BENEMÉRITA UNIVERSIDAD AUTÓNOMA DE PUEBLA

FACULTAD DE LENGUAS

TRANSLATING NOMINAL GROUPS IN SCIENTIFIC MEDICAL TEXTS: A SYSTEMIC FUNCTIONAL APPROACH

A THESIS SUBMITTED TO THE SCHOOL OF LANGUAGES

FOR THE DEGREE OF:

LICENCIATURA EN LENGUAS MODERNAS

BY:

JOSÉ LUIS VÁZQUEZ MARROQUÍN

THESIS DIRECTOR:

MTRA. BLANCA ADRIANA TÉLLEZ MÉNDEZ

Puebla, Pue. November, 2014

TRANSLATING NOMINAL GROUPS IN SCIENTIFIC MEDICAL TEXTS: A SYSTEMIC FUNCTIONAL APPROACH

This Thesis has been read by the members of the Thesis Committee of

José Luis Vázquez Marroquín

And is considered worthy of approval in partial fulfillment of the requirement for the degree of

Licenciatura en Lenguas Modernas

Thesis director

Mtra. Blanca Adriana Téllez Méndez

Committee Member

Dr. Michael Thomas Witten

Committee Member

Mtro. Ismael Mauro Jiménez Gómez

BENEMÉRITA UNIVERSIDAD AUTÓNOMA DE PUEBLA

Puebla, Pue., November 2014

ACKNOWLEDGEMENTS

This research paper would not have been possible without the support of many people. I am deeply indebted to teachers Adriana Téllez, Michael Witten, Ismael Jiménez. Each of them provided a unique perspective, as well as an invaluable guidance that led to the fulfillment of this project. I appreciate their insights, encouragements and kindness.

I would like thank my family and friends for their persistent cheering and emotional encouragement. Lastly, but not at least, I express my highest gratitude to my parents for their concern and persistence on my education.

TABLE OF CONTENTS

Translating nominal groups in scientific medical texts: A systemic functional approach.

CHAPTER I

1.1 Introduction

When translating scientific texts, students tend to believe that technical vocabulary is an essential part to achieve a proper translation. They are not wrong at all, however, they are missing another important characteristic which is as relevant as vocabulary, the grammatical aspect. Halliday (1993) points out that scientific writing consists of an interdependence of technical vocabulary and nominalized grammar, where creating a technical term is itself a grammatical process. This Hallidayan perception of scientific writing indicates that the scientific text translation practice involves not just terminology, but grammar as well.

Halliday and Martin (1993) assert that it is not the specialized lexical that characterizes scientific discourse, but the use of certain grammatical and syntactic aspects which are not found in the sentence even in the clause, but are located within the nominal group. In other words scientific discourse is difficult to comprehend, not so much for the specialized terminology or the previous knowledge required, it is difficult because it is constituted by a large group of noun groups, which at the same time are included into complex syntactic constructions.

As mentioned above, the academic writing difficulty lies more with the grammar complexity than its terminology. Due to this complexity, in which, nominal instances are the main grammatical resource, scientific text has represented a real challenge not just for readers but also for translators. One of the main concerns about translating this type of texts is that translator faces a specific formal field whose one of main linguistic characteristic is a condensed language. In other words, it is nominalization in the sense of the noun phrase. It has to be clear that this term will be hereafter used to refer only to the complex and simple structure in the noun group.

The complex nominal structure, basically, condenses information in such a way that may give the effect of disturbing the natural ordering of elements in the group, thus the translator must be careful to unpack all that information as well as choosing the correct word-order in the target text when translating from English into Spanish. Beke, (2002) mentions that the scientific text is not only difficult because the nominal group is not easy to decode, but it is, because of the difference between the way of organizing the nominal group in English and Spanish.

This fact gives rise to a translation issue because every time a translator meets a nominal construction he or she has to analyze its use and function carefully in both languages, in order not to affect the communicative effect. Otherwise the translator could make serious errors when reading, comprehending, interpreting and translating, and therefore the result would be an ineffective translation.

Another concern for translators, as stated by Werner Koller (1972), is producing a TT that achieves the same communicative effects the ST does, and to obtain that it seems that the

nominal phrase could represent a challenge for translators if they do not know how to deal with it. Thus, in dealing with nominal phrases and thereby with the organization of language, a systemic-functional approach would likely be a strong basis for the analysis of this issue since the translator must consider how language is used and for what purposes. Thus, this study is mainly focused on functional linguists since they are interested in what humans beings do with language, Butt, Fahey, Feez, Spinks, and Yallop (2000, p.257).

As mentioned before, one particular characteristic that identifies academic scientific discourse is the use of nominal phrases. As for the article analyzed in this research, it is a text of medic nature which follows two directions that fall into the category of research reports and clinical case studies, so they are divided into 4 sections: introduction, methods, results and conclusions. As clinical case studies, they are written for the medical community (professionals and trainees) using a specialized language having the purpose of providing a profound description an analysis. In order to achieve this, professionals and researchers can use several linguistic strategies; one of them is the use of nominal groups. Therefore, a systemic functional perspective can help us to develop a critical discourse analysis in both languages in order to understand the structures and functions of these particular phrases; so we can identify them in the scientific medical text and then these can be appropriately translated according to their context. Therefore this study's main purpose is to analyze the use of the complex nominal group in order to avoid the misuse of such nominal construction in the translation practice.

1.2 Significance of the study

This study aims to contribute to the awareness of those students that are involved in academic writing and that are somehow dealing with its implications during a translation process. Even though more and more people are familiarizing with academic language, they are not totally aware of the elements that constitute academic language. Thus, it is important that they understand the Linguistic elements that are part of the scientific academic writing in order to understand its difficulties. As mentioned above, translation students tend to believe that most of the problems when translating come with terminology; however they do not realize that the translation process goes beyond words and concepts. It implies among other aspects, grammatical notions which are part of patterns that construct the meaning of a message that if they are not well mastered, the communicative intention could be affected. Therefore, the main objective of this research paper is to raise awareness of some elements found in academic writing and the translation process as discourse analysis where functional grammar gives a more feasible way of applying linguistic knowledge to the translation practice.

1.3 Research questions

What are the grammatical problems involved in the process of translating nominal groups from English into Spanish in the medical text of obstetrics "Differential impacts of modes of anaesthesia on the risk of stroke among preeclamptic women who undergo Caesarean delivery: a population-based study" by J. Huang, which belongs to the category of research report and clinical case study?

What strategies can the translator use in order to keep the same or similar meaning of nominal groups in Spanish texts translated from English?

1.4 Organization of study

The introduction to the problem, significance of study and research questions were stated in this introductory chapter. Chapter two will expose the theoretical framework used in this research, which includes concepts such as: Scientific discourse, functional grammar, and nominal phrases. Third chapter shows the methodology that was carried out in this paper. Once the methodology was stated, the findings and results of the textual analysis were discussed in chapter four. Finally, in fifth chapter, the final conclusions were developed.

CHAPTER II

LITERATURE REVIEW

2 Introduction

Before analyzing the translation of the article used as our subject of study, it is important to have a background which will be useful to comprehend how language works in a particular field of knowledge. So, it is important to take into a count the concept of scientific discourse in order to establish a description of characteristics that shape the scientific discourse as a register.

Knowing the register of certain field of discourse helps the translator to reach a general perspective about translation challenge he is facing (Beker 1992). As a translator becoming familiarized with this characteristic is essential to have a clearer understanding of what is he or she translating and therefore producing a better translation of the text.

When translating a text, translators are not just dealing with a specific area of knowledge but with a new way of constructing a discourse, a new grammar (Hatim& Mason 1990). This is in the case of translation that a comparative grammar model would be useful, since translators regularly face distinct grammars, and they must fulfill the task of findings common elements that make their work properly.

This is why in this section Functional Grammar exposed by Halliday (1994) will be taken into a count to describe the role that some linguistic phenomenon such as: clause complexes, and nominal groups complex plays inside the scientific text. In order to describe these linguistic phenomena, an account of grammatical and functional factors was involved.

2.1Scientific discourse

Although it is argued that academic writing is based on the idea of objectivity due to the logical expositions of facts and hypotheses (Barras 1975, Wilkinson 1995), several studies have proved the presence of the Author as an inherent element of academic writing in specialized registers (Huston & Thompson 2000). The studies mentioned above, focus on those linguistic features that scientists use in order to reach a singular style of writing.

According to Halliday (1998 p. 186), the language of science "is the various forms of discourse in which the activities of doing science are carried out". In sum he mentions that the conceptual structures in the language of science contain a high level of abstraction, at the same time such forms of scientific writing can make the author get locked into patterns of writing falling into a singular style of writing as mentioned above.

