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An Analysis of the Inconsistency Problem in the Translation of Medical Terms from English into Arabic.

Presented and publicly defended by:

Mohammed BEDDIAF

Maria AGGOUN

Supervised by:

Mr. Hemza ZEGHAR

Jury:

Dr. Farida SAADONE	UKM-Ouargla	Chairperson
Mr. Hemza ZEGHAR	UKM-Ouargla	Supervisor
Dr. Nousseiba DJEHA	UKM-Ouargla	Examiner

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Dedication

Every dream that starts with a tear ends with a smile, and every path that starts with darkness ends with light. To those who believed in us, even when we didn't believe in ourselves, to our families, friends, and people who encouraged us throughout this dissertation, we dedicate this work.

Acknowledgment

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List of Abbreviations

Abbreviation	Signification
SL	Source Language
TL	Target Language
ST	Source Text
TT	Target Text
MSA	Modern Standard Arabic
SE	Standard English
EAMS	Egyptian Academy of Medical Sciences
AAS	Arab Academy of Sciences
ALESCO.	The Arab League Educational, Cultural and Scientific Organization
ASRT	Academy of Scientific Research and Technology
CPR	Cardio Pulmonary Resuscitation
MRI	Magnetic Resonance Image
AIDS	Acquired Immune Deficiency Disease Syndrome
STT	Scientific and Technical Translation
LSP	Language for Specific Purposes
DNA	Deoxyribonucleic Acid
RNA	Ribonucleic Acid
UMD	Unified Medical Dictionary
DPI	Drug Package Inserts
NCI	National Cancer Institute

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Abstract

This study is conducted to investigate the problem of inconsistency in the translation of medical terms from English into Arabic. The goal of the current study is to display the difficulties of translating medical terms, and how professional and non-professional Arab translators tackled them. Also it investigated equivalency in medical terminology and theoretically examined the idea of how medical terms function in both English and Arabic, such as the names of ailments, disorders, symptoms, and viruses. This study is descriptive by nature, both qualitative and quantitative analysis are used in this research. The data consists of seven medical terms and their renditions in Arabic, each term is analyzed in both SL and TL according to the samples collected. Translation procedures used for dealing with each medical term is investigated using the theoretical model that was proposed by Al-Zawawy, A. (2016).

Keywords: Translation procedures, Medical terms, Inconsistency, Descriptive, SL, TL.

المستخلص

تُعرِّج هذه الدراسة على مشكلة غياب الثبات في ترجمة المصطلحات الطبية من الإنجليزية إلى العربية. حيث ترمي هذه الدراسة الى ابراز الصعوبات التي تعتري ترجمة المصطلحات الطبية وكيف تعامل المترجمون المحترفون وغير المحترفون معها. كما تطرقت هذه الدراسة إلى التكافؤ في المصطلحات الطبية بين اللغتين الإنجليزية والعربية وكيفية سك المصطلحات الطبية في كل منهما، مثل أسماء الأمراض والاضطرابات وكذا الأعراض والفيروسات. تُعتبر هذه الدراسة وصفية بطبيعتها، وقد تم استخدام التحليل النوعي والكمي في هذا البحث. تتكون البيانات من سبعة مصطلحات طبية بالإنجليزية وما يقابلها من ترجمات باللغة العربية، تم القيام بتحليل كل مصطلح في اللغة المصدر واللغة الهدف وفقًا للعينات التي تمَ جمعُها. ثم قمنا بالتحقق من إجراءات الترجمة المستخدمة في كل مصطلح طبَي باستخدام النموذج النظري الذي اقترحه عمرو الزواوي، أ.(2016).

الكلمات المفتاحية : إجراءات الترجمة، المصطلحات الطبية، غياب الثبات، وصفية، اللغة المصدر، اللغة الهدف.

Introduction

Introduction

According to Nida & Taber (1969): "Translation is the re-expression of messages from the source language (SL) in the target language (TL) with the closest and fair equivalent". Translation has always been used to facilitate communication between various cultures and the exchange of ideas in different disciplines, and it can be applied to different fields. Among these fields is scientific translation, which is concerned with the branches that are related to science.

Medical translation is one of the expanding fields of translation and includes a variety of disciplines, from less specialized forms like drug package inserts to jargon ones like medical publications. Thus, the vocabulary used by the medical translator is more specialized than that of general English and is known as "medical language."

The Arabic language was built on several fundamental pillars, including extensive translation and Arabization, which brought it into line with global scientific and technological advancement. However, this did not last, as the Arab civilization collapsed over the years, which made the Arabic language less used now, especially in the scientific and technological fields.

"It is well known that English is the leading language of medical sciences. Communication in English has been indispensable throughout the history of medicine" (Krulj et al.2011:170). This emphasizes that English is now widely recognized as the primary language used in the medical field. For instance, Although Arabic is the official language of Arab countries; it is commonly known that English is used as the primary language of education and communication in the majority of Arab medical universities.

Medical English has therefore been translated into several languages on a global basis, with Arabic standing out as a particularly difficult one, and despite the Arab Academies' great contribution in this area, there are occasional inconsistencies in the translation of medical words into Arabic.

Statement of the problem:

This dissertation investigates the problem of the inconsistency in the translation of medical terms from English into Arabic.

The purpose of the study:

This study is expected to answer the following questions

Main question:

What sets behind the inconsistency of rendering English standardized medical terms in Arabic?

Sub-question:

1. How to coin words in both Arabic and English?
2. How has the inconsistency reflected and affected the medical field in the Arab world?
3. What are the translation procedures that are followed by experienced and non-experienced translators in translating medical terms from English into Arabic?

Hypothesis:

- Understanding the medical terms coining in English and Arabic, and know the difficulties resulted from medical terms inconsistency in Arabic.
- The translators use different translation procedures when they face difficulties in finding accurate equivalents for medical terms.

Objectives of the study:

The following are the objectives of the research:

1. The study aims to investigate how terminological inconsistency poses serious translation problems.
2. It aims to obtain the term-creation techniques used by translators.

Significance of the research:

Studies on the translation of medical words from English to Arabic are rare, especially in Algeria, since French is the language used in the scientific field. Therefore, there will be ambiguity issues because many English terminologies are either unfamiliar or overly technical for inexperienced translators to comprehend their meanings in the SL.

The complex structure of some medical terminology, such as compound phrases and abbreviations, makes their translation into Arabic more challenging. Most bilingual dictionaries and computer translation programs may not have definitions for many medical abbreviations.

Hence, this research is important to the field of medical translation because it illustrates the main difficulties that translators may find, it also provides translators in Arab countries with some examples that help in understanding how professional translators deal with these difficulties.

Literature review:

There is a wealth of literature on medicine in general. A civilization would be hard to find without medical literature. One of the most popular categories of professional translation is medical translation (**Montalt, 2011**). This could be before the subject's universality and the requirement for knowledge transfer from one country to another. However, in the context of translation studies, medical translation has not gotten the appropriate attention, and genuine attempts to provide some beneficial insights into medical translation have only recently been made. In a similar vein, much study has been done yet there is still a dearth of literature on medical translation into Arabic. Despite the fact that medical Arabic is not widely spoken in the Arab world, it still piques the curiosity of individuals who are only interested in the Arabic language for its own purpose. However, the present study can draw its foundation from a number of important investigations. For instance, Sieny (1985) addressed the issues with the general process of Arabizing scientific language as well as the terminology development, coordination, and dissemination processes. He clarified that the production of Arabic scientific terminology is carried out by numerous governmental and unofficial organizations, which contributes to the widespread issue of word multiplicity.

Seiny (1987) did another equally important study addressing issues with inconsistent Arabic technical terminology. The author credited linguistic and administrative issues for the ambiguity in Arabic technical terminology. The Arabic language's richness leads to many synonyms for the same idea; different processes are used to coin technical terms in Arabic, such as using terms from Arabic scientific heritage or translating terms from other languages using various translation techniques; and English and French are two source languages. The lack of an established terminological body and the poor progress of official bodies in developing Arabic terms for thousands of new concepts are among the administrative factors.

Organization of the dissertation:

To achieve its objectives, this study is structured into three chapters as follows:

Chapter one presents an overview of English and Arabic language. It studies the types of both languages and it will also investigate how to coin words in Arabic and English.

Chapter two deals with the definition medical translation, scientific and technical text. It will also discuss the matter of standardizing terms in the Arab world and illustrate the main procedures used to translate medical terms.

Chapter three will present the analysis of each term collected along with the results and findings of this analysis.

Chapter One:
An Overview of English and Arabic Languages

Introduction:

Arabic is seen as the language of science, civilization, and literature. It is a miraculous language with distinctive linguistic features, like writing from right to left, nouns having two numbers, and having both feminine and masculine genders in addition to the root. Moreover, the spectrum of sounds employed in the phonological systems of Arabic and English and the relative weights given to vowels and consonants in conveying meaning differ greatly. Arabic only has eight vowels and diphthongs to 32 consonants, compared to English's 22 vowels and 24 diphthongs. Arabic is considered as the official language of countries from North Africa like Algeria, Morocco, Tunisia, Egypt, and the Arabian Gulf countries like Qatar, Saudi Arabia, Yemen, and the United Arab Emirates.

1. The History of Arabic Language:

Arabic is classified as a Semitic language, which is originated from Afro-Asiatic languages. The Semitic language family is made up of dozens of different languages and contemporary dialects. The major Semitic languages are Arabic, Amharic Hebrew, Tigre, Aramaic and Maltese. With over 300 million native speakers dispersed across the majority of North Africa and the Arabian Peninsula, Arabic is by far the most frequently spoken of the Semitic languages.

Historically, there is not much information about the nature of the Arabic language. The only written information is in the form of epigraphic material (brief rock inscriptions and graffiti). However, it is observed that the Arabic language has changed throughout time. According to Versteegh (1997) "important changes occurred in the Arabic language as a consequence of its spread over an enormous territory and its contact with many different languages". He claimed that many speakers of different languages who were learning Arabic had a significant influence on the language.

As Islam was introduced, people who converted to Islam started reading the Quran, and as a result, they switched from their own languages to Arabic. In this way, Arabic gradually spread throughout numerous places. The Arabic language was greatly shaped by the remnants of these regions' native languages. Therefore, these minor variations signaled the appearance of the Arabic dialects.

1.1. Types of Arabic:

1.1.1. Classical Arabic:

Classical Arabic is the standardized literary form of the Arabic language used from the middle Ages to the Modern Period, most notably in Umayyad and Abbasid literary texts such as poetry, elevated prose, and is also the liturgical language of the Quran. It is frequently referred to as Quranic Arabic since it is the written form of the Quran, which is the main spiritual text of Islam. The languages of the ancient Arab tribes served as the foundation for classical Arabic, also known as Quranic Arabic, which was spoken during the Prophet Mohamed PBUH's lifetime. The grammar is the same as that used in standard Arabic today. The word choice, word families, and context are all extremely varied. There are a few minor differences in word punctuation and syntax between the Quran and modern standard Arabic.

Classical Arabic is mostly utilized for religious purposes and is no longer spoken. Despite the fact that there were numerous early dialects of Arabic, only Classical Arabic, a subset of Old North Arabian, has survived.

Many studies on Arabic linguistics and Arabic Natural Language Processing have used the Quranic Arabic Corpus as a gold standard resource.

1.1.2. MSA (Modern Standard Arabic):

Modern Standard Arabic (MSA), also known as Al-Arabiya Al-Fusha (العربية الفصحى), and Literary Arabic is the current standard language based on Classical Arabic, it is the language that's used in everyday life in the Arabic-speaking world. Almost all forms of media, including TV, movies, newspapers, and radio shows, use MSA. Politicians speak in MSA during debates and speeches and the majority of books are written in MSA. Moreover, new contemporary vocabulary and expressions that were not around when the Quran was written are used in Modern Standard Arabic. Additionally, unlike Quranic Arabic, MSA pronounces, organizes, and elicits diverse contexts between words.

