6	Item not defined	Item not defined	Item not defined	4 Synonyms	1 Synonym
7	Definition + 2 Synonyms	Definition + 3 Synonyms	1 Synonym	2 Synonyms	1 Synonym
8	Only a definition	Item not defined	1 Synonym	2 Synonyms	1 Synonym
9	Definition + 1 Synonym	Item not defined	Item not defined	4 Synonyms	1 Synonym
10	Definition + 1 Synonym	Item not defined	Definition + 3 Synonyms	3 Synonyms	1 Synonym

Accordingly, we will now introduce a table displaying the summary of the (English-Spanish) findings related to the term stroke.

Table 4: Summary of the (English-Spanish) Findings related to the Term 'Stroke'

Issue under Research	English (Source) Language	Spanish (Target) Language
<u>Available Nouns</u>	Stroke, attack, accident	ictus, accidente, apoplejía, ataque, congestión, derrame, embolia, enfermedad, hematoma, hemiparesia, hemiplejía, hemorragia, infarto, isquemia, and trombosis
<u>Attributing Adjectives</u>	Isch(a)emic, h(a)emorrhagic, transient isch(a)emic, cryptogenic, cerebral, cerebral vascular, and cerebrovascular.	Aterotrombótico, cerebral, cerebrovascular, cerebrovascular aguda, embólico, epidural, hemodinámico, hemorrágico, intracerebral, (intra)parenquimatosa, intraventricular, isquémico, lacunar, subaracnoidea, subdural, talámico, trombótico, vascular cerebral, vascular encefálico, vascular celebrar aguda
<u>Acronyms</u>	CVA ITA	ACV ACVA AIT AVC

		AVE ECVA EVCA
<u>Main Stroke Types (according to the Official Sources Sites)</u>	a) Isch(a)emic stroke b) H(a)emorrhagic stroke c) "TIA" (Transient isch(a)emic attack) d) Cryptogenic Stroke e) Brain Stem Stroke	a) Ictus trombótico/aterotrombótico/trombosis cerebral b) Ictus embólico/embolia cerebral c) Ictus hemodinámico d) Hemorragia intracerebral e) Hemorragia subaracnoidea

As far as the English language is concerned, the most frequent terms used (for the neurological concept under research) were the following ones: stroke, attack, apoplexy, and accident. Accordingly, the adjectives attributed to those nouns were isch(a)emic, h(a)emorrhagic, transient isch(a)emic, cryptogenic, cerebral, cerebral vascular, and cerebrovascular. In terms of noun phrases, we just found one, brain stem stroke.

With respect to the Spanish language, the lexical field is significantly enlarged. The most frequent terms employed for the idea of stroke were ictus, accidente, apoplejía, ataque, congestión, derrame, embolia, enfermedad, hematoma, hemiparesia, hemiplejía, hemorragia, infarto, isquemia, and trombosis. Equally, we unveiled a substantial amount of adjectives for the nouns just mentioned: aterotrombótico, cerebral, cerebrovascular, cerebrovascular aguda, embólico, epidural, hemodinámico, hemorrágico, intracerebral, (intra)parenquimatosa, intraventricular, isquémico, lacunar, subaracnoidea, subdural, talámico, trombótico, vascular cerebral, vascular encefálico, and vascular celebrar aguda.

Let us now move to the most significant results from our print dictionaries. We will present these results displayed in conceptual groups.

-The lexical items and phrases provided by 5 (out of the 5) references researched were just three, those ones quoted below: Stroke, Transient Ischaemic Attack, Apoplexy.