Focusing on scientific writing patterns, Halliday and Martin (1996), assert that these linguistic features are the ones that make people feel repealed, such as: the increased number of technical terms and complex grammar. We can deduce from this statement that one of the distinctive qualities of scientific writing lies in its lexicogrammar: its lexis or vocabulary entails some of the difficulties, but also the special grammatical patterns it engenders such as passive constructions and noun phrases (Lemke 1990).

The noun phrase is one of the most representative features that makes scientific text seems more formal, however nominalized sentences packed much information making them difficult to unpack or decode their message (Ventola 1996).

2.1.1 The structure of scientific text

One basic classification of text structure would distinguish between expository text and narrative texts which basically implies two approaches. Following Van Dijk (1972) they are, the study of 'micro-structure' and the study of 'macro-structure'. The second approach is intended to understand the overall organization of texts, to know how episodes, paragraphs and chapters of a narrative style are built into coherent whole, as a global coherence of discourse. Therefore it is not appropriated for the study of scientific text since its goals are focused on examining the narrative text, and mainly on fictional texts, short stories, novels and folk tales (Van Dijk 1972).

On the other hand, the micro-structure study concentrates its attention on exploring the text from the perspective of the textual cohesion in order to explore what makes a sequence of sentences into a coherent text. This analysis involves what Halliday and Hasan (1976) call, anaphora, reference and substitution, ellipsis, lexical cohesion and conjunctions.

A characteristic of all texts at the level of micro-structure, in which scientific writing is included, is that sentences are linked in a thematic progression, which means that each sentence adds some semantic content to what has preceded taking as a basis what has been mentioned before in order to convey something new. From the communicational point of view a sentence has two elements a theme and a rheme (Firbas 1966). Among other

characteristics we can find generalization, sequence, enumeration, classification, and contrast. (Cook, L.K. & Mayer, 1988.)

2.1.2 The Grammatical and lexical level in scientific English text

Scientific texts are found to be difficult to read because they are written in scientific language, a jargon which according to Halliday and Martin (1996), makes learners feel excluded from science. As mentioned before, when people think about scientific text problems they always tend to think about lexical terms, "the jargon", which contain a complex implication since some words can be easier expressed in common language. This conception could be contrasted with the opposite opinion, which says that you cannot separate science from its written structure; otherwise many difficulties would arise, especially when discussing concepts which are known into a specialized area of knowledge (Bloor and Bloor, 2004.).

These two contrary ideas seem to be held by people, however the problem seems to be in the middle; it is not found in vocabulary or in the inherent difficulty of science, but it is with the writer. It is true that it would be impossible to expose all the complexity that science presents in an ordinary language due to its conceptual and reasoning processes which contain a considerable level of abstraction. Hence the language in which it is constructed tends to be difficult to understand for people who are not familiar with science. So, the writer falls in patterns of writing whose structures make scientific writing difficult, especially for non-experts. Such forms are expressed in highly technical wordings even in

situations where there is no reason for it, giving to his work a standard level of intellectual and professional elite (Halliday and Martin, 1993).

But in order to understand the reasons why scientific writing is difficult to comprehend, it seems pertinent to leave behind the lexical aspect and pay more attention on the grammatical one, so it is related in certain way with technical terms; however the difficulty generally lies more with the grammar than vocabulary.

Halliday (1993) suggests that science uses the following academic language features: interlocking definitions, technical taxonomies, special expressions, lexical density, syntactic ambiguity, grammatical metaphor and semantic discontinuity. All these features do not occur in isolation; rather, they overlap with one another developing a complex relationship between them causing the learner difficulty when reading and comprehending scientific discourse.

On the other hand Chamot and O'Malley (1986) point out that scientific discourse is characterized by a particular sequence of steps and a heavy reliance on the use of passive voice and a highly use of long noun phrases.

All the characteristics presented above constitute a difficulty for students, however the most frequent aspect on causing trouble in students, is nominalization or in a more general way what Halliday calls "grammatical metaphor", this feature is the most representative in grammar of science. Such metaphorical grammar, among other uses, is used to present complex and abstract ideas in order to emphasize the objective approach in the scientific practice, the ideas are condensed into complex nominal groups which are the ones that

contain relevant and specific information for comprehension. (Albentosa&Moya, 2000; Halliday& Martin, 1993; Myers, 1992; Ventola, 1996).

2.2 Functional Grammar

Most authors define systemic functional linguistics as a system of meanings. This means that every time people use language they produce or construct meaning. From this point of view it can be said that this approach recognizes "meaning" and "use" as central features of language (Bloor & Bloor, 2004). The Hallidayan approach defines systemic functional linguistic as "an interrelation among sets of options for making meaning" (p.179), which means a network of systems. Both ideas perceive grammar as a study of how meanings are constructed through the choice of words and other grammatical resources.

This can be contrasted with Christine's perspective (1991), which argues that functional grammar consists of three basic features: the notion of choice, first; this means that grammar is a set of options, second FG looks at the way in which grammar is used to construct texts in their context of use and third FG is concerned with the way in which grammar is organized to make meaning. Basically Systemic Functional Grammar is concerned primarily with the choices grammar makes available to speakers and writers relating speakers' and writers´ intentions to a concrete form of language.

As stated by Bloor and Bloor (1995, p.2, 3) the "theory of language followed in SFL involves the idea that language consists of a set of systems, which gives the speaker or writer an unlimited options of ways of creating meaning". Such idea and the others stated above agree with the statement that "all functional linguistics is interested in what human beings do with language" (Butt, D., Fahey, et al. 2004)

2.2.1 Nominal groups

Nominalization is a fundamental linguistic resource that characterizes academic and scientific writings. It is a means whereby all reference to people can be omitted in order to facilitate the expression of general truths and claims about the nature of the world. According to Hopper and Thompson (1984), nominalization does not just represent an abstract process taken from a verb, but at the same time, it creates a noun with high level of abstraction making its comprehension more complex allowing the verbal process to become the head of a nominal group so available for modification. Halliday and Martin (1993) assert that scientific discourse uses nominalization to represent abstract and complex ideas, and that all that abstract information is packed in nominal groups.

In the model of systemic functional linguistics developed by Halliday, a nominal group normally comprises a noun surrounded by a set of modifiers that all in some way modify the noun. Within a clause, a nominal group functions as though it is that noun, which is referred to as the head; the items preceding the head are called premodifiers and the items after it the qualifier.

Bloor and Bloor (2002) state that the nominal group is a grammatical unit that according to the rank hierarchy is located between the word and clause; it does the function of subject or complement and it has as components a nucleus, determiners and modifiers. The same nominal group could be highly complex through the use of subordination from other structures which have a higher hierarchy than a group, such as the clause.

2.2.2 Logical and Experiential metafunctions

According to Systemic Functional Linguistics, model developed by Halliday, the grammar of every natural language is a theory of human experience and an enactment of interpersonal relationships. These two functions of grammar, which he calls the ideational and the interpersonal, act together with another, the textual in order to create discourse. So, what grammar does is to transform human experience into meaning. For him, each of these three metafunctions represents a different aspect of the world, so it is concerned with a distinct way of meaning.

The ideational metafunction is concerned with how we represent reality in language. Halliday (1994) and Bloor and Bloor (2002) perceive the ideational metafunctions as the way we use language to organize, understand and express our perceptions of the world and of our on consciousness. In sum, they explain that the ideational metafunction is divided in two branches: logical and experiential metafunctions. Both authors say that experiential metafunction is largely concerned with content or ideas and the logical is concerned with the relationship between ideas. Similarly the author ElkeTeich (1999) defines the experiential sub-system as a "propositional content encoded as processes, events, the types of objects referred to and their qualities", and defines the logical as the organization of our reasoning on the basis of our experience through dependencies between elements in structure.

Another author, O'Halloran, (2006) thinks that the ideational metafunction makes a relation between the field aspects of a text and its context of use. Among other things he says that within the semantic domain, "SFG proponents examine the subject matter of a text through organizing its nominal groups and its lexical verbs, adjectives, and adverbs". SFG proponents such as Bloor and Bloor (2004) state that the main parts of the nominal group are the Head and Modifier fall within the logical metafunction, concerning dependency relations.

2.2.3 Deictic

The term Deictic is derived from the Greek and it is used for *pointing out.* Such word directly relates a reference to a tie, a place or a person. In nominal groups, the Deictic function is realized by determiners: demonstratives like ***this, that, these and those***, even the article *the*, which Halliday calls as a weak form of demonstrative. Deictic can be possessive nouns or pronouns, which mean that not in all cases the function is fairly literally one of 'pointing'. In sum they can be non-specific items such as the indefinite articles. (Halliday and Martin 1993; Bloor and Bloor 2002; Robin P. 1990)

2.2.4 Numerative

According to Halliday (1990) the numerative function can be divided into definite and indefinite and independently into quantitative and ordenative. This point of view agrees with Bloor and Bloor (2002), "Numeratives can be realized by numerals such as *two or second* or by expressions as *many, several, few, and a lots of.* Basically, numerative is a word of a phrase that refers to a number.