In the Arab world, it is necessary to comprehend written and spoken forms of MSA. However, there is no agreed-upon standard speech in order to communicate informally, and since Arabs are

fluent in their mother tongue and understand other languages, this combination of two languages formed a colloquial language or as it is referred to by linguistic terms as "diglossia".

1.1.3. Colloquial Arabic:

Colloquial Arabic is a different kind of Arabic that exists outside of the formality of academic contexts, diplomatic interactions, and the media.

Although most of its vocabulary and grammatical foundations derive from the MSA, each region's dialect of Arabic, known as colloquial Arabic, also integrates its own lexicon because of its historical background. As a result, within the same nation and sometimes even within the same region, colloquial Arabic has several variations.

Dialects are mostly spoken in North Africa and the Middle East, they are not typically written but they do exist in some of the literature work (poetry and plays). They are frequently used in different ways in informal spoken media.

The largest dialectal split is between Middle Eastern and North African dialects. Therefore, speakers of certain of these dialects are unable to communicate with those who speak another dialect of Arabic; I.e. Middle Easterners for example frequently struggle to comprehend North Africans even though they can generally understand one another.

1.2. The Arab Academies:

According to a July 24, 1995 article in the US News and World Report, almost 25,000 new English terms are coined every year, of which only 4% make it into dictionaries (Segura, 1999). Consequently, Arabic is somewhat behind the times with respect to the plethora of English terminology being created every day. The Arab academies were institutions established to serve Arabic language, and improve the communication and understanding between its speakers, in addition to make medical information more accessible to Arabic speakers.

Al-Zarkan (1998) has thoroughly studied the Arab academies and their efforts in this field. One of the main efforts by Arab academies is the development of a standardized Arabic medical terminology. This includes the creation of a comprehensive dictionary of medical terms in Arabic

and the establishment of guidelines for the translation of medical terms. There are mainly four Arab academies that have been mainly at work in Syria, Iraq, Jordan and Egypt. The first Arab academy was founded in Syria in 1919, followed by the Arab academy in Egypt in 1932, The Iraqi scientific academy in 1947, and finally the Arab academy in Jordan which established in 1976.

At the beginning, no due heed was paid to the translation of technical terms, although the high need of them and the ultimate importance of finding corresponding equivalences in Arabic within the fast discoveries and development in different science fields. However, later on; The Syrian Academy of Medicine and the Egyptian Academy of Medical Sciences have both made significant efforts in the translation of medical terms from English and other languages into Arabic

The Syrian Academy of Medicine, for example, has published a number of dictionaries and glossaries of medical terms in Arabic, which are widely used by medical professionals and researchers in Syria. They have also organized workshops and seminars to educate medical professionals and researchers on the proper use of medical terminology in Arabic.

The Egyptian Academy of Medical Sciences (EAMS) has also played a major role in promoting the use of standardized Arabic medical terminology. They have published a number of dictionaries and glossaries, additionally the EAMS has created specialized committee of experts, who are responsible for reviewing and approving translations of medical terms to ensure the accuracy and consistency of the translations. The EAMS also works closely with other Arab academies, such as the Arab Academy of Sciences (AAS) and the Academy of Scientific Research and Technology (ASRT), to ensure that the translation align with the standardized Arabic medical terminology.

1.3. *Arab Academies Approach of Translation*

It is worth mentioning, that despite Arab academies relative differences, they have all agreed in similar approach in coining of new medical terms. They all called for reviving of old Arabic terms rather than creating a new one or transliterate the foreign terms; unless the necessity call for that. In relation to that, two Arab academies had the leading role in coining of medical terms in Arab world; The Syrian Academy of Medicine and the Egyptian Arab Academy

According to its previous president Dr. Husni Sabah, (Professor of Medicine) the Arab Academy in Damascus, despite its small contributions; but considered important as it was the first step

toward reviving Arabic technical terminology. However this Academy had no specific procedures in Arabizing terminology. Hence, individual efforts of translation of its members were the most common, which resulted in medical Arabic terms suffered from multiplicity. The latter cause a confusion among translators and the medical professionals themselves.

On the other hand, the Egyptian Academy of Medical Sciences (EAMS) uses a systematic method of new terms coining from English and other languages into Arabic.

As per Ahmed Abdel-Halim in his paper titled "The development of Medical Terminology in Arabic'', published in the journal Medical Principles and Practice in 2009; the method used by EAMS to coin new terms includes the following steps:

1- Identification of the term: the first step is to identify the medical term to be translated

2- Research and analysis: the term is then researched to understand its meaning, context, the usage in the source language.

3- Selection of the Arabic equivalent: The most appropriate Arabic equivalent for the term is selected bases on the research and analysis

4- Review and approval: the selected Arabic equivalent is reviewed and approved by a committee of experts from the EAMS to ensure its accuracy and consistency

5- Publication and dissemination: the approved Arabic equivalent is then published in dictionaries and glossaries of medical terms in Arabic, and made available for use by medical professionals and researchers in Egypt.

6- Regular update: The EAMS continuously monitors the translation and use of the medical terms and make adjustments and updates as necessary

Moreover, if no equivalence found in Arabic old books "The Cairo academy has very sophisticated procedures in processing new terms beginning from subject specialties through to the annual 'General Conference', when the new terms are given the blessings of the Academy" (Sieny, 1985: 156). After the feedback of experts about new coined terms, a committees discuss them, and the Council of the Academy review after that. If the council approve, a list of latest coined terms to be sent to different educational institutions to spread them for use

In order to keep updated with the latest sciences and scientific terms, the Arab Academy seek for a list newly used terms and their foreign equivalents and discusses the possibility of entering then into Arabic dictionaries. After the approval, should recommends the use of such terms, however, the EAMS would also include to other terms used in different Arabic countries, which led again also to multiplicity and lack of standardization which resulted in inconsistency.

To address these challenges and ensure the consistency in the translation of medical terms from English into Arabic, it is important to have a standardized Arabic medical terminology, and to use the same Arabic coined equivalent for each medical term. This requires close collaboration between medical professionals, translators, and relevant organizations.

1.4.   Other Institutions:

The contributions is considerable of other institutions such as ALESCO, the Kuwait Research Institute and The Arab development Institute in Tripoli and Beirut. As an example ALECSO (The Arab League Educational, Cultural and Scientific Organization plays a role in the Arabization of new coined medical terms. ALECSO works to promote Arabic language and culture, and to support the use of Arabic in various fields, including medicine.

2. The History of English Language:

English is a West Germanic language that originated from Ingvaeonic languages (a proposed linguistic grouping of the northern West Germanic languages, including Old English, Old Saxon, and their descendants), it is named after the Angles, the Anglo-Saxon who migrated and settled in Britain Isles and came to dominate the majority of southern Great Britain in the mid-5th to 7th centuries AD. English is closely related to Frisian, German, and Dutch English originated in England and is the dominant language of the United States, the United Kingdom, Canada, Australia, Ireland, New Zealand, and several Caribbean Sea and Pacific Ocean island nations. It is also an official language of India, the Philippines, Singapore, and many Sub-Saharan African countries, including South Africa. English is the first choice as a foreign language in most countries, and it is this status that has earned it the title of global lingua franca.

2.1. The development of English Language:

The Contact with the North Germanic languages used by the Scandinavian Vikings who invaded and settled portions of Britain in the 8th and 9th century had a substantial later impact on the development of Old English, leading to significant vocabulary borrowing and grammatical reduction. Old English was temporarily superseded as the language of the higher classes by Anglo-Norman (also known as Anglo-Norman French) following the Norman Conquest in 1066.Since the English language was extensively impacted by Anglo-Norman at this time and developed into a stage known as Middle English, this is regarded as the end of the Old English or Anglo-Saxon era.

Up until the late 15th century, Middle English was spoken. The orthography system established during the Middle English period is still widely used today. Later changes in pronunciation, combined with the adoption of various foreign spellings, result in highly irregular spelling of modern English words.

The language used by William Shakespeare, known as Early Modern English, dates from around 1500. Many Renaissance-era loans from Latin and Ancient Greek were included, as well as borrowings from other European languages such as French, German, and Dutch. The Great Vowel Shift, which affected the qualities of most long vowels, was one of the most significant pronunciation changes during this time period. However, Even after the vowel shift the language still sounded different from Modern English.

2.1.1. Standard English:

Standard English (SE) is a type of English that has undergone extensive regularization. It is often used in formal education, language assessment, and official print media, including newspapers of record and public service announcements.
The term "Standard" does not refer to minimal desirability or interchangeability; rather, it refers to the regularization of grammar, spelling, and language usage.
Due to previous English-speaking population movements and colonization, as well as the predominance of English as the global language of trade and commerce. Countries where English

is neither an official language nor one that is widely used as a second language may import different varieties of English through educational resources (usually British English or American English) and use them as their "standard" for instruction and evaluation.

3. Word Formation in English and Arabic:

Word formation is a productive process that aims at producing and creating new words, and it can be both grammatical and morphological. It varies among languages, including Arabic and English. English places a lot of emphasis on affixation, whereas Arabic relies on the combination of morphological patterns and roots.

Arabic words can express many of the ideas that English affixes can. English uses effective techniques like word blending and shortening to create brief words. Arabic does not have any techniques that are this effective. Due to these variations, terms generated in each language differ in length, and the length of English terms and their Arabic translation equivalents differ.

According to Amr M. El-Zawawy (2016), English morphology is usually described as linear and affixing, while Arabic morphology is considered nonconcatenative. In the Arabic language morphology, the stem of a consent word had three discontinuous morphemes: the consonantal root, the templatic pattern, and the vowels. The consonantal root is a fundamental lexical unit of the language; it is used to create genuine words by combining the root consonants with vowels and non-root consonants that belong to a specific morphological category. Adding to the root's significance is the templatic pattern into which the consonantal root is put. The vowels are to indicate differences in verbs, voice, and nouns. In English language morphology, the linear process of affixation is used for example to form nouns.

As it is noticeable, the two languages are systematically different so naturally, the ways they both compound and derive words are different.

3.1. Arabic Derivation (The Root-Pattern System):

According to Igaab & Kareem (2018: p.95), a good description of Arabic derivation is a recycling process. The most natural method of the language's development has long been thought

to be its derivation from existing Arabic roots. Arabic has been referred to as the Ishtiqaq language. Unlike English, Arabic is a non-linear language, it consists of a root between its letters, thus, adding affixes is not the only way to create new words. By altering the word template, it enables the creation of new words. These modifications could affect both the written word and pronunciation, e.g.:

- كَتَبَ/kataba/ (he wrote).
- كُتِبَ / (kutiba/ (was written).
- كُتُبْ/kutub/ (books).
- كاتِبٌ / katib/ (a male writer).
- كُتاب /kutab/ (writers).
- كاتِبة /katibah/ (a female writer).

These verbs above can have inflectional suffixes, as for the verb Kataba there can be different variations for example:

- I wrote Katabtu (first person singular).
- He wrote Kataba (second person singular, masculine).
- She wrote Katabat (second person singular, feminine).
- They (masculine) wrote Katabu (third person plural, masculine).

Accordingly, based on the pattern that is operating into the consonant root, the consonant root can be seen as a nucleus or core around which are fit a vast array of potential meanings.

3.1.1. Arabic Compounding:

Compound words in Arabic are often sentences with a regular word order. The Arabic forms don't really help much with new formations. These variants are typically not part of the standard Arabic derivational structure. Compound words can be written in both languages in various ways. Arabic compounds are typically spaced (separated by a blank). The majority of Arabic compounds are either created or modified through translation after a certain foreign pattern.

According to (cf. Ibrahim, 2010) there are basic types of compounds in Arabic:

-Genitive compounds (a noun added to another noun) e.g., hizamu l. Amani حزام الأمان.

-Predicative compounds (a finite verb and a noun) e.g., ta'abbata sarran تأبط شزا.

-Synthetic compounds (two nouns are juxtaposed), e.g., ḥaḍramūt حضرموت.