-Conversely, 7 (of the 10) entries of our corpus were not defined or translated in at least one of the most prestigious references in the field of Medical Translation investigated, as listed below:

- a) Isch(a)emic Stroke was not translated by *Diccionario Crítico de Dudas Inglés-Español de Medicina*, which did not provide a translation for H(a)emorrhagic Stroke either
- b) Cryptogenic Stroke was missing in *Farlex Medical Dictionary*, *Medline Plus*, and *Diccionario Crítico de Dudas Inglés-Español de Medicina*. Additionally, these resources did not offer a definition and translation for Brain Stem Stroke
- c) Cerebral Hemorrhage was not coined by *Medline Plus*, and the same issue happened with Cerebrovascular Accident
- d) Cerebral Vascular Accident did not appear in *Medline Plus*, and *Diccionario Crítico de Dudas Inglés-Español de Medicina* either. Surprisingly, the two machine translation resources investigated did provide us with a translation for every single item from our corpus (10 out of 10 items).

With regard to the contents offered by the five resources researched, we feel that *Diccionario Crítico de Dudas Inglés-Español de Medicina* is the only one providing both translators and physicians with not only definitions, but also with translations in context.

As far as our contributions are concerned. We were able to offer plenty of Spanish translations and synonyms and types of "ictus", specifically 33 lexical items and phrases, as quoted below:

ACV; accidente cerebrovascular; accidente vascular cerebral; accidente vascular encefálico; enfermedad vascular cerebral aguda; ataque cerebral; apoplejía, apoplejía cerebral; enfermedad cerebrovascular aguda; congestión cerebral; ictus hemorrágico, derrame cerebral, hemorragia cerebral, hemorragia intracerebral (when it is because of the rupture of a blood vessel), main types of haemorrhage: 1) hemorragia (intra)parenquimatosa (a bleed that occurs within the brain parenchyma, the functional tissue in the brain), 2) hemorragia subaracnoidea (bleeding in the space between the brain and the surrounding membrane), 3) hemorragia

intraventricular (also known as intraventricular bleeding, is a bleeding into the brain's ventricular system), 4) hematoma subdural (because of an abnormal collection of blood under the dura mater. This represents one of the intracranial injuries associated with abusive head trauma, especially in pediatric patients), 5) hematoma epidural (an extra-axial collection of blood within the potential space between the outer layer of the dura mater and the inner table of the skull); ictus isquémico, ictus trombótico, ictus aterotrombótico, trombosis cerebral, isquemia cerebral (due to an interruption of the blood flow to the brain), infarto lacunar (small deep infarcts caused by occlusion of a single penetrating branch of a large cerebral artery), ictus/infarto/ACV talámico (when there is a disruption in blood flow to the thalamus); ictus embólico, embolia cerebral (when a blood clot, usually from the heart, travels to the brain); ictus hemodinámico (due to a drop in blood pressure); hemiplejia (the stroke aftermath: complete loss of strength leading to paralysis on one side of the body); hemiparesia (the stroke aftermath: partial loss of strength leading to paralysis on one side of the body).

Considering that the corpus consisted of 10 lexical items and phrases in English language; after carrying out our research, we were able to provide the amount of 33 lexical items and phrases in Spanish language. Overall, the findings unveil a much more significant number of Spanish lexical and phrase items as compared to the English ones available. This fact proves how Spanish language, due to its lexical richness, might also be regarded as a second lingua franca for medicine.

Additionally, machine translation resources proved suboptimal, when acting as independent sources, for rendering a professional medical translation, since human translation may also resort to qualified references in the field, as well as parallel documentation. Therefore, a combination of both options (human + machine translation) would be of utmost relevance for both trainee and professional translators.

Funding: This research received no external funding.

Conflicts of Interest: The author declares no conflict of interest.