2.2.5 Classifier and Epithet

The Classifier has the function of sub classifying the modified item into a subclass of such an item. On Epithet and Classifier functions, Bloor & Bloor (2004) state that "out of context, many expressions are ambiguous with this functional distinction between Classifier and Epithet" and they go on to say that "The context usually provides sufficient information to make it clear what is intended." Halliday (1994) also notes that the same word may function as Epithet or as Classifier but there are significant differences between them "Classifiers do not accept degrees of comparison or intensity and they tend to be organized in mutually exclusive and exhaustive sets."

Whereas the Epithet indicates the features or characteristics of the modified item and is typically realized by the adjective. Halliday (1994) distinguishes two types of Epithet: those that are experiential in function in that they provide what may be an objective property of the Thing and interpersonal epithets which may express the speaker's subjective attitude. The principal difference between the two according to Halliday (1994) is that "experiential epithets are potentially defining, whereas interpersonal ones are not"

2.2.6 Thing

Thing is the fifth experiential function and it conflates with Head. Thing is usually realized by a noun, pronoun or a verbal nominal item. Thing, according to Bloor & Bloor (2004: 142), may be "a material inanimate thing, an animal, a person, a substance or even an abstract concept." It specifies the class of the item referred to.

2.2.7 Qualifier

The sixth function in the nominal group is *Qualifier*. The Qualifier follows the Head noun and gives more information on it. It conflates with the post modifier. The qualifier is usually realized by the prepositional phrase and embedded clauses. (Halliday 1994; Bloor and Bloor 2002).

So far three different scenarios have been presented. First stage has the structural description of the scientific discourse as a central point which explores the main features that shape the wording in the scientific writing. Most representative points of view in this stage are those from Van Dijk (1998) whose micro-structure study of text is a proper one to analyze scientific texts; Bloor & Bloor (2002) whose point of view states that technical vocabulary is inherent when explaining science, finally the statement of Halliday and Hasan (1996) which focus on the complex grammatical resources that makes people feel alienated.

Second and third stages are closely related since one is deployed from the other. Functional grammar and its logical and experiential metafunctions are shown in these two sections with the objective of describing through this grammar analysis the features that stand out in the academic writing or in the language of science.

Halliday´s perspectives are remarkable to the textual analysis matter since they provide through the experiential and logical metafunctions a profound description of the linguistic elements that model the grammatical structure of the language of science.

These last two stages that are part of the theoretical frame work correspond to the base of the methodological analysis some of the instruments used in this research were taken from the theory of functional grammar stated in Bloor & Bloor (2002). This is explained in more detail in chapter three.

CHAPTER III

Methodology

3 Introduction

The previous chapter presented the theoretical framework used in this research, so in order to understand such theory, a description of the subjects, instruments and procedures used to carry out this research is given. The means of data collection and analysis were based on the theoretical approach of logical and experimental metafunctions structures of functional linguists such as Halliday (2004) and Bloor and Bloor (2004). Translation theorists like Nida and Taber (2003) and Baker (1992) were also considered. The functional grammar criteria that was taken into a count facilitate the necessary steps to carry out the text analysis since allows having a considerable observation of the subject of study.

The methodology of this paper is divided into three sections. The first section concerns the analysis on the scientific medical writing focusing on its nominal grammatical characteristics that represent a difficulty when translating them into Spanish. The second stage is related to Functional Grammar analysis of the academic article that was chosen according to the parameters of Functional Linguistics. Then, complex nominal phrases were selected and evaluated according to the Bloor and Bloor table (Appendix A). Later, such nominal phrases were translated as well as the whole article. Finally in the third phase an expert in the medical area was consulted in order to see if there were opacities into the translation.

3.1 Subject

A scientific medical text was analyzed: it was taken from the "British journal of Anaesthesia" published by Oxford University Press in 2010. The text falls into the category of research medical reports, which put in the words of Cabrera and Hernandez, (2004) "the function of research reports should perform two functions: to inform and describe". In order to reach such goals, researchers can use several linguistic strategies; one of them is the nominal group or noun phrase. In the case of the texts of a medic nature, they use a specialized language and have the purpose of providing a profound description and analysis of studies with a wide range of information (Halliday, 1993).

The title of the text chosen is "Differential impacts of modes of anaesthesia on the risk of stroke among preeclamptic women who undergo Caesarean delivery: a population based study" written by J. Huang and C. Fan. This kind of text was selected since its scientific discourse present linguistic features that makes it difficult to understand arising two specific complications that Halliday (1993) and Bloor and Bloor (2004) perceive in the scientific writing: lexical density and grammatical metaphor. Hence the text is useful to give a closer vision to achieve the main goal: describing the complex nominal group when translating it into Spanish.

3.2 Instruments

The text was approached by using a qualitative text analysis, even though some statistics were computed, like the number of complex nominalizations instances, they do not serve for the main purpose of the study.

The main objective was to determine the description of the complex nominal grammar insight the text and detect the possible complications that such grammar could represent when it is translated into Spanish. In order to detect the nominal instances the Bloor and Bloor table (Appendix A) was used during their observation in the ST (Source Text).

The further part of the analysis concerns the translation process. For this matter the translation strategies adopted from Baker (1992) as well as the theory stated by Nida and Taber (2003) were used. As for the theory concerning the description of the Spanish nominal group, the Spanish Language Grammar (2010) was of particular use in order to achieve an accurate translation of the complex nominal instances detected before.

3.3 Procedure

First, all complex nominal instances in the ST were isolated and classified according to their premodification and postmodification characteristics in order to observe their English structural composition. Once their grammatical composition was determined the translation process was applied to each of the nominal groups selected taking into account the order of the Spanish nominal group. During the process of translation the analysis moved forward to the examination of the meaning accuracy that the TT had respecting to the ST. The

strategies suggested by Baker (1992) and the theory stated by Nida and Taber (2003) were used in order to accurate the closer meaning in the ST. Finally, the translation was checked by an expert in the field paying particular attention on the nominal phrases with the objective of detecting a possible irregularity in the translation. The findings are presented in chapter four.

CHAPTER 4: Findings

4 Introduction

In chapter three, it was stated the methodology used in this research. So, in this chapter the final results will be seen. As mentioned before, in chapter three a text from medicine field was taken as a sample of scientific text in order to analyze its grammatical features mainly focusing on the nominal phenomenon in such a way to detect the nominal group structure to give a description with the objective of achieving a proper translation.

During the text analysis many nominal phrases and many other chunks of language that could be interpreted as nominal instances, nevertheless, complex nominal phrases were only deeply analyzed , since it was found that very often they were constructed by groups of simple nominal groups. Therefore, the complex nominal phrases or clauses were useful to study the nominal phenomenon as a whole with the purpose of becoming familiarized to facilitate the translation process.

4.1 Corpus analysis

The clause stated below is the title of the analyzed text and it is the first sample of a nominal group that represent a model of a complex nominal instance since it has more than one group of words linked to the main head nominal group. Logical and experiential metafunctions are of particular used to identify the ordering and similarities of the elements inside the whole clause and into each nominal group.

Complex clause

Differential impacts of modes of anaesthesia / on the risk of stroke / among preeclamptic women / who undergo Caesarean delivery: a population-based study

Table 1

Logical function	**Premodifier**				**Head**	**Postmodifier**
Experiential function	Deictic	Numerative	Epithet	Classifier	Thing	Qualifier
				Differential	*Impacts*	*of modes of anaesthesia on the risk of stroke among preeclamptic women who undergo Caesarean delivery: a population-based study*.

Table number 1 presents a logical and experiential function splitting the whole clause into two parts in order to detect the head, around which the other components cluster and which dictates sense and other kinds of congruence with the rest of the sentence outside the noun phrase. From the experiential perspective it can be seen that the nominal group in table 1 has only two constituents, classifier and qualifier, whose Head is formed by a simple nominal group. On the other hand, logical function shows all the prepositional phrases and

one relative clause that are surrounding the head nominal group. Besides showing all the string of words this nominal instance has, the logical and experiential functions are also bringing out the instance of embedding in post modification. A further analysis is given in table 2.