 In addition to these types, there are other types of compounds for example:

 Compounding into One Word:

For example: ra'smaal formed from conjoining the word r'as "head" with maal "money"

 Compounding into Two Words:

 This type usually creates noun phrases, for example: "kiis hawaa" for "airbag". Or a combined participle-noun phrase such, e.g., "muta'iaddid-u l-'aṭraaf" for"multilateral".

Numerical Compounds:

 In numbers from 11 to 19, the first part referring to the first digit and the second part always some form of the word "ten". For example: ahada asr, ithna asar, thalathata asr, ect.

3.2. *English Derivation:*

 The word Derivation is a Latin word that means, "To draw off," (Nordquist, 2019b). By incorporating specific affixes into the roots, new words are created in this process. From their roots, it develops words with various meanings or classifications (word-classes).

 In English, this procedure is primarily based on affixation, which can be prefixes or suffixes. Prefixes can be added to almost all word classes except some adverbs, e.g. unhappiness consists of three consonants: a base (happy), a prefix (un-), and a suffix (-ness). It is important to mention that there are no infixes in English.

 English affixes can be classified into two types: class-changing derivational and class-preserving derivational.

Class-Changing Derivational:

It is producing derived forms of another class and it is four types:

a) Verb-forming derivational suffixes:

e.g. -ize, modernize; -fy, simplify; -en, harden.

b) Noun-forming derivational suffixes:

e.g. -er, teacher; -ation, organization; -ing, acting; -ee, trainee; -ment, recruitment; -al, refusal.

c) Adjective-forming derivational suffixes:

e.g. -al, logical; -ical, historical; -ial, partial; -ful, wonderful; -able, acceptable; -ish, greenish; -ible, edible; -ed, curved, -ive, supportive; -ative, comparative; -ittive, additive.

d) Adverb-forming derivational suffixes:

e.g. -ly, hardly; -ward (s), afterward; -wise, moneywise.

3.2.1. English Compounding:

"A compound is a word that consists of two smaller words or more whose meaning cannot be portrayed by taking each word in isolation." Buhari (2006: p.60). In English compounds, the modifying element typically appears in the stem form and they have a structure lexemic-base.

Ibrahim (2010) prefers to section such types of compounds semantically into the following sub-types:

• Endocentric N + N: airplane.

• Appositional N+N: player-coach.

• Copulative N+N: bittersweet.

• Possessive noun + noun: book's content.

• Verb+Noun: pass port.

• Noun+Verb: lifeguard.

• Gerund+Noun: house cleaning.

• Noun+Gerund: ice skating.

• Adjective+Noun: high quality.

• Particle + Noun: offhand.

• Verb + prep/Adverb: glow-up.

• Noun + pp: mother-in-law.

4. Medical Language:

Medical language refers to the specialized language used by healthcare professionals and researchers to communicate about health, illness, and the human body. This language is characterized by a specialized vocabulary, syntax, and style that is different from everyday language. While the medical translation refers to the process of translating medical information and medical documents, including medical reports, patient information, and clinical trial protocols, into different languages. Medical translation requires a high level of accuracy, precision, and cultural sensitivity, as medical information can have important implications for patients' health and well-being.

Medical translation requires a deep understanding of medical terminology, anatomy and physiology as well as the cultural, social and historical context in which medical information is produced and received.

4.1. *English Medical language:*

Nowadays, it is well known that English is the first language in the world in different domains, including the medical sciences field. To doctors; the communication in English has been indispensable

throughout the history of medicine (Krulj et al., 2011: 170). Thus, it is not easy to get a full understanding the nature of the language without referring to the feature of English medical language.

4.1.1. Lexical features of Medical English:

Medical English language is characterized by using a pure medical words. English medical terminology could be divided into the following subcategories:

Greco-Latin terms: it makes a big part of the overall lexical body of medical knowledge. Medical English is rich with morphologically complex words which is made up of Latin and Greek roots and affixes. Medical English either purely borrows Greco-Latin terms without any alternations as in Phlegmasia albadolens (a disease related to deep vein thrombosis), fascia (a sheet of connective tissue covering or binding together body structures) or, adapt them hence making them overtime an integral part of English language such as "pericardium" instead of the Greco-Latin "perikardion" which according to Merriam Webster online medical dictionary, refers to " the conical sac of serous membrane that encloses the heart and the roots of the great blood vessels of vertebrates".

Collocations: A collocation is a process of combing two different words to form a new one word group for example ¨Benign¨ or ¨Malignant¨ collocate with ¨Tumor¨ (Newmark, 1979:1406).

Abbreviations and Acronyms: CPR (Cardio Pulmonary resuscitation), MRI (Magnetic Resonance Image)…etc. are all abbreviations we hear them in our daily life. Kasprowics (2010) has defined abbreviations as shortened forms of words or phrases that are spelled variously according to the rules of different languages. Acronyms on the hand, are words formed by a sequence of one to several capitalized initial letters or syllables. The clearest example is AIDS which is (Acquired Immune Deficiency Disease Syndrome).

It is a historical tradition of language of medicine to use abbreviations and acronyms, which make it popular and the privilege of space and time economy which it provides.

Eponyms: There are numerous eponyms in medical English e.g. Achilles tendon, Crohn disease, Cushing syndrome…etc. it is any law, disease, equation or formula named after a person called an eponym. They are used simply because they are a simpler way of describing complicated syndromes, procedures or disease.

Neologisms: neologism can be defined as ¨newly coined lexical units or existing lexical units that acquire a new sense¨ (Newmark, 1988:140)

As a consequence of the rapid development in medical fields and the largely increasing number of pharmacological discoveries, neologisms are constantly created neologisms are present mainly in the names of drugs which are being invented for the treatment of various diseases. Names of organisms, enzymes are just few examples of medical neologisms.

Blends: blends are the new words formed from parts of other words. The blending process means joining the first part of a word with a final part of another word to eventually create one word (Farghal, 2000:45). One of the famous examples is the word ¨Caplet¨ which is formed from the words ¨capsule¨ and ¨tablet¨ to refer some kind of bills that is between capsule and tablet.

4.1.2. Syntactic Features of English Medical Texts:

As all ESP (English for Special Purposes), English medical text is structurally complex, because it has the same features of the language of science; these features are:

Complex structure: Although doctors and high profile specialists rarely to find difficulties when communicating with each other using certain complex words and sentences, on the same occasion it is an obstacle for the junior level like nurses and pharmacists; especially whom first language is not English although their good command of medical English.

Prepositional Phrases: prepositions and prepositional phrases play a significant role in the professional medical language in English. The preposition "of" has the highest frequency compared with other prepositions, though this finding could not be generalized as a universal rule (Krulj et al, 201: 173; 157).

The use of present Tense: the use of present tense is obvious feature of medical English as well as the language of science (Haddad; 1997:9) Examples are many including: each intercostal nerve enters…cardiac muscles consist of…etc.

Prolonged Strings of Successive Adjectives: the use of more than one adjective simultaneously in the aim of describing or defining an entity is one of the distinctive features of medical English. Examples are: Left anterior descending (interventricular) coronary artery, fourth posterior sacral foramen.

4.2. Medical Arabic Language:

Although the inability of Arabic language to compete with the English language in medicine, and almost all scientific fields; the Arabic language has preceded the English language in the in invention and development of medical terminology.

At the beginning of the Middle Ages, European science was at a low level of development. Meanwhile, the Arabs have collected the famous books of previous civilizations and on these grounds continued scientific progress, which empower them to lead the world in different sciences, thus resulted in coining of new medical terminology during that period, more specifically during the Umayyad and Abbasside periods, when movement of translation into Arabic flourished, followed by a period of Arabic contributions. The history of Arabic medicine extended from the eighth century when Arab intellectualists started to appear and multiple sciences began to emerge eastward. This beacon of sciences remained there until the beginning of thirteenth century (Najjar, 2012:587).

4.2.1. *Lexical features of Medical Arabic***:** it is characterized by its use of specific lexical features:

Classical vocabulary: it draws heavily on classical vocabulary, which can be difficult for speakers of MSA to understand

Technical terms: It includes a wide range of technical terms that are specific to the field of medicine, such as " الجهاز الهضمي"(Digestive system) and "(Digestive system) and "المناعة" (Immunity)

Arabic-Islamic medical concepts: Medical Arabic includes concepts and terminology that are based on traditional Arabic-Islamic medicine such as "الطب النبوي" (Prophetic medicine) and الطب الشرعي (Forensic medicine).

Loanwords: A number of loanwords are included in Medical Arabic from other languages, particularly Greek and Latin, which have been adopted and adapted to fit the Arabic language.

4.2.2. *Syntactic features of Medical Arabic language***:** It is characterized by its use of specific syntactic features including:

Classical Arabic: Medical Arabic is heavily influenced by classical Arabic, which is a complex and formal language that is different from MSA (Modern standard Arabic).

Nominalization: Medical Arabic also employs noun forms of verbs and adjectives, to create technical terms.

Arabic vocabulary: Medical Arabic employs Arabic vocabulary that is not commonly used in everyday language, such as "التشخيص" (Diagnosis) and (Diagnosis) and "العلاج" (Treatment).

Complex sentence structure: Medical Arabic often includes long, complex sentences with multiple clauses and dependent phrases, similar to medical English.

Abbreviation and Acronyms: Medical Arabic also uses abbreviations and acronyms, but it tends to be less frequent than in medical English.

Passive voice: Medical Arabic also frequently uses passive voice, which can make it difficult to determine who is performing the action.

Formal and precise language: like medical English, medical Arabic is formal, precise, and technical in nature, and it is not colloquial or casual.

Specificity: Medical Arabic uses specific terms to describe symptoms, diagnosis and treatments.

It's worth mentioning that the use of classical Arabic in medicine can make it difficult for non-experts to understand, which is why the Arabic academies in different countries made a considerable efforts seeking to keep Arabic language in its modern shape MSA always up to date and understandable for those who their mother language is Arabic.

Chapter Two:

Medical Translation and Translation Procedures

Introduction:

This chapter attempts to explore the medical translation in both languages English and Arabic; and explores the features of each language and its capacity of coining new medical terms. It provides an overview of main translation procedures used to find equivalents from English into Arabic.

1. Medical Translation:

Medical translation is the translation of data and papers related to healthcare or medicine. Translation in medical field involves many aspects of human health; pharmaceutical translation, medical device translation, and healthcare translation are all examples of medical translation. Medical translation is critical in assisting healthcare professionals in providing necessary treatment to their patients who speak a different language. Since medications and medical devices have such a large impact on people's lives, it is especially important to avoid errors in comprehension or suppression of information.

For any given medicine or medical device, in the situation of a regular treatment or in a clinical trial of a new medicine, this information needs to be explained clearly in the patient's native language in any country where the drug or device has been approved for the respective market. If there is a translation mistake, incorrect information will surface and have major repercussions that could endanger a person's life. In order to accurately translate subject-specific terms and phrases, translating medical literature calls for highly qualified translators who are especially attentive with terminology.

Even though medical translation shares many features with other types of translation, but there are many factors that distinguish it:

2. The History of Medical Translation in the Arab World:

Translation has always been practiced since human beings felt the need to interact and communicate with other groups of their own kind long before paper and alphabet were invented. One of the most ancient references to written translation were discovered in Mesopotamia where medical, mathematical, and chemical knowledge was gathered and organized in cuneiform symbols written on clay tablets in different language such as Akkadian, Sumerian, Ugaritic, Hittite, and Hurrian.

However, it is believed that ancient Egyptians are the ones who influenced Greek and Mesopotamian medicine.

To be more precise, the movements for historical medical translation began to take shape in the early middle ages. After the fall of the Roman Empire in Europe, the practice of Greek knowledge and central medical study decreased. Fortunately, some of the Hippocratic and Galenic literature were preserved and translated into Latin in Italy thanks to the efforts of the bilingual Graeco-Roman pioneers. The translations of the writings written by the two doctors served as efficient and useful guidelines for medical care and scientific research. The significance of these works was that they marked the start of Latin's ceremonial and public hegemony as the primary language of instruction and writing in medical school.