ORCID ID: <https://orcid.org/0000-0002-8553-7477>

References

- [1] Bailly, A. (1950). *Dictionnaire Greek-Français*. Paris: Hachette.
- [2] Blázquez Fraile, A. (1950). *Diccionario Latino-Español*. Barcelona: Ramón Sopena.
- [3] Faksova, K., Walsh D., Jiang Y., et al. (2024). Covid-19 vaccines and adverse events of special interest: A multinational Global Vaccine Data Network (GVDN) cohort study of 99 million vaccinated individuals. *Vaccine*, 42(9), 2200-2211.
- [4] Lyons, J. (1971). *Introduction to Theoretical Linguistics*. Cambridge: Cambridge University Press.
- [5] Navarro, F., A. (2005). *Diccionario Crítico de Dudas Inglés-Español de Medicina*. Madrid: McGraw-Hill.
- [6] (UK) Stroke Association. (2024). Types of Stroke. Retrieved July 7, 2024, from <https://www.stroke.org.uk/stroke/types>
- [7] (US) American Stroke Association. (2024). Types of Strokes. Retrieved July 17, 2024, from <https://www.stroke.org/en/about-stroke/types-of-stroke>
- [8] VV.AA. (2024). *Britannica Encyclopaedia*. Retrieved July 8, 2024, from <https://www.britannica.com/>
- [9] VV.AA. (2024). *Britannica Encyclopaedia*. Stroke. Retrieved July 8, 2024, from <https://www.britannica.com/science/stroke-disease>
- [10] VV.AA. (2024). *Cambridge Dictionary*. Retrieved July 6, 2024, from <https://dictionary.cambridge.org/es/>
- [11] VV.AA. (2024). *Collins Dictionary*. Retrieved July 10, 2024, from <https://www.collinsdictionary.com/dictionary/English>
- [12] VV.AA. (2024). DECEL (*Diccionario Etimológico Castellano en Línea*). Ictus. Retrieved July 7, 2024, from <https://etimologias.dechile.net/?ictus>
- [13] VV.AA. (2024). DeepL. Retrieved July 11, 2024, from <https://www.deepl.com/es/translator>
- [14] VV.AA. (2024). *Diccionario de la Real Academia Nacional de Medicina de España*. Ictus. Retrieved July 5, 2024, from <https://dtme.ranm.es/busador.aspx>
- [15] VV.AA. (2024). *Farlex Medical Dictionary*. Retrieved July 8, 2024, from <https://medical-dictionary.thefreedictionary.com/>
- [16] VV.AA. (2024). Google Translate. Retrieved July 1, 2024, from https://www.google.es/search?q=google+translate&sca_esv=2ea74cac3d3cf760&sca_upv=1&source=hp&ei=az5zZuiWHLGrxc8PuP6duAc&ifsig=AL9hbdgAAAAZnNMexVTEMHSB_q2vf7MxIjKlFLWKX4_&ved=0ahUKEwio-MzZv-iGaxWxVfEDHTh_B3cQ4dUDCA8&uact=5&oq=google+translate&gs_lp=Egdnd3Mtd2l6lhBnb29nbGUgdHJhbnNsYXRIMgsQABiABBixAxiDA TIFEAYgAQyCxAAGIAEGLEDGIMBMggQABiABBixAxiFEAYgAQyBRAAGIAEMgUQABiABDIFEAYgAQyBRAAGIAEMgUQABiABEitGICLB1iYG HAbEACQAQKYAakDoAGmFKoBCTkuMi4yLjluMbgBA8gBAPgBAZgCD6ACxA-oAgrCAhAQABgDGOUCGOoCGLwDGI8BwglQEC4YAxjlAhjqAhiMAXiPACICERAuGIAEGLEDGNEDGIMBGMcBwglFEC4YgASYAWaSBwoxMC4yLjluMC4xoAeBYg&slclient=gws-wiz
- [17] VV.AA. (2024). *Medline Plus*. Retrieved July 6, 2024, from <https://medlineplus.gov/encyclopedia.html>
- [18] VV.AA. (2024). *Online Etymology Dictionary*. Coup. Retrieved July 13, 2024, from https://www.etymonline.com/word/coup?utm_source=related_entries#etymonline_v_19174
- [19] VV.AA. (2024). *Online Etymology Dictionary*. Stroke. Retrieved July 14, 2024, from <https://www.etymonline.com/search?q=stroke>
- [20] VV.AA. (2024). *The Fine Dictionary*. Retrieved July 15, 2024, from <http://www.finedictionary.com/>
- [21] VV.AA. (2024). *The Free Dictionary Thesaurus*. Retrieved July 7, 2024, from <https://www.freethesaurus.com/>