Table 2

Note that **[[ ]]** signifies an embedded clause, and **[]** and embedded phrase (or group)

Differential	*impacts*	*[of modes]*	*[of anesthesia]*	*[on the risk]*	*[of stroke]*	*[among preeclamptic women]*
Classifier	**Thing**	**Qualifier**				
Adjective	Noun	Prep phrase 1	Prep phrase 2	Prep phrase 3	Prep phrase 3	Prep phrase 4
[[who undergo Caesarean Delivery]]						
Qualifier						
relative clause						

As stated before, table 2 presents the embedding phenomena occurring in post modification, which is very frequently realized by prepositional phrases (Bloor and Bloor, 2004). According to the experiential function the complexity of this clause lies in the qualifier, having 5 prepositional phrases and 1 relative clause, each prepositional phrase postmodifying a Head noun in a nominal group containing within itself another prepositional phrase postmodifying a Head noun as shown in table 2.This experiential analysis suggests that the Head of the main nominal group (*Differential impacts)* is being modified by five nouns which serve as a Head of independent nominal groups and finally by a relative clause with another nominal group inside. On the other hand, the logical function displays the semantic relationships that govern the complex clause. This means the natural order of the clause and the general relationship that runs throughout in post modification elements. In this clause, both the prepositional phrases and the relative clause

belong to a hypotactic order due to each phrase correspond each other. They link information in a dependent order by using embedded prepositional phrases.

As for the last phrase, which is another nominal group that belongs to the complex clause it is found complexity in premodification as shown in table 2.1

Table 2.1

<table>
<tr><td>A</td><td>Population</td><td>Based</td><td>Study</td></tr>
<tr><td colspan="3">Modifier</td><td>Head</td></tr>
<tr><td rowspan="2">Deictic</td><td>Sub-Modifier</td><td>Sub- Head</td><td rowspan="2"></td></tr>
<tr><td colspan="2"></td></tr>
</table>

In this table, it is a found a group being modified by a verb and a noun. According to the experiential analysis, a verb is functioning as classifier which is being modified by a determiner and a noun. Both, classifier and noun have a qualitative function withregard to the head of the nominal group. However, in logical analysis, the qualitative functions seems to suffer a lexical expansion because there is sub-modification, that is, a sub-head with his modifier and subordinate to the main nominal group head. This sub-modification may have the effect of disturbing the natural order of elements in the group.

Paragraph 2: nominal instances are underlined

Preclampsia is characterized by the onset of hypertension after 20 weeks gestation accompanied by renal or haematological and liver involvement. Proteinuria is confirmed by the presence of a 24 h urinary protein excretion in excess of 0.3 g dl. Preeclampsia remains one of the leading causes of maternal mortality worldwide.

Table 3

Logical function	**Premodifier**				**Head**	**Postmodifier**
Experiential function	Deictic	Numerative	Epithet	Classifier	Thing	Qualifier
	The				*onset*	*[of hypertension] [after 20 weeks gestation]*

Table 4

Logical function	**Premodifier**				**Head**	**Postmodifier**
Experiential function	Deictic	Numerative	Epithet	Classifier	Thing	Qualifier
					renal(or) haematological (and) liver involvement	

Table 5

Logical function	**Premodifier**				**Head**	**Postmodifier**
Experiential function	Deictic	Numerative	Epithet	Classifier	Thing	Qualifier
	The				*presence*	*[of a 24h urinary*

		protein excretion] [in excess of 0.3]

Table 6

Logical function	**Premodifier**				**Head**	**Postmodifier**
Experiential function	Deictic	Numerative	Epithet	Classifier	Thing	Qualifier
					one	*[of the leading causes] [of maternal mortality worldwide]*

Tables 3, 4, 5 and 6 show four complex nominal groups in this paragraph each formed by explicitly two or more groups together with a prepositional phrase and in the case of table number 4, the group is constructed with binding conjunctions (*or, and)* linking three groups together. Following this analysis, it is perceived that embedding phenomena is still present in the texture of this paragraph. Prepositional instances are frequently founded in an hypotactic way that makes the main nominal group even more complex. Tables 3, 5 and 6 represent an example of clustered groups, However, the group of table number 4 has another construction even when it is a clustered group. The difference lies in the order, they are in a coordinated order, this means; they are not dependent among them. They are in a paratactic way; they can change their place without affecting the meaning.

In regard to the clause level these three nominal instances serve as part of a passive construction and complements of an active sentence. It seems that they are built by the same patron mentioned in the analysis of the first clause, the hypotactic patron.

Paragraph 3: nominal instances are underlined

Anaesthesiologists use their judgment in selecting the appropriate anaesthesia for the severely preeclamptic women requiring Caesarean section (CS). Neuraxial anaesthesia for CS is preferable to general anaesthesia given the risks of aspiration, failed intubation, and unstable haemodynamics associated with general anaesthesia in the preeclamptic parturient. Although epidural anaesthesia can be used, the recommended technique in the haemodynnamically stable parturient with preeclampsia is spinal anaesthesia. There are also instances in which neuraxial anaesthesia is relatively or absolutely contraindicated and therefore general anaesthesia may be required.

Table 7

Logical function	**Premodifier**				**Head**	**Postmodifier**
Experiential function	Deictic	Numerative	Epithet	Classifier	Thing	Qualifier
			severely	*preeclamptic*	*women*	*[[requiring Caesarean section]]*

Table 8

Logical function	**Premodifier**				**Head**	**Postmodifier**
Experiential function	Deictic	Numerative	Epithet	Classifier	Thing	Qualifier
				general	*anaesthesia*	*[[given [the risk of aspiration, faild intubation and unstable haemodynamics] [[associated with [general anaesthesia in the preeclamptic*

		parturient]]]]

Table 9

Logical function	**Premodifier**	**Head**	**Postmodifier**
Experiential function	Deictic Numerative Epithet Classifier *The recommended technique*	Thing	Qualifier *[in the haemodinamically stable parturient] [with preeclampsia] is [spinal anaesthesia.]*

These three tables (7, 8, 9) illustrate the composition of these three nominal instances that are found in paragraph 3. As it can be seen their difficulty lies in the postmodification part they are slightly different in their postmodification structure. Table 7 presents a nominal group whit a classifier being modified by an adverb (*severely preeclamptic)* the semantic aspects describes a circumstantial aspect instead of a description which is part of the function of the adjective. The logical function suggests that this group belong to the signification of the head word "women", and they are in a sub categorization order. This sub categorization order helps to see which word is a subset of each word (Bloor and Bloor, 1995). Furthermore, a finite clause (*requiring caesarean section)* is postmodifying this group turning it into a more complex one the finite verb "require" is serving as link to gather the secondary group "caesarean section" to the core of the main nominal group.

In the second example, shown in table 8 the difficulty lies definitely in postmodification, it is forms by two finite clause being introduced with the verbs "given" and "associated" according to Quirk, (1995) a nominal group can be modified by a finite verb and this nominal group reaches the semantic charge the verb form has, in this case they have the form of past participle. In the first finite clause with the verb *given* there are embedded groups in a paratactic order, this can be seen because of the binding word *and*. Being in a paratactic order means that they are constituents but they are not dependent of it. On the other side, in the finite clause with the verb "associated" the order is not paratactic bur hypotactic and this can be said because of the prepositional phrases they are directly dependent among each other, they are gather together with the binding words *with* and *in.* as for the last example, presented in table 9 it can be noticed that it is following a similar patron described in the first paragraph, there are two prepositional phrases (*in the haemodinamically…with preeclampsia)* with a nominal group inside and they are incrusted to the main nominal group, however there is one more function here, the first complex nominal group *the recommended technique in the…* is functioning as a subject in a copulative sentence and the last group *spinal anaesthesia* is functioning as a predicate. These two groups are being linked by a copulative verb (*to be,)* this means that both are in certain semantic relation (Quirk, 1995) and that must be considered when doing the translation. In this paragraph it can be observed that modification can go beyond from the phrase level, it can go to the clause level making even more complex the structure of the nominal group.

Paragraph 4: nominal instances are underlined

There are also instances in which neuraxial anaesthesia is relatively or absolutely contraindicated and therefore general anaesthesia may be required. Moreover, evidence suggests that general and regional anaesthethic methods are equally acceptable for CS in pregnancies complicated by severe preeclampsia. Preeclampsia is associated with increased risk of stroke in later life. In addition, data from a population-based study in Taiwan revealed that women with preeclampsia have increased risk of stroke during pregnancy and the first postpartum year.