On the other hand, Graeco-Arabic intellectuals and medical professionals assisted in documenting and translating historic Greek medical writings into Syriac and Arabic with a transcultural and scientific perspective for about two centuries in the early Middle Ages. All the health sciences medicine and surgery, pharmacology, military medicine, and veterinary science that were practiced in the Eastern Byzantine Empire and the Near East were covered in these Greek medical writings. Several physicians, including Hunayn ibn Ishaq, Al-Razi, and Avicenna, studied and summarized Hippocratic and Galenic texts with the help of the Abbasid caliphate and the upper echelons of Arabic society in Baghdad. They also made important studies and contributions to medical science. Furthermore, throughout his rule, Sultan Saladin had a number of medical professionals, such Ibn Jami, who contributed to the spread of Greek medicine and its various methods of providing healthcare throughout the Arab world.

The Islamic era, notably the Umayyad and Abbasid periods, saw the height of Arabic medicine and pharmacology as movements of translation into Arabic flourished, followed by a period of Arabic contributions. Arabic medicine has a long history dating back to the seventh century, when Arab intellectuals first began to appear and various sciences began to spread eastward. For Arabs, the middle ages were a time of enlightenment because of a scientific study renaissance that maintained for the world much of the medical knowledge of the Greeks and ancient Semites and added to it by

adding much of what had been unknown in the field of medicine (Wakim, 1944: 96). There are three stages of Arabic medicine history:

- **The Age of Translation (A.D. 750-850):** According to Haddad, Many translation movements got their start in the Islamic era, specifically in the Umayyad era. Due to the caliphs of the Abbasside era's great interest in science and knowledge, translation technology advanced during this time. They paid rewards for their efforts in translating Greek sciences, which encouraged physicians and scientists in general. For instance, Caliph al Mamoun used to pay Greek and Hippocratic works translators the equivalent in gold.

- **The Age of Arabic Contribution (900-1100 A.D.):** After the translation era, the Arabs built upon and developed classic sciences, utilizing their own assets and scientific advancements. The creation of what are known as medical encyclopedias due to their thorough content defined this phase of Arabic-Islamic medicine. Al-Razi, Ibn Sina, and Ibn Al-Haitham, were "the most important protagonists in the process of 'vivification of medical sciences'" (Romani, n.d: 101). They were also the most prominent medical authorities.

- **The Age of Decline and Transmission to Europe (1100-1400 A.D.):** Beginning in the twelfth century, the study of science began to decline in the East, signaling the end of the Eastern intellectual era and the start of scientific advancement in the West. The sciences had spread to Europe by the end of the thirteenth century. Western students first encountered the Arabic scientific tradition as the Arab civilization spread to Spain. Furthermore, this opened up access to the rich Arab civilization to the rest of Europe, ultimately opening the door for more research and discoveries that would later define the Western Renaissance. The Arab world experienced a period of scientific recession at the same time, and medical Arabic fell behind Western medical languages in importance. Nonetheless, movements to inspirit scientific terminology began throughout the Arab world in the nineteenth century through translation. Schools appeared then in different areas in the Arab world like Syria and Iraq and the translations were only from French to Arabic. However, with the establishment of the American University of Beirut, English took it place in sciences in the Arab world through translation.

Since then, the Arabic language, which was once a means of connecting civilizations and a source language from which other languages sought credible translations, has evolved into a target language that struggles to keep up with daily updating foreign sciences.

Medical Specialties:

Medical translation entails communicating knowledge generated and required in a variety of specialties including:

- **Obstetrics and Gynecology:** the medical and surgical treatment of female reproductive system disorders.
- **Internal Medicine:** the diagnosis and treatment of cancer, infections , and diseases affecting the heart, kidneys, blood, and digestive, respiratory, and vascular systems, and treatment of problems of the eyes, ears, skin, nervous system, and reproductive organs.
- **Pediatrics:** the diagnosis and treatment of injuries, genetic defects, and many types of organic disease and dysfunction in children.
- **Surgery:** preoperative, operative, and postoperative care for any surgical conditions affecting any part of the body.
- **Pharmacology:** drug composition, mechanisms of drug action, and therapeutic use of drugs.
- **Psychiatric:** the diagnosis and treatment of mental and emotional disorders.

Translators may have to deal with knowledge from anthropology, psychology, sociology, economics, and law, among many other disciplines, when translating medical texts.

Comprehension of Medical Notions:

Genuine comprehension is necessary in the translation process; the translator must be relevant not only for the reader of the source text but also for the reader of the target text. However, when it comes to medical translation the priorities differ. The literary translator's focuses only on aspects such as register, rhythm, or cultural references, whereas the medical translator's priority is to deal with factual complexity and accuracy. The lack of knowledge of the different specialties often leads to comprehension problems.

Medical Terminology:

In translation process, half of the time is invested in detecting and overcoming the terminological problems. The terms for diseases, syndromes, drugs, and other medical equipment are specific in medical translation. Being able to overcome all sorts of terminological problems-neologisms, synonyms, polysemy, register mismatches and being familiar with the particular terminology in the languages involved, are necessary activities in medical translation and an important aspect in the education of professional translators.

Medical Communicative Situations:

Medical translation may be used in different broads; it is not related only to the communication among researchers but also to the communicative interaction that involves health professionals, patients, and public. There are many communicative functions including the education of health professionals at Universities; the approval of new drugs; the regulation of all kinds of health products; the dissemination of the relevant research; the communication in hospitals and other health centers; the campaigns carried out by health institutions such as World Health Organization; and so forth. Medical communicative situations are usually found in health services, biomedical research, pharmaceutical laboratories, and so forth.

Finding the right equivalent is one of the problems that translators face in translating scientific English texts into Arabic. A good scientific translation should guarantee an accurate rendering of terminology. Actually, Arabic suffers a serious shortage of scientific terminology. Language purists argue that translators should find original Arabic terminology which is better than loanwords. Selection of an equivalent scientific term in the target language also complies with the requirement of precise transmitting of thoughts and ideas. Therefore, terminology must be carefully chosen in order to be unequivocal.

2.1. *Scientific and Technical Translation (STT):*

According to Krien-Kuhle "Scientific and technical translation has always played a pivotal role in disseminating knowledge. Today, the domain of science and technology is the main area of translation work". An important component of translation studies is STT. Every area of life, society, and science, including translation, are impacted by modern technology. Translation is crucial to the diffusion of

new technological advancements and scientific discoveries around the world. Throughout history, translation has been crucial in spreading scientific and technological knowledge between different countries. It is believed that throughout history, scientific and technical translation has been essential for the spread of knowledge. In actuality, translation is closely related to or even the origin of contemporary science and technology. The demand for information transmission in the technical and scientific domains has resulted in a rapid growth in the requirement for translation.

As was already noted, translation plays a crucial part in the transfer of science and technology as well as the dissemination of information. The significance of STT may be understood by the fact that, in the field of science and technology, no nation can exist without interaction with the outside world, participation in global technical advancements, and communication**.** After the development of the internet, which connects the world and provides a great opportunity for all people to communicate and access new technology and information, STT is now thought to be even more vital.

The technical translator's has an important role in all scientific and technical fields including medical, such as in the case of translating any technical documents pertaining to the product that will be sold, using the language of the country where the product will be sold is essential.

A scientist or technician who speaks and writes in one language must also be aware of the efforts, theories, and outcomes of those who speak and work in another language. This is a sort of information exchange. Furthermore, translation is the primary method used to transmit technological information and knowledge from one nation to another around the world.

2.1.1. Translating Scientific and Technical Texts from English into Arabic:

Despite the fact that it is commonly acknowledged that English is the universal language, governments of nations where English is not the primary language have taken steps to ensure that the most data is gathered and translated in order to distribute the knowledge that is needed from English. For instance, numerous schools and organizations have been founded in Arab nations with the aim of translating from English into Arabic.

Technical translation involves a variety of aspects, including terminology (such as non-equivalence concerns), translator expertise in the field of translation and technical subject matter, and standardization problems. In the increasingly competitive environment of today, all of these are important to translation.

Hempel believes that when considering the whole range of cultural perspectives, terminology, culture, and status can occasionally stand in the way of successful and efficient translation.

The same thing might be viewed differently in different cultures due to inter-cultural incongruity, i.e. Muslims, for example, prefer to use the word جهاد if the fighting is between Muslims and non-Muslim enemies. Therefore, the word terrorists could be rendered into Arabic as مجاهدين. Same thing can be said about science that is founded on terminology with highly precise meanings and a hierarchical system for each term in the area.

Also, it should be noted that acronyms and abbreviations are frequently used in English technical literature, especially in medical texts, but are rarely used in Arabic when referring to technical and scientific topics.

Since technical language is a type of formal language that borrows all of its vocabulary, grammar, and linguistic elements from everyday speech. One should not only focus on the vocabulary when reading a technical text. The terms in a technical text are also governed by style and grammar. In technical writing, the important ideas are discussed using the present tense.

2.1.2. Problems in Scientific and Technical Translation:

As each language has its own qualities, such as grammatical and lexical features and cultural aspects, which create difficulties for translators and readers of those writings, the transfer of information and technology is restricted by a number of factors, which makes the STT not an easy task to achieve. There are many other problems such as language changing and new coined terms, and other difficulties.

Every language evolves with time. As a result, these changes will lead to the addition of new words to the language, the replacement of some terms with synonyms or other words with similar or different meanings, and the change of other words to other meanings. There may be words that are no longer commonly used. This type of shift takes place as a result of modifications in human culture and communities as well as advancements in technology. Numerous new terms have been added to several languages. Furthermore, changes in language are usually followed by changes in grammatical forms. Certain English words from Shakespeare's day are no longer used in modern English, with the exception of religious contexts, which is an excellent illustration of how languages change through

time. As a result, translators need to keep learning new things and stay up with any changes that the languages they work with go through.

2.1.3. Terminology Related Problems:

The world has currently experienced the exponential growth of information technology, which has resulted in widespread publicity and the emergence of several forms of mass communication, facilitating and expanding global direct access to knowledge and scientific and technological advancement. Access to new technology from wealthy nations is necessary for the Arab world. However, for Arab translators participating in STT, the issue of the massive number of new phrases that arise in the wake of new technologies and discoveries is a significant challenge. Since technical terms are a main subject in scientific text, difficulties will arise for the Arab translators when trying to find the right equivalent in Arabic.

Terminology issues play a major role in technical and scientific translation. The accuracy of the rendering of concepts and their words determines how well a scientific or technical translation will turn out. The ongoing need to discover or invent necessary scientific and technological words arises from the fact that the transfer of knowledge of science and technology from highly developed to emerging countries has become a fundamental necessity. The issue of creating a new Arabic counterpart for each technical term troubles Arabic academics. There are many problems in coining Arabic equivalents for scientific terms, some of them are:

- Some universities in the Arab world use either French or English as the language of education in their science and medical departments instead of Arabic (like in Algeria).
- The absence of cooperation among Arab nations in developing and standardizing Arabic translations of scientific words.
- The rapid technological and scientific developments in the world.

Another issue that arises from the specialized usage of technical terminology is the fact that many technical terms are not used in daily English and are therefore completely foreign to the lay translator like:

- Technical terminology, such as "allergenic," "dermal," and many more, that are foreign to the lay translator since they are not used in everyday English. Hence, the translator cannot infer the term's precise meaning without specialized understanding.
- Technical phrases that are familiar to lay translators since they are also used in common English but have different meanings in the technical context.
- Technical terms which have everyday senses that are not obviously wrong in a context, so the translator can easily fail to recognize the term as a technical term and can mistakenly render it in its ordinary sense, e.g. , the word "drug" which can be understood either as medicine or illegal substances.

To sum up what is stated above, technical text translators must be familiar with both text's intended meaning and the technical words used in the field they are translating in the SL. They must also provide the correct translation for each term in the TL.

2.2.   *Approaches to Medical translation:*

There are several approaches that are used in medical translation, including the linguistic, cultural, semiotic, technical and multidisciplinary approaches. Pilegaard (1997) has explained the most of the current international medical literature adopts a sociolinguistic approach to medical language. "The communicative purpose of medical language is to provide unambiguous and nonsynonymous language by means of terminologies in order to express relevant concepts, especially in the expert-to-expert tenor" (159-160)

The sociolinguistic approach to medical language recognizes the social and cultural context in which medical language is produced and used. This approach views medical language as a social and cultural construct, shaped by the needs and expectations of different social groups, such as patients, health experts and policymakers

 The sociolinguistic approach to medical language takes into account the following factors:

- Power relations: The way medical language is used reflects the power dynamics between different social groups.

- Discourse practices: medical language is shaped by the discourse practices of different social groups, such as the ways doctors communicate with patients and the ways patients communicate about their health.
- Cultural values medical language is influenced by cultural values and beliefs about health, illness, and the body, and these can vary between different cultures and social groups.

As a branch of LSP, it follows the same techniques and pattern of any other technical translation, the medical translation must be heeded as it much as it is in ST. The maximum degree of accuracy and adequate information about the subject matter are stone corner of correct translation that every translator in this field should acquire, also medical text is crammed with medical terminology, that must translated heedfully. It is not easy to translate medical text by just referring virtually to dictionaries and as some think that technical translation is always possible by that way. Especially the selection of the right equivalent in the right context. Newmark (1979: 1406) explained the need of dictionaries in translation is not sufficient to guarantee the right equivalent in the TL, as they often contain multiple synonyms that are not corresponding the context.

3. Inconsistency of translation from English to Arabic:

According to Macklovitch (1995:1) terminological consistency means that "each terminological unit should receive the same translation throughout the final text, so that readers are not unduly confused" so the consistency in translation is vital to maintain such standardization which help in maintaining a good communication among the TL users.

There are several factors that contribute to the inconsistency in the translation of medical terms from English to Arabic, including:

1- Lack of standardization: the absence of a standardized Arabic medical terminology leads to the use of multiple Arabic equivalents for the same medical term, which creates confusion and inconsistency.

2- Different interpretation: different translators may have different interpretations of the meaning and usage of a medical term, which can result in inconsistent translations.

3- Different regional variations: Arabic is spoken in many countries with different cultural and linguistic backgrounds, which can result in regional variations in the use of medical terms.

4- Evolution of medical knowledge: the rapid evolution of medical knowledge and technology creates new medical terms that need to be translated into Arabic, and this can result in inconsistent translations.

5- Limited knowledge of medical terminology: some translators may have limited knowledge of medical terminology, which can result in inaccurate or inconsistent translations.

6- Use of non-standardized terminology: some medical professionals may use non-standardized terminology, which can lead to confusion and inconsistency.

Sometimes there is no consistency with regard to scientific and technical translation within the same language. In consistency means using different translation of/for the same SL term throughout a text or across relevant texts. Rogers (2008: 90) points out that, terminological inconsistency can be interpreted as the use of different forms for the same referent e.g. synonyms, or ethnographic variants and geographical variants in the same text or set of related texts, as well as hyponyms. A good case in point is that of Arabic itself, where there are large variances of terms when one moves form one region to another, and a large part of a translated piece can be lost in translation because of the lack of standardization. For example, in the Maghreb countries which are influenced by the French language, the use السيدا Al-Sida as an equivalent for AIDS, whereas in eastern Arab countries, which are influenced by English they use Aydz.

4. Translation Procedures of medical texts:

Terminology is one of the problems encountered while translating from English into Arabic; a perfect translation should always pay attention to rendering an accurate terminology. The translation of scientific text is a complex process that requires specialized knowledge and skills.

Scientific texts often contain technical terms, jargon, and complex concepts that require accurate translation to ensure the intended meaning conveyed. It has distinctive characteristics, the use of terms; accuracy and objectivity are the main characteristics of the scientific text.

Bahaa-Eddin Hassan (2017) make a study to determine the main procedures used in translation of scientific texts by comparing two famous international magazines, *Scientific American* (Arabic version) and *Nature* (Arabic version).

Mainly, we have four procedures, which lead to four different types of equivalence, which are predominantly used as follows:

4.1. *Transliteration***:** is semantic translation at the phonetic level refers to the process of translating words or phrases from one language to another while preserving their phonetic characteristics. This means that the translator must take into account not only the meaning of the words but also their pronunciation, intonation and rhythm. See the below examples:

- *DNA* الدنا *(Scientific American 1995, n.1 p.70)*
- *RNA* الرنا *(Scientific American 2014, Vol. 9-10, p.18)*
- *Lasering* الليزرة

Ghazalla (Translation as Problems and Solutions 1995: p.90-91), on the other hand, considers this method of translation to be inadequate. He claims that in this case, transcription is the poorest and worst method of translation because it allows foreign words to infiltrate the Arabic language. As a result, students must avoid it at all costs, except in two cases:

1- When a foreign term, such as vitamin, does not have an Arabic equivalent. In this case, it can be used temporarily, until an Arabic equivalent is found. For example:

Virusفيروس

2- In the case of foreign names, such as inventors' names who have discovered some diseases or created some medicines. English pronunciation is common in the medical field, and most transliterated terms have been adopted in Arabic, such as

Cholera, كوليرا

Which has an Arabic equivalent الهيضاء but is not commonly used, or Pancreas البنكرياس which has an Arabic equivalent المعثكلة but not used widely.

Transliteration is a solution for some Arabic translators for a variety of reasons, including:

- Some medical terms are names of formula, place or person like Parkinson باركينسون and could not be translated into Arabic only through transliteration

- They rely on transliteration as there is no absolute Arabic equivalent, so they use the foreign term as it is to avoid any ambiguity.

Baker (2011: 20-21) have argued with some reasons on how to avoid this kind of problems by adding an explanation to loan words when they are unfamiliar to the target leader. It could be through explanation of what the product or disease I, such as:

The term *schizophrenia* could be rendered as **مرض انفصام الشخصيّة**

The term *Myoglobin* could be translated into Arabic **الصبغ البروتيني الميوغلبين**

Or by explaining the function of the product such as;

Tyrocidin which could be translated to الماة **المضادة للجراثيم الثيروسيدين**

4.2. **Calque:** Also known as loan translation, which is a kind of semantic translation where the individual words of source language are translated literally into the target language, keeping the source language structure; such as:

Anaerobic لاهوائي *(Scientific American 2015, Vol. 7-8, p.74)*

Gasohol بنزحول *(Scientific American 1994, Vol. 12, p.58)*

Interneurons ما بين العصبونات *(Scientific American 2015, n. 7-8, p.23)*

Some calque translations resulting in a phrase, term or expression that may not be idiomatic or natural in the target language. Such as:

Superhuman فوبشرية *(Scientific American 2015, n.5-6, p.63)*

Ultraviolet مافوسجي *(Scientific American 1996, n.11-12, p.13)*

Biome حيو *(Scientific American 1990, n.1, p.99)*

Chronobiological البيوزمنية *(Scientific American 2015, n. 7-8, p.45)*

Spacetime زمكان *(Nature 2016, Vol.43, p.12)*

Electromagnetic كهرطيسية *(Scientific American 2000, Vol.14, no.3,* p.48)

While calque translation can be useful in some cases, it can also result in awkward or incorrect translations, especially in the medical field where precise and accurate terminology is essential.

4.3. **Gloss Translation:** Semantic translation at the gloss level refers to lexicalizing equivalent words in the target language. This type of translation most completely typifies the structural equivalence, in which the translator attempts to reproduce as literally and meaningfully as possible the form and content of the original.

Gloss Translation tends to render the terms and concepts into Arabic by translating the lexicon. It is more acceptable in some scientific texts.

Some examples of Gloss translation are:

DNA الحمض النووي   *(Nature 2013, Vol.2, p.13)*

RNA الحمض النووي الريبي   *(Nature 2013, Vol.2, p.13)*

Generic medicines أدوية جنيسة (Nature 2014, Vol.6, p.14)

Resolution الميز   (*Scientific American 2000, Vol. 16, no.11, p 40*)

Resolution الاستبانة   (*Nature 2003, Vol. 9, p22*)

HDTV التلفزيون عالي الوضوح   (*Scientific American 2002, Vol. 18, no.5-6, p 63)*

As explained in previous examples, this kind of translations brings the translated text closer to the form of the original text while keeping as much as possible the sound effects of SL. if the SL deviates from the stylistic norms of the SL, the translation subsequently show that, TL also should deviate from the stylistic norms of the target language.

4.4.   ***Communicative translation:*** is to reorganize syntax and uses more commonly used collocations and terms in order to get the translation fluent and authentic, concise and more understandable. The translator could get himself free of the SL restrictions and give full play to the advantages of the TL. For this purpose, the translator could clarify the ambiguity that may the ST have it, delete repetitions or expand the sentence to make the reader able to understand the concepts or terms easily

The communicative translation is more fluent, simple, clear, direct and well known to the reader of the TT. It is different from the semantic translation, which is more complex, subtle, clumsy and obscure; as it focuses on reproduction of the original author s thinking process.

> *"Semantic translation is usually more awkward, more detailed, more concentrated but briefer… Communicative translation is easy reading, more natural, smoother, simpler, clearer, more direct, and more conventional…" (NEWMARK 1991:11).*

As pointed out by Newmark, "*Communicative and semantic translation may well coincide… There is no one communicative or one semantic method of translating a text—these are in fact widely overlapping bands of methods. A translation can be more, or less, semantic—more, or*

less, communicative – even a particular section or sentence can be treated more communicatively or less semantically" (1991: 10).

According to Newmark, communicative translation is preferred in scientific texts, because they are informative, he looks to the communicative translation as smoother and more clear, while semantic translation is viewed as awkward, more detailed and more concentrated.

Example of communicative translation:

- **Spintronics** : (Scientific American 2014, n.5-6, p.77)

الالكترونيات السبينية تقانة بازغة لنقل المعلومات تستخدم بعض خواص الالكترون من قبيل الشحنة والسبين والعزم المغناطيسي

- **Quantumdot:** (Scientific American 2010, n.3-4, p.40)

النقطة الكمومية هي نصف ناقل أزواج الكتروناته وثقوبه المترابطة محتواة ضمن جميع الابعاد المكانية الثلاثة

Obviously, the semantic and communicative translation are the most common procedures used in rendering different scientific texts including the medical one. Of course, there is a difference between them; but it does not mean that they are in contradiction, as in reality we may find the both combined in the same translated text. Although the theoretical difference between the two is enormous. To express the original works thinking process, semantic translation strives to preserve the language characteristics and unique expression of the original work, giving full play to the expressive function of language, whereas communicative translations key goal is to convey information, allow readers to think, feel and act and serve specific types of translation.

The communicative translation is not better than the semantic translation; however, the choice of one method always depends on the value of the text. It plays a role in determination of which method should be used based on: text type, readership, the roles of translators, and functions of the text.

With regard to readership, the priority is to be given to the author, if the semantic translation method is used, and if priority given to audience; the communicative translation method is to be followed.

Chapter Three:

Methodology and Analysis

1. Methodology and Collected Data Sources:

This study falls under the framework of descriptive translation studies. Quantitative and qualitative analysis is adopted in this research along with comparative analysis as an aim to compare between the translation procedures used to translate the medical terms. The representative data consists of seven (7) medical terms that were collected from a number of drug package inserts (DPIs), two medical dictionaries (the UMD and Hitti's dictionary). It also consists of samples that were collected from the OPUS website.

- **Unified Medical Dictionary (UMD):** The UMD is a multilingual dictionary. The Arab Medical Union in Baghdad, Iraq, published the first edition in the 1960s due to the pressing demand for standardized medical words in Arab nations. The Arab Health Ministers' Council, Arab Medical Union, and Arab League Educational, Cultural and Scientific Organization (ALESCO) have all made significant contributions to its development and maintenance since its third edition in 1973. A dedicated group of professionals was formed to gather, validate, and expand the medical words. The committee also receives medical words approved and issued by the Arab academies in Cairo, Damascus, and Amman as well as criticism, comments, and information from experts and professionals from throughout the Arab world.