Table 10

Logical function	**Premodifier**				**Head**	**Postmodifier**
Experiential function	Deictic	Numerative	Epithet	Classifier	Thing	Qualifier
				general	*methods*	*[[are equally acceptable[for CS in pregnancies] [[complicated by severe preeclampsia]]]]*
				regional		
				anaesthethic		

Table 11

Logical function	**Premodifier**				**Head**	**Postmodifier**
Experiential function	Deictic	Numerative	Epithet	Classifier	Thing	Qualifier
					preeclampsia	*[[(is associated)*

		[with increased risk] [of stroke][in later life]]]

Table 12

Logical function	**Premodifier**	**Head**	**Postmodifier**
Experiential function	Deictic Numerative Epithet Classifier	Thing *women*	Qualifier *[with preeclampsia] [[have increased risk [of stroke] [during pregnancy][and the firs postpartum year]]]*

As the analysis moves forward it is necessary to detect the finite or nonfinite verbs that are founded in the clause and therefore they can signify the nominal group (Halliday, 2004) so, when the nominal group appear in a finite or nonfinite sentence they performed a syntactic function they can be subjects, objects or complements. In paragraph 4, the first instance hast two nominal groups in a paratactic order (*general and regional methods)* functioning as subjects in the nonfinite clause with the verb to be, being this verb the link to the adverbial phrase *equally acceptable* which is embedded at the same time with prepositional phrase *for CS in pregnancies* and the nonfinite clause *complicated by severe preeclampsia.* It is important to highlight the function of the nominal group at the sentence level due to it

is perceived through this process the logical and semantic function in relation with the verb. As it was mentioned before the finite or nonfinite clauses can be part of the nominal group, but not dependent of it. In table 11 the nominal group "preeclampsia" is being signified as in the previous examples by a non-finite clause (*is associated with…)* and ate the same time there are three prepositional groups with a nominal group inside being the heads of each prepositional phrase the prepositions *with, of* and *in.* The embedding phenomenon is still present in this paragraph as in the examples above. In table 12 there is a very similar composition; there are prepositional phrases with a nominal group inside, however the nonfinite clause is performed by the verbs *have increased.* The rest of the structure follows the same embedding patron.

Paragraph 5: nominal instances are underlined

Caesarean delivery has also been demonstrated to be a strong and significant predicator of post-partum stroke over a 12 month period in population-based study in Taiwan. The long-term effects of different modes of anaesthesia in terms of the incidence of maternal postoperative complications are largely unknown.

Table 13

Logical function	**Premodifier**				**Head**	**Post modifier**
Experiential function	Deictic	Numerative	Epithet	Classifier	Thing	Qualifier
	a		*strong (and)*			*[of post-partum*
	a		*significant*		*predicator*	*stroke][over a 12*
						month period][in a
						population-based
						study][in Taiwan.]

Table 14

Logical function	**Premodifier**	**Head**	**Postmodifier**
Experiential function	Deictic Numerative Epithet Classifier *The long-term*	Thing *effects*	Qualifier *[of different modes][of anaesthesia][in terms][of the incidence][of maternal postoperative complications][[are largely unknown]].*

There is no doubt that this paragraph contains two extensive nominal groups and its complexity lies in the postmodification section or in terms of experiential function it is found more complexity in the qualifier. The nominal group presented in table 13 has complexity from two perspectives: it has parataxis and it has a condensation of prepositional phrases in the qualifier side. Parataxis can be perceived since there is a binding element (*and),* this element is gathering together the groups *strong predicator* and *significant predicator.*

On the other side, postmodification, there is a string of prepositional phrases with a nominal group inside as in the previous groups, however there is a difference that makes this group even more difficult than the others; each nominal group incrusted in the prepositional phrase has two premodifiers that characterize each head word, most of them have internal bracketing, this is "sub-modification" as in the case of *a 12 month* and *population-based study*. What makes more complex this group is the extension of each nominal group incrusted in each prepositional phrase; as a result the whole nominal group becomes in a big unit difficult to establish logical relations.

The linguistic composition of the nominal group in table 14 has embedded prepositional phrases however, there is also "internal bracketing" in its postmodification (*maternal postoperative complications).* What it is important here is to see that even though a nominal group is complex because of the embedded phrases, it can become even more complex if each nominal group incrusted in the prepositional phrases has a considerable modification (Halliday, 2004)

Paragraph 6: nominal instances are underlined

We investigated the impact of general, spinal, and epidural anaesthesia on the risk of stroke, including cerebrovascular complications of the puerperium and stroke in later life, in preeclamptic patients who undergo CS delivery in Taiwan.

Table 15

Logical function	**Premodifier**				**Head**	**Postmodifier**
Experiential function	Deictic	Numerative	Epithet	Classifier	Thing	Qualifier
	the				*impact*	*[of general, spinal,] and [epidural anaesthesia][on the risk] [of stroke,] [[including cerebrovascular complication]][of the puerperium and stroke][in later life] [in preeclamptic patients][[who undergo CS delivery in Taiwan.]]*

The nominal group exposed in table 15 is one of the longest groups in the text, so there is an inherent complexity in its linguistic structure which means that is condenses a great amount of information and it has a complex logical relation defined by relative clauses, finite or nonfinite clauses, prepositional phrases and nominal groups with more than one modifier. All these aspects are found in table 15.

Going over a more detailed analysis it is found that the qualifier starts with three groups in a paratactic order (*of general, spinal and epidural anesthesia)* then two prepositional phrases are embedded (*on the risk of stroke)* and shortly after a nonfinite clause appear introducing a new nominal group (*cerebrovascular complication)* which is going to be connected to three prepositional phrases (*of the puerperium, in later life, in preeclamptic patients)* and a relative clause with two more incrusted nominal groups. Furthermore each nominal group inside prepositional phrases has modifiers; this makes even more complex the process of unpacking information. This is its linguistic patron if it is seen its composition, the information is being packed chiefly by incrusting clauses and prepositional phrases.

This is a perfect example of clustering information and getting long strings of words. Until this point of analysis it is seen that the these chunks of words are bringing out the recursive feature of language making the logical order very dependent of the embedding resource since the level of embedding in this group is higher than the other examples. This kind of

grammar is what makes scientific text difficult to read and so, difficult to understand (Halliday, 1992).

Paragraph 7: nominal instances are underlined

Because general anesthesia has been associated with unstable hemodynamics and increased neuroendocrine stress responses to Caesarean delivery in women with severe preeclampsia, it *was hypothesized that general anaestesia is associated with a greater risk of stroke when compared with neuraxial anaesthesia in preeclamptic women who undergo caesarean delivery.*

Table 16

Logical function	**Premodifier**	**Head**	**Postmodifier**
Experiential function	Epithet *unstable* *increased*	Classifier Thing *haemodynamic* *neuroendocrine stress responses*	Qualifier *[to Caesarean delivery][in women] [with severe preeclampsia]*

Table 17

Logical function	**Premodifier**	**Head**	**Postmodifier**
Experiential function	Deictic Numerative Epithet Classifier *a* *greater*	Thing *risk*	Qualifier *[of stroke][[when compared]][with neuraxial*

		anesthesia][in preeclamptic women][[who undergo CS delivery.

As it was stated before the embedding patron is very repetitive as the analysis move forward. Prepositional phrases, and different kinds of clauses as well as simple modifiers are very common to be found in the complex nominal group analysis. In the case of table 16 there the two groups *unstable hemodynamics* and *increased neuroendocrine stress responses* are joint in a paratactic order. Even though they have the same structure with respect to the others, something different happens in the second group (*increased neuroendocrine stress responses).*

Its complexity lies in postmodification but also has complexity in its premodification, there are three adjectives characterizing the head word: two adjectives functioning as epithets and one as classifier. This is what Halliday, 2004 calls the "univariate structure", it means; an iteration of the same functional relationship: one element is modified by a second element, which is modified by a third element, which is…. This is the type of structure Deictic + Numerative + Epithet + Classifier + Thing. However, most of the nominal groups in these texts has modifiers at the prepositional level or clause level which is another kind of structure and it is usually found in postmodification. So, this group shown in table 16 is different from the other since has complexity I both sides: premodification and postmodification. Its postmodification stricture has the same elements than the previous examples have: prepositional phrases with nominal groups inside.

Table 17 present a group that has the same construction of the group shown in table 15, it has two finite relative clauses and more than one prepositional phrase with nominal groups inside.

Paragraph 8

The study used 2002-7 anonymized data from Taiwan National Health Insurance Research Database that was published by the National Health Research Institutes and released for public access for research purposes. Initiated in March 1995, the National Health Insurance program, in which the government is the sole insurer, provides a comprehensive benefit package covering preventive, dental, and medical services to all citizens in Taiwan.

Table 18

Logical function	**Premodifier**	**Head**	**Postmodifier**
Experiential function	Deictic Numerative Epithet Classifier *anonymized*	Thing *data*	Qualifier *[from Taiwan National Health Insurance Database]*
	National Health Research	Institutes	

Table 19

Logical function	**Premodifier**	**Head**	**Postmodifier**
Experiential function	Deictic Numerative Epithet Classifier	Thing	Qualifier

	comprehensive benefit	package	[[covering preventive, dental, [and medical services][to all citizens][in Taiwan.]]]

In Paragraph 8 does, table 18 does not have a highly complex nominal group, its postmodification is basically being done by a long string of words inside a prepositional phrase and this group has the recursive characteristic of complex groups, it means, it generates long strings of words. On the other side, table 18 is also showing another nominnal group composed by three pre modifiers which are bringing out the hypotactic (internal bracketing) basis of premodification in the nominal group, this explains the penchant of generating long string of nouns such are found in the names of institutions.