- **Hitti's Dictionary:** Hitti's Medical Dictionary (English-Arabic) written by Dr. Yusuf Hitti (1967) has remained for the past quarter of a century the most reliable reference for the study of medicine and medical sciences in the Arabic language as well as for translators and intellectuals throughout the Arab world. In its fourth edition, which was released in Beirut in 1982, Hitti's Medical Dictionary added color anatomical plates and an English-Arabic dictionary of the vocabulary used.

- **OPUS Website:** OPUS is a collaborative project that aims to gather and provide a wide range of multilingual corpora for research and development in the field of natural language processing (NLP). The OPUS project provides access to a vast amount of translated texts across various domains and languages. It is also considered as an open and accessible resource for researchers, and developers who are interested in working with multilingual data.

2. Data Analysis:

> **Anosmia :**

According to the Oxford Dictionary, the term ***anosmia*** is defined as:

"The loss of smell, either total or partial, caused by injury, illness, or a congenital condition." (The Oxford Dictionary)

On the other hand, the MSD defined it as:

<div dir="rtl">

"يُعرف فقدان حاسة الشم anosmia بأنه عدم قدرة الشخص على شم الروائح بشكل كامل."(دليل MSD الارشادي)

</div>

The term ***anosmia*** conveys multiple equivalents; the following are examples of possible translations for this term from OPUS website:

ST

A person with Parkinson's disease can also experience a wide range of other physical and psychological symptoms, including depression, constipation, problems sleeping (insomnia), *loss of sense of smell* (*anosmia*) and memory problems.

TT

<div dir="rtl">

من الممكن ان يعاني الشخص المصاب بمرض باركنسون من مجموعة واسعة من الأعراض الجسدية والنفسية الأخرى، بما في ذلك الاكتئاب، الإمساك، مشاكل في النوم (الأرق)، **فقدان حاسة الشم (الخُشام)**، ومشاكل في الذاكرة.

</div>

In this example, the translator followed the procedures of: couplets (gloss translation and loan translation)

ST:

Unfortunately for people with ***anosmia***, their problems aren't so easily solved: the condition has no cure.

TT:

<div dir="rtl">

من سوء حظ الأشخاص الذين يعانون من **أنوسميا** انه لا يمكن حل مشاكلهم بسهولة؛ إذ لا يوجد علاج لحالتهم.

</div>

ST

> ***Anosmia's*** one of the side effects of the blockers.

TT

> فقد **حاسة الشم** هو أحد الآثار الجانبية لعقاقير التجميد.

In this example, the translator followed the procedure of: Communicative translation.

As mentioned in chapter one, English morphology is usually described as linear and affixing, while Arabic morphology is considered non-concatenative. The derivation process in English is primarily based on affixation, which can be prefixes or suffixes.

In English language, there might be some complex or technical terms are used in specialized fields that needs to be simplified to be more accessible to the target audience. Furthermore, translators suggests the "intralingual translation" to simplify these terms.

Roman Jakobson introduced the concept of intralingual translation in his seminal essay "On Linguistic Aspects of Translation" (1959). According to him, "*intralingual translation is the process of rewording or paraphrasing a message within the same language to make it more comprehensible or to adapt it to a different context*". The concept was introduced as one of three types of translation, alongside interlingual translation (translation between two languages) and intersemiotic translation (translation between different sign systems, such as from language to music or from language to music or from language to visual art).

The word ***anosmia*** is an example of an intralingual translation, as it is a term that has been translated within the same language. According to the Online Etymology Dictionary, the term ***anosmia*** is derived from Greek, the prefix "***an-***" is a common negative prefix in English that is derived from Greek. It is used to form words that express negation, absence, or reversal of the action or condition expressed by the root word like "*anemia*", "*anorexia*". The root "***Osme***" is a Greek word that means "sense of smell". It is commonly used as a root word in medical terminology to describe various conditions related to the sense of smell. The suffix "**-*ia***" is a commonly used suffix in medical

terminology that is derived from Greek and means "condition of" or "abnormally of". It is used to form nouns that describe various medical conditions or states of being.

As stated in the examples above, there are multiple equivalents for the word *anosmia*; this can be due to the use of two different procedures (Arabization, descriptive) to translate the term. Arabization (transliteration, loan translation) involves translating medical terms into Arabic by creating new Arabic words that are derived from the English language.

In Arabic language, one of the most used molds for terms denoting diseases is *faalun (فَعَلٌ)* like *barasun (*leprosy) and *fualun (فُعَالٌ)* like *khushamun (*sarcoma)*, zukamun (*cold)*, Ruhabun (*phobia).

- According to the OPUS Website, the UMD, and Hitti's Dictionary, *anosmia* is translated as الخُشَام (على وزن فُعال). The translators used the loan translation. It is considered as a loan translation because it involves borrowing the Greek roots that make up the word "*anosmia*" and translating them directly into the target language.

- Another equivalent for the word *anosmia* according to the OPUS Website is انوسميا. The translators used the transliteration procedure. It is considered as transliteration because it involves representing the sounds of one language (Greek language) using the script of another language (Arabic language).

On the other hand, descriptive translation (gloss translation, communicative translation) involves translating medical terms into Arabic by using descriptive phrases that explain the meaning of the term.

- In the OPUS Website and Hitti's Dictionary, the word *anosmia* is translated as فقد حاسة الشم. In this case, "**فقد حاسة الشم**" literally means "*loss of smell*" in Arabic, which conveys the general idea of what the term "*anosmia*" refers to. The translators here used the gloss translation and it is considered as a gloss translation because it provides a simple, literal translation of the meaning of the term

However, there could be a combination between two translation procedures while dealing with one term, this combination is known as "*couplet*". According to Peter Newmark, "*couplets occur when the translator combines two different procedures*".

For example: the translation of the word "*anosmia* " as "**فقد حاسة الشم (الخشام)**'. The translators combined two different procedures (gloss translation) and (loan translation) to translate the medical term *Anosmia*, which corresponds to Newmark's "Couplet's".

Here are other possible equivalents of the term *anosmia* according to the UMD:

Anosmia: حالة فقد الشم, اضطراب فقدان الشم, الخشم, اللاشمية.

> **Sarcoma :**

According to NCI Dictionary, the term *sarcoma* is:

"A type of cancer that begins in bone or in the soft tissues of the body, including cartilage, fat, muscle, blood vessels, fibrous tissue, or other connective or supportive tissue. Different types of sarcoma are based on where the cancer forms."(NCI Dictionary)

While Altibb's Website defined it as:

"الساركوما عبارة عن نوع نادر من السرطان الذي يؤثر على العضلات، الدهون، الأوتار، الغدد الليمفاوية، الأوعية الدموية، والأعصاب بحيث قد تظهر في مناطق مختلفة من الجسم بما في ذلك اليدين، القدمين، منطقة الصدر، وفي المعدة أيضاً".(موقع الطبي)

The term *sacroma* conveys multiple equivalents, the following are examples of possible equivalents for this term from OPUS website:

ST

If *sarcoma* located on the arm or leg, the surgeon can remove the tumor.

TT

إذا كان *الغرن* في الذراع او الساق، يمكن للجراح إزالة الورم.

In this example, the translator followed the procedure of: gloss translation.

ST

Secondary cancer- when the *sarcoma* spreads to other parts of the body

TT

السرطان الثانوي-عندما ينتشر *الورم اللحمي* في أجزاء أخرى من الجسم.

In this example, the translator followed the procedure of: gloss translation.

ST

A cure isn't actually possible if a soft tissue *sarcoma* is only detected when it's already spread to other parts of the body.

TT

غالبا ما يكون العلاج غير ممكن إذا اكتشفت *ساركومة* النسيج الرخو وقد انتشرت بالفعل في باقي أجزاء الجسم.

In this example, the translator followed the procedure of: transliteration.

ST

A risk of soft tissue *sarcoma* can be inherited from parents.

TT

من الممكن وراثة خطر الإصابة *بساركوما* الأنسجة الرخوة من الوالدين.

In this example, the translator followed the procedure of: transliteration.

As we all know the difference between Arabic and English in lexical and syntactical levels, we notice in this example that the word *sarcoma* is a term that has its roots in Greek and Latin. It is

derived from the Greek word **"sarcoma"**, which means "*fleshy growth*" or "*tumor*". The term "*sarcoma*" is composed of two Greek elements: "*sarx*", which is a word that evolved from the Proto-Indo-European root "*hes-*", which means "*to consume*" or "*to eat*". In ancient Greek, "*sarx*" referred to the physical flesh or meat of animals or humans. Over time, its meaning expanded to include the idea of fleshy or soft tissue; and "*-oma*", a suffix used to indicate a swelling or a tumor for example "*lymphoma, melanoma, lipoma*…"

As was mentioned before, the usage of different procedures to translate one word (in this case it's **"sarcoma"**), led to have multiple equivalents.

• In the OPUS Website and Hitti's Dictionary, the word **sarcoma** is translated as الغرن. The translators here rendered the term **sarcoma** into Arabic by translating the lexicon. The translators used the gloss translation. It is considered as a gloss translation because the translators rendered the term from English into Arabic by translating the lexicon.

• Another translation of the word **sarcoma** in the OPUS Website and the UMD is الورم اللحمي. This translation directly describes the nature of the condition, as "الورم" means tumor and "اللحمي" means "fleshy". The translators used gloss translation because they rendered the term from English into Arabic by translating the lexicon.

• Another acceptable translation that is found in the OPUS Website, the UMD, and in Hitti's Dictionary is *"ساركومة"* or"ساركوما"... In order to translate this term, the translators used the transliteration or borrowing procedure. It is considered as borrowing or transliteration because it represents the English phonetic elements of the word **"sarcoma"** by using the characters of the Arabic language script.

In addition to these equivalents, The UMD suggests the following:

Sarcoma : سرطان النسيج الضام.

➢ **Anorexia:**

According to Cambridge Dictionary, the term ***anorexia*** is defined as:

> *"A serious mental illness in which a person does not eat, or eats too little, often resulting in dangerous weight loss."(Cambridge Dictionary)*

And in Oxford Dictionary, ***anorexia*** is:

> *"a mental illness causing somebody to control the amount of food they eat in an extreme way that leads to dangerous weight loss, usually because they have an intense fear of getting fat and believe they are fat when they are not."(Oxford Dictionary)*

Examples of the possible equivalents for the term ***anorexia*** from OPUS website:

ST

> This comes after health experts estimate that about 30,000-40,000 people in France suffer from ***anorexia***, most of them teenagers.

TT

> ويقدر خبراء الصحة أن ما بين 30 إلى 40 ألف شخص يعانون من ***النحافة المفرطة*** في فرنسا غالبيتهم من المراهقين.

The procedure used here is: communicative translation.

ST

> About ten percent of people with ***anorexia*** die of hunger and malnutrition.

TT

> حوالي عشرة في المائة من المصابين بمرض ***فقدان الشهية*** يموتون من المجاعة وسوء التغذية.

The procedure used here is: communicative translation.

ST

> Eating disorders such as ***anorexia*** and bulimia are more common in girls.

TT

> تعتبر إضطرابات تناول الطعام من قبيل *القَهَم* والقَشَم أكثر شيوعا بين الفتيات.

The word "*anorexia*" was first used in a medical context to describe the general loss or lack of appetite. Over time, it came to be associated specifically with a psychological disorder known as "*anorexia nervosa*".

As mentioned before, the intralingual translation is the process of rewording a message within the same language. The term "*anorexia*" is considered as an intralingual translation because it has its roots in Greek, as it is derived from the Greek words: "*an*", a prefix, which means "*without*" and "*orexis*", which refers to a concept in psychology or philosophy that encompasses the "*desire, appetite, or craving for something.*" When combined together the word "*anorexia*" is formed which literally means "*without appetite*."

- In the OPUS Website, the equivalent of the word "*anorexia*" is "*الحافة مفرطة*". Here, the translators used the communicative translation. It is considered as a communicative translation because it renders the exact contextual meaning of the word "*anorexia*" from English into Arabic.

- The OPUS Website and Hitti's Dictionary suggested "*فقدان الشهية*" as an equivalent for the word "*anorexia*". The word "*فقدان الشهية*" is also considered as a communicative translation.

- The OPUS Website, Hitti's Dictionary, and the UMD suggested "*القهم*" as an equivalent for the term "*anorexia*". In this translation, the procedure of gloss translation. It is considered as a gloss translation because the translator's aim was to render the word into Arabic by translating the lexicon.

The UMD also suggested these translations:

> **Anorexia :** قَمَه, فقد الشهية للطعام.

> ➢ **Diplopia :**

In Meriam-Webster, the term *diplopia* is:

> *"a disorder of vision in which two images of a single object are seen (as from unequal action of the eye muscles)." (Meriam-Webster)*

And in the German Neuroscience Center Website, it is defined as:

"يرى المريض ذو **الرؤية المزدوجة** صورتين لجسم واحد إما بشكل دائم أو متقطع. تُعرف الرؤية المزدوجة أيضًا باسم **دبلوبيا**."(الموقع الالكتروني لمركز علم الأعصاب الألماني)

Here are the possible translations for the term "diplopia" from OPUS website:

ST

> In this case, the brain receives two different images, and either suppresses one or allows the person to see double (*diplopia*).

TT

> في هذه الحالة، يتلقى الدماغ صورتين مختلفتين، وإما أن يقمع صورة واحدة أو يسمح للشخص برؤية صورتين (**الشفع**).

In this case, the translators followed the procedure of: Gloss translation.

ST

> *Diplopia* occurs rather frequently in the first few weeks following surgery.

TT

> غالبًا ما يعاني المرضى من *ازدواج الرؤية* في الأسابيع القليلة الأولى بعد الجراحة.

In this case, the translators used the procedure of: Communicative translation.

ST

> *Double vision* (medically known as diplopia) is seeing two images of a single object some or all of the time.

TT

> *الرؤية المزدوجة* (المعروفة طبياً باسم ازدواجية الرؤية) هي رؤية صورتين لشيء واحد بعض أو كل الوقت.

In this case, the translators used the procedure of: Communicative translation.

ST

> **Double vision** (*diplopia*) may occur if there is pressure on the 6th cranial nerve, and there may be impairment of the muscles of the eyelids.

TT

> ضعف في قد يحدث *ازدواج الرؤية* **(الشفع)** إذا كان هناك ضغط على العصب القحفي السادس، وقد يكون هناك عضلات الجفون.

The used procedure here is a combination of: gloss and communicative translation.

The word "*diplopia*" is originally derived from the combination of two Greek words: "*diplous*", which is a term that is often used as a prefix in medical terminology to indicate a "*doubling*" or "*duplication*" of a particular structure or condition. "*Ops*" refers to "*sight*", it is used a root in medical terminology related to the eyes or vision. The two terms are combined together to form the word "*diplopia*" which literally means "*double vision*". Since we analyzed the etymology of the term "*diplopia*", we can understand that it is an example of the intralingual translation because the term is translated within the same language in order to make it clear to the readers.

- Hitti's Dictionary, the UMD, and the OPUS Website all suggested the word "*الشفع*" as an equivalent for the word "*diplopia*". The translators used the gloss translation procedure in order to rend the word from English into Arabic by translating the lexicon.

- The other suggested equivalent according to Hitti's Dictionary, the UMD, and the OPUS Website is"*ازدواج الرؤية*". This translation is considered as communicative translation because the word is described as it is from English into Arabic.

- Another acceptable equivalent according to the OPUS Website is "*الرؤية المزدوجة*". The term "*diplopia*" is described by its meaning from English into Arabic language as "*الرؤية المزدوجة*". The procedure used here is also the communicative translation.

• There could be a combination of two different procedures, also known as "*couplets*" for example: "*double vision (diplopia)*" was translated as"(الشفع) ازدواج الرؤية". This translation is a combination of the two procedures (gloss translation and communicative translation).

> **Ischemia:**

According to Altibbi's Website, *ischemia* is:

"نقص التروية هو الامداد الغير كافي بالدم لأنسجة مُحددة في الجسم لانسداد الأوعية الدموية المُغذية لها، وينتج عن نقص تروية أعضاء وأنسجة الجسم ونقص تركيز الغلوكوز والاكسجين اللازمين للعمليات الأيضية الخلوية وخاصة في الدماغ، الأمعاء، القلب، الأطراف والجِلد ."(موقع الطبي)

While in Meriam-Webster, the term *ischemia* is:

"*Deficient supply of blood to a body part (such as the heart or brain) that is due to obstruction of the inflow of arterial blood.*"(Meriam-Webster)

Here are the possible translations for the term "*ischemia*" from OPUS website:

ST

> *Ischemia* is the term used to describe the loss of oxygen and nutrients to brain cells when there is inadequate blood flow.

TT

> *الإقفار* هو المصطلح المستخدم لوصف فقدان الأكسجين والمواد المغذية لخلايا الدماغ عندما يكون تدفق الدم إليه غير كافٍ.

In this case, the translators used the procedure of: gloss translation.

ST

> A heart attack can also lead to cerebral *ischemia* due to the association that exists between heart attack and low blood pressure.

TT

> يمكن أن تؤدي النوبة القلبية أيضًا إلى *نقص التروية* الدماغية بسبب العلاقة القائمة بين النوبة القلبية وانخفاض ضغط الدم.

In this case, the translators used the procedure of: Communicative translation

ST

> Current researchers now understand some of the major factors that lead to chronic wounds, among which are *ischemia.*

TT

> في الوقت الحالي يمكن للباحثين فهم بعض العوامل الرئيسية التي تؤدي إلى الجروح المزمنة ومنها *الإسكيمية*.

In this case, the translators used the procedure of: Transliteration.

ST

> During his time at Ratcliffe's laboratories, Dr. Al Haj Zen's research also focused on treatments for *ischemia*, a condition that restricts blood supply to tissues and causes a shortage of oxygen required to keep tissue alive.

TT

> وخلال فترة عمله في مختبرات السير راتكليف، ركزت أبحاث الدكتور أيمن كذلك على طرق علاج *فقر الدم الموضعي*، وهي حالة تحد من تدفق الدم إلى الأنسجة وتسبب نقصًا في الأكسجين المطلوب للإبقاء على الأنسجة حية.

In this case, the translators used the procedure of: Communicative translation.

The term "*ischemia*" was introduced in medical terminology to describe the condition characterized by a deficient blood supply to a particular organ or tissue. The term comes from the Greek word "*ischaimos*" which literally means "*stopping of blood*". It is derived from the combination of "*ischein*", meaning "*to hold back*" or "*to stop*", and "*haima*", meaning "*blood*".

- According to the OPUS Website, the UMD, and Hitti's Dictionary, the term "*ischemia*" can be translated as "*الاقفار*". The translators used the gloss translation in order to rend the meaning of the word from English into Arabic by translating the lexicon.

- The term "*نقص التروية*" is also suggested by the OPUS Website, the UMD, and Hitti's Dictionary as an equivalent for the word "*ischemia*". The term is originally translated within the same language which means it's an intralingual translation. As a result, the translators used the loan translation and rendered the meaning from English into Arabic without changing the structure of the source language term.

- Another suggested equivalent by the OPUS Website is "*الاسكيمية*". This equivalent is borrowed from English language and rendered into Arabic language using the Arabic alphabet. The translators used the transliteration procedure and came up with the term "*الاسكيمية*" as an equivalent of the word "ischemia".

- "*فقر الدم الموضعي*" is also an equivalent of the word "*ischemia*" as stated in the OPUS Website. This translation is considered as a communicative translation because the translators described the word as it is in Arabic language to make it more comprehensible as it might be unfamiliar to the target audience.

  ➢ *Cataract:*

According to Meriam-Webster, the term *cataract is:*

> *"A clouding of the lens of the eye or of its surrounding transparent membrane that obstructs the passage of light."(Meriam-Webster)*

While Altibbi's definition of the term *cataract* is:

"الساد أو إعتام عدسية العين: ويعرف أيضاً بالمياه البيضاء أو مرض العدسة، هو مرض ينشأ نتيجة للزيادة التدريجية في مقدار سمك عدسة العين." (موقع الطبي)

The following are equivalents for the term *cataract* from OPUS website*:*

ST

Patients suffering from *cataract* usually have trouble reading, driving and recognizing faces.

TT

> المرضى الذين يعانون من *إعتام عدسة العين* يواجهون عادة صعوبة في القراءة والقيادة والتعرف على الوجوه.

The translators used the procedure of: communicative translation.

ST

> The term *cataract* is derived from the Greek word cataractos, which describes rapidly running water

TT

> ويستمد مصطلح *الساد* من الكلمة اليونانية كاتاراكتوس الذي يصف المياه الجارية.

The translators used the procedure of: gloss translation.

The word "*cataract*" is originated from the Latin word "*cataracta*", which was borrowed from the Greek word "*kataraktes*" referred to a steep waterfall or a strong rushing downpour of water. The term "*cataracta*" in Latin was used to describe a waterfall or something that descended rapidly. Over time, the term started to be used in medicine to describe a condition where the vision is clouded or obscured, much like looking through a waterfall. It was initially used to refer to any kind of cloudiness affecting the eye

- In the OPUS Website, the term "*cataract*" is translated as "*اعتام عدسة العين*", which is an equivalent that describes the term as it is. The translators used the communicative translation as a way to simplify the term and make it obvious in the target language.
- In the OPUS Website, the UMD, and Hitti's Dictionary, the term "*cataract*" was translated as "*الساد*".The obtained procedure here is the gloss translation, the translators focused on translating the lexicon to get the equivalent in the target language (Arabic).

Here are other suggested equivalents according to the UMD and Hitti's Dictionary:

> *Cataract* : العدسة الكدرة, كتاركت

> **Glaucoma:**

According to the Online Dictionary, the term *glaucoma* is defined as:

"abnormally high fluid pressure in the eye, most commonly caused either by blockage of the channel through which aqueous humor drains (open-angle glaucoma, or chronic glaucoma) or by pressure of the iris against the lens, which traps the aqueous humor (angle-closure glaucoma, or acute glaucoma)."(Online Dictionary)

And in the MSD Manuals, *glaucoma* is:

"الزرق هو مجموعة من الاضطرابات التي تتسم بتضرر تدريجي في العصب البصري (يترافق في كثير من الأحيان مع زيادة ضغط العين، ولكن ليس دائمًا) مما يؤدي إلى فقدان رؤية لا يمكن علاجه."(ادلة *MSD* الارشادية)

The following are suggested equivalents for the term *glaucoma* from OPUS website:

ST

Sight-threatening eye diseases such as ***glaucoma*** or macular degeneration (AMD) develop in the early stages unobtrusively and painlessly.

TT

تتطور أمراض العين المهددة للنظر مثل *المياه الزرقاء* أو التنكس البقعي (AMD) في المراحل المبكرة بشكل خفي وبدون ألم.

The translators used the procedure of: communicative translation.

ST

Green tea should not be consumed if you suffer from ***glaucoma***, as it increases the pressure inside the eyes

TT

لا ينبغي أن تتناول الشاي الأخضر إذا كنت تعاني من *الزرق*، لأنه يزيد من الضغط داخل العينين.

The translators used the procedure of: gloss translation.

ST

> Drugs to treat *glaucoma* are classified by their active ingredient.

TT

> يتم تصنيف الأدوية المستخدمة في علاج *الجلوكوما* حسب مكوناتها الفعالة.

The translators used the procedure of: Transliteration.

ST

> Ocular hypertension in fact has been recognized as the most important risk factor for the development of primary open angle *glaucoma.*

TT

> لطالما عرف الارتفاع الشديد في ضغط العين بأنه أكثر عوامل الخطورة أهمية لظهور *جلوكوما.*

The translators used the procedure of: transliteration.