As for table 19 there is a more constructed nominal group. It is perceived that there is modification in both sides, in pre modification, it is found internal bracketing, the principle that was explained in the paragraph above, an adjective and one noun are surrounding the head (package), in post modification is found a non-finite clause and two prepositional phrases with a nominal group inside joint by a conjunction in a paratactic order.

Paragraph 9

The National Health Insurance program provides universal coverage and access to any medical institution of the individual patient's choice. The National Health Insurance Research Database provides registries of medical institutions that contract with the Bureau of the National Health Insurance in Taiwan and monthly claim summaries for all inpatients.

Table 20

Logical function	**Premodifier**	**Head**	**Postmodifier**
Experiential function	Deictic Numerative Epithet Classifier	Thing	Qualifier
		National Health Insurance program	

Table 21

Logical function	**Premodifier**	**Head**	**Postmodifier**
Experiential function	Deictic Numerative Epithet Classifier	Thing	Qualifier
	universal	coverage	
		access	*[to any medical institution][of the*

		individual patient's choice.]

These two tables, 19 and 20 have complexity in premodifcation and postmodification. The group in table 20 has hypotaxis in his premodification three elements are surrounding the head word "programs" functioning either as Epithets or as classifiers, so, bringing out the hypotactic basis of premodification explains the penchant for generating long string of nouns such are found in the names of institutions such the case in table 19. Most of these cases follow a univariate structure because each of their elements has the same functional relationship: submodification.

In table 20 there two groups linked by the paratactic order with the conjunction "and" this characteristic is what makes it difficult, furthermore the second group of words has three embedded prepositional phrases which makes even more complex its structural characteristics. So, these two prepositional phrases are headed by words "to" and "of" both have nominal groups inside however, the second prepositional group has an embedded word (*choice*) so, this is another aspect of complexity in this group. Incrusting words in the way of possessive features is another matter that implies extension in the structure of the nominal group.

Paragraph 10

The study sample was based on the records of deliveries in hospitals or obstetric clinics between January 2002 and December 2006. CS delivery cases were identified form the database by the group codes 0371A (CS delivery) and 0373B (maternally requested CS delivery). For those women with multiple caesarean deliveries during the observation period, only the first CS was counted. There were a total of 305330 cases of CS. These CSs were carefully inspected to screen for outliers. Two subjects with a peculiarly long hospital stay for the caesarean delivery were identified and subsequently excluded. To ease comparison between our study and a previous study, subjects with extreme values (i.e. younger than 16 years or older than 49 years) of maternal age were excluded as in the previous study. Subjects with missing data were further excluded, resulting in a total of 303 862CSs.

Table 22

Logical function	**Premodifier**	**Head**	**Postmodifier**
Experiential function	Deictic Numerative Epithet Classifier *the*	Thing *records*	Qualifier [of deliveries][in hospitals] (or)

	obstetric clinics	[between January 2002][and December 2006.]

Table 23

Logical function	**Premodifier**	**Head**	**Postmodifier**
Experiential function	Deictic Numerative Epithet Classifier Thing *the* *database*		Qualifier by the group codes 0371A (CS delivery) and 0373B (maternally requested CS delivery)

Table 24

Logical function	**Premodifier**	**Head**	**Postmodifier**

Experiential function	Deictic Numerative Epithet Classifier Thing *those* *women*	Qualifier [with multiple Caesarean deliveries][during the observation period,] only the first CS was counted.
	two *subjects*	[with a peculiarly long hospital stay] [for the Caesarean delivery]

It is perceived that in these three tables the same phenomena is happening, the difficulty lies in postmodification because it is full of prepositional phrases with one or two nominal groups incrusted, however in premodification it is found simple noun being modified by classifiers, determiner or even numeratives as in the case of the nominal group exposed in table 24 (*two subjects with…).*

In table 23 the head noun is being modified by two nominal groups that incrusted in a prepositional phrase with the head word "by", in addition these two groups incrusted in the prepositional phrase are in a paratactic order because of the conjunction "and", furthermore they have two more complex nominal groups that are in brackets and belong to them. As for these nominal groups in brackets (*Caesarean section delivery* and *maternally requested CS delivery*) its complexity lies in premodification due to they are following the hypotactic modification, previously analyzed in other examples. So, as it can be seen there a total of 4

complex groups that clustered in the head nominal group (*the database)* and each group having a considerable degree of complexity when decoding the information they are communicating.

In table 22 there is a similar structure. Such table shows two complex groups (*the record…* and *obstetric clinics…)* joint by the conjunction "or" which is a sign that they are in a paratactic order, however, both have their internal grammatical structure. The firs group is being modified by two prepositional phrases having as a head the words "of" and "in" the groups that are incrusted here are simple since they have only one noun which serves as a head of the nominal group, they are *deliveries* and *hospitals.*

Table 24 shows a more complicated structure that the groups exposed in table 22. Even when they have almost the same amount of prepositional phrases, they have more complexity because of the condensed nominal groups that are incrusted in the prepositional phrases. The first group in table 24 (*those women with…)* has two prepositional phrases and inside such phrases there are two groups with more than one element as modifiers (*multiple caesarean deliveries* and *the observation period)* so the information that it is packed in these two groups are in a hypotactic order making in that way a long complex group.

The second group has a very similar structure, two prepositional phrases with a two complex nominal groups in hypotactic order (*a peculiarly long hospital stay* and *the caesarean delivery)* however there is a slight difference in terms of modification, one these groups have four modification elements making this group more difficult its grammar characteristics. So, in these three tables brought out the extension than nominal groups

could have when they are incrusted in prepositional phrases making in this way even more complex the whole complex nominal group.

Paragraph 11

Definition of variables

The independent variable of interest was the mode of anaesthetic procedure, which was defined by the order codes (96020C-96022C for general anaesthesia; 96007C and 96008C for spinal anaesthesia; 96005C and 9600C for epidural anaesthesia). The endpoint under investigation in this study was whether an individual had been hospitalized for the treatment of any type of stroke. To identify all stroke cases, each case was tracked from the index date until the end of 2007. For those who suffered from multiple stroke events, only the first stroke event after delivery was included. The stroke- free survival time was defined as the period between the index delivery and admission for any type of stroke.

Table 25

Logical function	**Premodifier**	**Head**	**Postmodifier**
Experiential function	Deictic Numerative Epithet Classifier *the independent*	Thing *variable*	Qualifier [of interest] was defined [by the order codes]
	general anaesthesia *spinal anaesthesia* *epidural anaesthesia*		

Table 26

Logical function	**Premodifier**	**Head**	**Postmodifier**
Experiential function	Deictic Numerative Epithet Classifier *multiple stroke* *stroke-free survival*	Thing *events* *time*	Qualifier
	the	*period*	[*between the index delivery][and admission][for any type][of stroke.]*

Paragraph 11 does not have a very complex nominal groups as it can be seen in tables 25 and 26, there is only one group that can be considered as complex (*the period between the index…)* nevertheless this not a reason to consider this paragraph as an easy structure. The representative grammatical feature of this passage is that it is found a great amount of

simple nominal groups functioning in different ways. In table 25, there are two nominal groups joint by a copulative verb (to be), both groups fulfilling a different function; subject and predicative (*the independent variable of interest* and *the order codes).*

As for their internal structure they are being modified by one determiner and one adjective in the case of the first group, in the second group, the head word "codes" is being modified by one determiner and one noun. Table 25 is also showing three simple nominal groups (*general anaesthesia, spinal anaesthesia, epidural anaesthesia),* the three of them are inside a prepositional phrase, however, they are simple due to they have only one element as modifier.

In table 26 it is found two groups with complexity in premodification (*multiple stroke events* and *stroke-free survival time),* so, this means that there is a hypotactic order among its elements; it follows the sub-modification order mention before in other examples. The last nominal group (*the period between the index…)* expose in this table have more condensation in its structure and it is founded in its postmodification because it has four prepositional phrases with a simple nominal group inside, in addition they are linked by the conjunction "and" which means they are in a paratactic order (*the index delivery and admission date for the delivery).*

Paragraph 12

To determine the impact of modes of anaesthesia on the risk of stroke, it is important to take into consideration the influences of possible confounding variables. These included the patient's age in years, multiple gestation, comoborbidites, chronic hypertension,

pregnancy- related hypertension, antepartum haemorrhage, disorders of electrolytes/ acid-based balance and heart disease.

Table 27

Logical function	**Premodifier**	**Head**	**Postmodifier**
Experiential function	Deictic Numerative Epithet Classifier Thing *the* *influences*		Qualifier [of possible confounding variables]

Table 28

Logical function	**Premodifier**	**Head**	**Postmodifier**
Experiential function	Deictic Numerative Epithet Classifier Thing *the* *patient's* *age*		Qualifier [in years]
	multiple gestation *comorbidities* *chronic hypertension* *pregnancy-related hypertension* *antepartum haemorrage* *post-partum haemorrage*		
	disorders		*[of electrolytes, acid-base balance]*

	hearth disease	

These two tables in paragraph 12 show differences in the structure of the nominal groups they are showing. In table 27 there is a nominal group with complexity in its postmodification since it has a prepositional phrase with a nominal group that have the hypotactic order (*possible confounding variables).* In table 29 there are two groups that have postmodification, such postmodification consist on one prepositional phrase with a simple nominal group, and nevertheless, there are a great amount of simple nominal groups that represent almost the whole part of paragraph 12. They are in a paratactic order even when there is no conjunction, the element that is functioning as a binding word is the use of "comma".

Paragraph 13

The statistical Package for the Social Sciences, version 16.0 was used to perform the statistical analyses in this study. The Mann-Whitney U-tests and x2 test were used to examine the differences between modes of anaesthesia. The stroke-free survival rate was estimated by the Kaplan-Mejer method. The log-rank test (Mantel- Cox) was used to examine the differences in the effect on the stroke-free survival rate of the three modes of anesthesia. The Cox proportional hazards models were used to estimate the association of general anaesthesia with stroke.

Table 29

Logical function	**Premodifier**				**Head**	**Postmodifier**
Experiential function	Deictic	Numerative	Epithet	Classifier	Thing	Qualifier

	the log-rank test the differences	*[in the effect][on the stroke-free survival rate][of the three modes][of anesthesia]*

Two nominal groups were detected in this paragraph, both are linked with the verbal group *was used to examine.* The firs group has two elements; one determiner and one classifier, however complexity lies in the second groups, due to it has four prepositional phrases and each phrase has a nominal groups with more than one element. Nominal groups are being modified by determiners, numerals and adjective by following hypotactic order.

Paragraph 14

Among the 303 862 parturients receiving CS, we identified 378 women who suffered at least one stroke event within the 6 year follow-up period. It has been computed the distribution of stroke rates by status of preeclampsia and by mode of anaesthesia within the 6 period. We computed the propensity score by using logistic regression with the dependent variable being mode of anaesthesia and independent variables being the potentially confounding variables.

The distribution of in-hospital stroke rates per 100 000 deliveries after CS delivery and stroke rates per 100 000 deliveries during the 6 follow-up period by status of preeclampsia and by mode of anaesthesia is presented in table 1.

Table 30

Logical function	Premodifier				Head	Postmodifier
Experiential function	Deictic	Numerative	Epithet	Classifier	Thing	Qualifier
	the			*propensity*	*score*	*[by using logistic regression][with the dependent variable] [[being mode of anaesthesia]] and independent variables [[being the potentially confounding variables]]*

Table 31

Logical function	Premodifier				Head	Postmodifier
Experiential function	Deictic	Numerative	Epithet	Classifier	Thing	Qualifier
	the				*distribution*	*[of in-hospital stroke rates per100 000 deliveries][after CS delivery and stroke rates per 1000 000 deliveries][during the 6yr follow-up period][by status][of preeclampsia][and by mode anaesthesia]*

Paragraph number 13 has more than one nominal group with a considerable level of complexity, however only two of them were chosen due to their high level of condensed grammar they have in their internal structure. It was found a variety of grammatical characteristic such as: simple nominal groups inside prepositional phrases or embedded clauses with two or more nominal groups inside. In table 30 the head noun *(score)* is being modified basically by two finite clauses whose finite verb is "being", then is modified by prepositional phrases with a nominal group inside. The firs finite clause (…*being mode of anaesthesia)* is incrusted with the two prepositional phrases that preceded it (*by using logistic regression* and *with the dependent variable),* such clause and prepositional phrases are in paratactic order with the next finite clause (… *being the potentially confounding variables)* this postmodification shows a specially condensed grammar.

In table 31 the head noun is being modified by 6 prepositional phrases which have a nominal group inside with more than two modifiers, nevertheless there is something else that makes even more difficult to decode the grammar of this nominal group. Most of the prepositional phrases are in a paratactic order due to they are linked each other by using the conjunction "and".

The two first nominal groups (*in hospital stroke rates…CS delivery)* are in a paratactic order with the next two next four nominal groups that are inside the prepositional phrases (*stroke rates per 100 000, 6yr follow-up period, status of preeclampsia, mode of anaesthesia).* So, these two tables illustrate the great level of condensation that scientific

could reach when it is presenting a serious of information full of different words that involves a variety of concepts.

4.2 The translation process

Once a general panorama about the structure of nominal groups has been stated, the translation process starts having two important aspects that shape such process in order to have a guide; they are the formal constitution of the Spanish nominal group as well as the strategies suggested by Baker (1992) and the theory stated by Nida (1969) and Hatim and Mason (1990). It was mentioned before that the process of translation was taken into a count the theory of some translation theorists and it was followed with special attention the theory of Nida, 1969 in which the process of translation involves three steps: (1) the analysis, in which the surface structure is analyzed in terms of grammatical relationships among the combinations of words, (2) transfer, in which the analyzed material is transferred in the mind of the translator form language A to language B, and (3) restructuring, in which the transferred material is restructured in order to make the final

message fully acceptable in the receptor language. All this process will be complemented with the support of two more authors, Baker (1992) and Hatim and Mason (1990).

Translation of paragraph 1

Table 1

Soure text: English	**Target text: Spanish**
Differential impacts of modes of anaesthesia on the risk of stroke among preeclamptic women who undergo Caesarean delivery: a population-based study	El impacto diferencial de los métodos anestésicos respecto al riesgo de accidente cerebrovascular en el parto pre eclámptico por cesárea: un estudio poblacional.

As stated before, this is a complex clause formed by more than two nominal instances that follow a hypotactic patron by embedded clauses. When doing the translation process some lexical and syntactic changes were done in order to make an appropriate clause in the Spanish register, in other words some stylistics aspects were modified taking care of not affecting the meaning of the source text (ST) when rendering it into the target text (TT). This is what Baker (1992) calls "grammatical adaptation". To some extent, Hatim and Mason (1990), state that it is difficult to keep grammatical patterns when achieving coherence in the TT. So, with the purpose of performing the grammatical adaptation the linguistic analysis presented in table 1 was helpful to see the relationships between words and the meaningful combinations among them. Each lexical and syntactic change in the TT was done taking into a count such analysis.

The main nominal group of this complex clause (*Differential impacts)* was turned into a singular phrase and it can be seen that it is not surrounded by 5 prepositional phrases as the ST is, this Spanish clause has 3 prepositional phrases, one adverbial phrase (*respect a...)* and one nominal group. Doing this syntactic change allows the text have more fluency in Spanish language. As for the lexical items, some words were omitted since it was believed that it was understood in the propositional meaning of another word. This is the case of the words "*women"* and *"undergo".* Their meanings are already encoded in the Spanish words "*parto"* and *"cesarea".* This elliptical items help to reduce words in the TT and therefore to avoid the prep phrase and the relative clause to which they belong, having as a result a more shaped clause and a more appropriate clause for the Spanish language. As stated before, the main purpose in this first complex clause was to change grammatical patterns in order to have more fluency in the Spanish TT.

Translation of paragraph 2

Table 2

Source text: English	**Target text: Spanish**
Preclampsia is characterized by the onset of hypertension after 20 weeks gestation accompained by renal or haematological and liver involvement. Proteinuria is confirmed by the presence of a 24 h urinary protein excretion in excess of 0.3 g dl. Preeclampsia remains one of the leading causes of maternal mortality worldwide.	La preeclampsia se presenta después de las 20 semanas de gestación, y se asocia a la presencia de hipertensión junto con daño renal, hematológico y hepático. La excreción de proteína urinaria por más de 0,3g/dl señala la existencia de proteinuria. Actualmente la pre eclampsia aún se considera una de las principales causas de mortalidad materna en todo el mundo.

Once it is known the structure of the nominal groups, it is easier to move their elements without altering the meaning of the group in the TT. So, there were some morphological and syntactic switches with purpose of achieving cohesion in the Spanish text. There were some linguistic changes that make the text more suitable for its reading and for the Spanish register. In this case, the first nominal group was rebuilt by changing its word order, this helps to have a more dynamic translation having as a result a more confortable syntax structure which convey the message without affecting the meaning (Nida, 1969). The word group "*The onset"* was placed after the word group "20 weeks gestation" this syntactic order mentioned above was helpful to have a more cohesive sentence in the TT. Then, in the second complex nominal group it was intended to keep the same paratactic patron that was found in the linguistic analysis of the ST, however one lexical element that was replaced for another, the word "involvement" was treated as a lexical unit whose literal translation does not fulfill the proper requirements for the Spanish medical register, so it was changed for a more expressive word in the TT such as Baker (1992) suggests. A similar strategy was applied in the third nominal instance was applied. The syntactic order was changed with cohesion purposes and lexical substitution took place with the objective of accurate a more expressive translation in the TT. As for the last nominal group in this paragraph, a plain translation was performed since there was equivalence in both aspects; grammatical and lexical equivalence.