The word "*glaucoma*" originates from the Greek language. It is derived from the Greek word "*glaucoma*", which means "*opacity of the lens*". The term was used in ancient Greece to describe several different eye conditions that caused cloudiness or opacity in the eye. The Greek word "*glaucoma*" itself is derived from the root word "*glaukos*", which means "gray" or "bluish-green". It was used to describe the color of the eye in certain eye diseases or conditions.

- One of the suggested equivalents for the term "*glaucoma*" in the OPUS Website is "*المياه الزرقاء*". The translation is a literal description of the meaning of the term. The translators used the communicative translation to rend the meaning from English into Arabic and make it more comprehensible to the target audience.

- The OPUS Website, Hitti's Dictionary, and the UMD suggested the term "النزرق" as an equivalent for the term "*glaucoma*". In this translation, the focus was on translating the lexicon which means that the translators used the gloss translation to obtain the translation of the term.

- Another suggestion according to the OPUS Website is the term "الجلوكوما"or" جلوكوما". The translators used the transliteration procedure and borrowed the word "*glaucomia*" as it is from English and rendered it in Arabic by using the language's alphabet.

> **Allergy:**

According to Meriam-Webster, *allergy* is:

> "*Exaggerated or pathological immunological reaction (as by sneezing, difficult breathing, itching, or skin rashes) to substances, situations, or physical states that are without comparable effect on the average individual.*"*(Meriam-Webster)*

And according to Altibbi's Website, it is defined as:

" هو رد فعل تحسسي من الجسم على مسبب معين، ويحدث نتيجة تفاعلات غير مألوفة من الجهاز المناعي اتجاه مواد غريبة أو مسببة للحساسية تعرض لها الجسم من خلال الجلد أو الأنف أو العينين أو الجهاز التنفسي أو الجهاز الهضمي أو عن طريق البلع أو الحقن."(موقع الطبي)

The following are suggested equivalents for the term "*allergy*" from OPUS website:

ST

An eye *allergy* may happen at any time of year.

TT

قد تحدُث **حساسية** العين في أي وقت من السنة.

The translators used the procedure of: Gloss translation.

ST

An *allergy* is a condition of unusual sensitivity to one or more substances in the environment which may be harmless to the majority of people.

TT

> **الأرجيّة** هي حالة من الحساسية غير المألوفة التي يبديها شخص ما إزاء مادة أو أكثر، قد تكون غير مؤذية لمعظم البشر.

The translators used the procedure of: transliteration.

ST

> The diagnosis of food **allergy** is difficult to prove or refute.

TT

> إن تشخيص **التحسس** الغذائي صعب الإثبات أو النفي.

The translators used the procedure of: Gloss translation.

ST

> If there is a family history of allergies, one may wish to introduce only one new food at a time, leaving a few days in between to notice any reactions that would indicate a food **allergy** or sensitivity.

> في حالة وجود قصة عائلية للأرجية فإنه من المستحسن تقديم نوع واحد من الأغذية الجديدة في المرة الواحدة وعلى عدة ايام فاصلة بينه وبين طعام آخر لملاحظة أي تأثر يمكن أن يدل على وجود**أرجية** أو حساسية لهذا الطعام.

The word "**allergy**" was coined by the Australian pediatrician Clemens Von Pirquet. The term is derived from the Greek words "**allos**", wich means "other" or "another" and "**ergon**", which means "work" or "action". "**Ergon**" is commonly used in English to refer to the function of activity associated with a particular role or task. In the context of the word "**allergy**", the term "**ergon**" is used to describe the immune system's reaction or response to a substance that is perceived as a threat, even though it might be harmless to most individuals.

- The OPUS Website suggested the word "حساسية" as an equivalent of the word "***allergy***", the term "حساسية" is derived from the Arabic root "حسس" which means, "***to feel***". The translators used the gloss translation to rend the exact meaning of the medical concept from English into Arabic.

- Another similar equivalent that was suggested by the OPUS Website is the term"تحسس" . This term shares the same root with,"حساسية" but it has a broader meaning and can refer to sensitivity in a general sense. The translators used the gloss translation procedure and focused on translating the lexicon.

- The term ***"الارجية"*** or ***"ارجية"*** was suggested by the UMD and the OPUS Website. This term is borrowed from English language as it is, and was transferred into Arabic using the language's alphabet. The translators used the procedure of transliteration.

The Arab academies made significant efforts in the area of medical terminology, but they were unable to unify and disseminate the accepted medical terms across the Arab world. The following table illustrates this idea:

- **Table No.1:**

The following table illustrates the frequency of the translated medical terms that were translated by "*transliteration, gloss translation, communicative translation, and loan translation*":

Terms	Gloss translation	Frequency	Translitera-tion	Frequency	Loan Translation	Frequency	Communicative Translation	Frequency
Anosmia	الخشام	2	انوسميا	9	فقد الشم	4	فقد حاسة الشم	3
Sarcoma	الغرن	3	ساركوما	232	/	/	/	/
	ورم لحمي	9	ساركومة	29	/	/	/	/
Anorexia	القهم	9	/	/	/	/	النحافة المفرطة	2
							فقدان الشهية	29
Diplopia	الشفع	4	/	/	/	/	الرؤية المزدوجة	2
							ازدواج الرؤية	4
Ischemia	الإقفار	17	الإسكيمية	11	/	/	فقر الدم الموضعي	4
							نقص التروية	55
Cataract	الساد	204	/	/	/	/	اعتام عدسة العين	138
Glaucoma	الزرق	282	الجلوكوما	300	/	/	المياه الزرقاء	23
			جلوكوما	6				
Allergy	حساسية	4551	أرجية	1	/	/	/	/
	تحسس	16	الارجية	8				

General Conclusion

General Conclusion

This dissertation investigated the mechanisms of medical terms translation from English into Arabic, and highlighted different challenges that may encounter during the process of rend medical texts or terms from English into Arabic.

Translating medical terms from English into Arabic can be inconsistent due to a combination between linguistic factors and extra linguistic factors. The linguistic factors includes: the richness of the Arabic language which may results in the large number of synonyms, and the different methods in coining Arabic technical terms. The extra linguistic factors includes: the lack of standardization and evolution of language. It is important to recognize these challenges and work towards developing a standardized approach to medical terminology in Arabic that accurately reflects medical practices and concepts.

In addition, English language terminologists coining thousands of new terms yearly, due to the dominant use of English in modern sciences such as medical field, which makes Arabic beyond the high pace of innovation and inventions of modern world, which lets the Arabic terminologists to opt to choose borrowing (loan) as a temporary solution until getting the right equivalent.

The problem of terminological inconsistency exhausts the Arab translators in their attempt to accommodate the increasingly rapid progress in sciences in foreign languages in general and in English language in particularly into their native language. To address this issue, it is important to work with professional translators who have a deep understanding of both English and Arabic and specialized knowledge of medical terminology. It is also essential to establish standardized translation guidelines and glossaries to ensure consistency and accuracy in translating medical terms. Moreover, incorporating machine translation systems with domain-specific training can also aid in improving the accuracy and efficiency of translating medical terms.

ملخص المذكرة

الإشكالية:

تعاني اللغة العربية الطبية في الوقت الحاضر من غياب الثبات في ترجمة المصطلحات الطبية؛ ونتيجة لذلك، تشكل ترجمة المصطلحات الطبية الى العربية بشكل موحد إحدى هذه الصعوبات. فعلى الرغم من أن بعض العبارات الطبية يمكن ترجمتها بسهولة، إلا أن البعض الآخر يمثل تحديًا كبيرًا، حيث ان الطبيعة المُعقَّدة للعديد من الكلمات الطبية تجعل ترجمتها إلى العربية أكثر صعوبة.

الهدف من البحث:

من المتوقع أن تجيب هذه الدراسة على الأسئلة التالية

السؤال الرئيسي:

ما هو سبب غياب الثبات في ترجمة المصطلحات الطبية باللغة العربية؟

الأسئلة الفرعية:

كيف انعكس غياب الثبات وأثَّر على المجال الطبي في العالم العربي؟

ما هي إجراءات الترجمة التي يتبعها المترجمون المتمرسون وغير المتمرسون في ترجمة المصطلحات الطبية إلى اللغة العربية؟

كيف تصاغ المصطلحات باللغتين العربية والإنجليزية؟

الفرضيات:

- فهم أصل الكلمة المترجم سيساعد على معالجة مشكلة ترجمة المصطلحات الطبية.
- يستخدم المترجمون إجراءات ترجمة مختلفة عندما يواجهون صعوبات في العثور على مكافئات دقيقة للمصطلحات الطبية.

أهداف الدراسة:

تبحث الدراسة في كيفية تسبب غياب الثبات في المصطلحات الطبية في مشاكل ترجمة خطيرة.

تهدف هذه الدراسة إلى التعرف على تقنيات إنشاء المصطلحات المستخدمة من قبل المترجمين العرب.

أهمية البحث:

تعد الدراسات المتعلقة بترجمة المصطلحات الطبية من الإنجليزية إلى العربية نادرة، خاصة في الجزائر، حيث أن الفرنسية هي اللغة المستخدمة في المجال العلمي. لذلك، سيكون هناك غموض لأن العديد من المصطلحات الإنجليزية إما غير مألوفة أو تقنية بشكل بحت للمترجمين عديمي الخبرة لفهم معانيها في اللغة المصدر.

إن التركيب المعقَّد لبعض المصطلحات الطبية، مثل العبارات المركبة والمختصرات، يجعل ترجمتها إلى اللغة العربية أكثر صعوبة. حيث لا تحتوي كل من القواميس ثنائية اللغة وبرامج الترجمة الحاسوبية على تعريفات للعديد من الاختصارات الطبية.

ومن ثَمَ، فإن هذا البحث مُهَم في مجال الترجمة الطبية لأنه يوضح الصعوبات الرئيسية التي قد يجدها المترجمون، كما أنه يوفر للمترجمين في البلدان العربية بعض الأمثلة التي تساعد في فهم كيفية تعامل المترجمين المحترفين مع هذه الصعوبات.

خطة البحث:

لتحقيق اهداف هذا البحث، تم تقسيمه الى فصول على النحو التالي:

يقدم الفصل الأول لمحة عامة عن تاريخ اللغتين العربية والإنجليزية بالإضافة الى تقديم نبذة حول الأكاديميات العربية ومقارباتها في الترجمة. كما تم التطرق إلى أنواع اللغة العربية والانجليزية إلى جانب كيفية سك الكلمات في كلتا اللغتين. كما تم التطرق في اخر هذا الفصل إلى اللغة الطبية وسماتها المعجمية.

يتناول الفصل الثاني تاريخ الترجمة الطبية في العالم العربي بصفة عامة بالإضافة الى تعريف الترجمة الطبية والترجمة العلمية والتقنية وشرح مشاكلها. تم التطرق في اخر هذا الفصل الى مشاكل غياب الثبات في ترجمة المصطلحات الطبية من الإنجليزية والعربية كما تم ذكر إجراءات الترجمة المستخدمة من طرف المترجمين.

يقدم الفصل الثالث شرحا مفصلا حول المنهجية المستخدمة في هذا البحث حيث تم جمع سبعة مصطلحات طبية كما تم تقديم تحليل نوعي وكمي حول هذه الأمثلة وفي نهاية هذا الفصل تم التطرق الى مخرجات هذا البحث.

الخُلاصة:

تُظهر نتائج هذه الدراسة أن الكتب الطبية العربية، ومواقع الترجمة، والنشرات الدوائية تبين تناقضا يكمن في اختيار المصطلحات أو تطبيق ترجمات مختلفة لنفس مصطلحات اللغة المصدر داخل النص مما يشكل مشكلة عند المترجمبن العرب حيث ان أي خطأ في ترجمة المصطلحات الطبية بشكل دقيق قد يؤدي الى عواقب وخيمة وهذا ما أدى الى استخدام إجراءات الترجمة كمحاولة لإيجاد مكافئ دقيق لكل مصطلح طبي.

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