Translation of paragraph 3

Table 3

Source text: English	**Target text: Spanish**
Anaesthesiologists use their judgment in selecting the appropriate anaesthesia for the severely preeclamptic women requiring Caesarean section (CS). Neuraxial anaesthesia for CS is preferable to general anaesthesia given the risks of aspiration, failed intubation, and unstable haemodynamics associated with general anaesthesia in the preeclamptic parturient. Although epidural anaesthesia can be used, the recommended technique in the haemodynnamically stable	Los anestesiólogos seleccionan el método anestésico más apropiado para mujeres en cesárea con pre eclampsia severa. La anestesia neuroaxial es preferible en este tipo de parto debido a las complicaciones que se asocian a la anestesia general, tales como: problemas de aspiración, intubación fallida e inestabilidad hemodinámica. Si bien la anestesia epidural se puede usar en el parto preeclamptico y hemodinamicamente estable, la anestesia espinal es recomendable para este caso.

parturient with preeclampsia is spinal anaesthesia.	

Once the grammatical analysis was done here it was studied the grammatical relations among meaning of words and combinations of words, the translation suffered some modifications in order to make the message acceptable as possible in the target language. So, in the first string of words (*their judgment in selecting….)* when decoding the whole nominal group some lexical elements were omitted since in the target language one more general word could cover the meaning of the ones omitted. However the nominal group *appropriate anesthesia* was replaced for another one that had a more elaborated structure with the purpose of adapting the English nominal group into a more coherent group in the Spanish group, this what Hatim and Mason (1997) call textuality.

What it is noticed in this paragraph is that repetition of words is highly presented and this makes the translator to look for a tool that could avoid repetition in the target text since it not appropriate in the target text. This is the reason why some cohesive devices were useful to face the problem of repetition in the second nominal group. The words *Caesarean section* are highly repeated and were replaced by the cohesive device called "reference" this resource has potential to avoid repetition without affecting coherence in the text.

According to Baker (1992) allows the reader to trace participants, entities, event, and is one of the most common patterns of establishing chains of reference and a good tool of creating textuality in the translation. However there are another kind of problem besides repetition, and it is the way of rebuilt the complex nominalization into the target language.

Complex nominal group *general anesthesia given the risk of aspiration…* was rebuilt into a more dynamic construction into the TT. After studying the grammatical relationships as Nida (1969) establishes, it was decided to remove the elements using the "colon" as a mark punctuation that permits to rebuilt the nominal group into a new construction as shown in table 3. This translation gives more dynamism in the target text and it has fluency for the receptor language.

In the case of the last nominal group (*the recommended technique in the haemodinamically stable parturient with preeclampsia)* its construction was rebuilt quite different. The sentence in which the nominal group is incrusted was turned into an active, this permits to move one element (*the recommended technique*) and place it into a copulative sentence (*la anesthesia espinal es recommendable).* The purpose of these grammatical changes was to do a more acceptable translation for the receptor reader.

Translation of paragraph 4 and 5

Source text: English	**Target text: Spanish**
There are also instances in which neuraxial anaesthesia is relatively or absolutely contraindicated and therefore general anaesthesia may be required. Moreover, evidence suggests that general and regional anaesthethic methodhs are equally acceptable for CS in pregnancies complicated by severe preeclampsia. Preeclampsia is associated with increased risk of stroke in later life. In addition, data from a population-based study in Taiwan revealed that women with preeclampsia	No obstante, existen casos en los cuales la anestesia neuroaxial es relativamente o completamente contraindicada, de ahí que la anestesia general pueda ser requerida. Asimismo, existe evidencia que muestra a la anestesia general y regional como métodos igualmente aceptables para el parto por cesárea con pre eclmpsia severa. Dos estudios, hechos en una población de Taiwán, revelaron que tanto el parto por cesárea como la preeclampsia en el embarazo han incrementado el

have increased risk of stroke during pregnancy and the first pospartum year .(5) Caesarean delivery has also been demonstrated to be a strong and significant predicator of post-partum stroke over a 12 month period in population-based study in Taiwan. The long-term effects of different modes of anaesthesia in terms of the incidence of maternal postoperative complications are largely unknown.	riesgo de accidente cerebrovascular durante la gestación y el primer año posterior al parto. Cabe agregar que la presencia de dicho trastorno representa un mayor riesgo de derrame en una vida futura.

Translating the first nominal instance in paragraph 4 involved some lexical substitutions and as consequence some syntactic changes. The noun word *evidence* in the first nominal group was turned into a "verb" in the TT. This verb helps to distribute the whole complex nominal word and create a new one with two sentences in it. This means there are verbs instead of nouns in the reception language. Using the verbs "existir" and "mostrar" in the TT helps to have a new word order that it is more acceptable for the target text.

Even though in the new construction the noun groups *general and regional anesthetic methods* are in the same paratactic order as they were in the source text there was a morphological change; the adjective "anesthetic" turned into the noun "anestesia" to have the same nominal groups linked with the adverbial clause, *como métodos igualmente aceptables…*As for the last group (*for CS in preganancies complicated by severe preeclampsia*) it seems that there are a literal translation, however, a lexical omission was done; the word "pregnancies" was not translated into the target text since its significance it

is included into the target text phrase “parto por cesárea”. Omitting this word and rebuilding grammatical features were helpful to have a more acceptable translation such as Baker (1992) states: “Changing grammatical sequences or omitting words is a good resource for the transalator as long as the translator does not affect the propositional meaning.”

In paragraph 5, as it can be seen, it corresponds to paragraph 4 and it is marked with the number 5 in brackets inside the source text. However, in the linguistic functional analysis paragraph four was bifurcate with the purpose of appreciating better its grammatical elements. On the other hand, in the translation process paragraph four needs to be back in its original form for analyzing it into a complete translation unit.

In the previous paragraph, it has been analyzed a part of paragraph four, so in the rest of it the analysis will take into a count the paragraph as a whole unit in order to detect the possible changes in the target text (Spanish). When doing the translation the first observation was focused on the necessity of separating the English text into two paragraphs in the TT in order to distribute the information and establish coherent order among the elements that carry important information.

In the target text, the second paragraph includes information of what it is called paragraph 5 and paragraph 4, this final target text paragraph took one important element information in the English version (*a population- based study)* and place it in the thematic position in the text, doing this movement allowed to fix the other necessary elements in the text, those are: *preeclampsia,Caesarean delivery* and *risk of stroke* . When fixing these elements, placing a

binding conjunction was useful to create a comparative relation such as the original text was intending to do with these elements.

So, establishing this comparative relation was the first step to carry out the translation. The second step consisted on omitting the words that are not necessary in the text due to its propositional meaning is incrusted in another word or because they were repeated before, this is what Baker (1992) calls lexical cohesion. Words like *population-based study*,*stroke*, *prclampsy* ,*pregnancr* were substituted by synonyms, appositions and by more general words such as the case of "preeclampsy" which with the purpose of not repeating the word in the TT it was used a more general word such as "trastorno". Applying a comparative relation and using the strategies of lexical cohesion was performed with objective of achieveing textual equivalence, in other words, using the patterns the target language use to convey the interrelationships of events (Hatim and Mason, 1990).

Translation of paragraphs 6 and 7

Source text: English	**Target text: Spanish**
We investigated the impact of general, spinal, and epidural anaesthesia on the risk of stroke, including cerebrovascular complications of the puerperium and stroke in later life, in preeclamptic patients who undergo CS delivery in Taiwan. (7) Because general anesthesia has been associated with unstable hemodynamics and increased neuroendocrine stress responses to Caesarean delivery in women with severe preeclampsia, it was hypothesized that general anesthesia is associated with a greater risk of	Si bien los efectos a largo plazo de los diferentes tipos de anestesia, en gran parte, son desconocidos en términos de incidencia de complicaciones post operatorias en la madre, investigamos el efecto de la anestesia general, espinal y epidural en relación con el riesgo de accidente cerebrovascular tomando en cuenta sus complicaciones en el puerperio y la probabilidad de sufrirlo en la vida futura respecto a pacientes preeclampticos que se someten a cesárea. Puesto que la anestesia general se ha asociado a una

stroke when compared with neuraxial anesthesia in preeclamptic women who undergo caesarean delivery.	inestabilidad hemodinámica y a un incremento en la respuesta de estrés neuroendocrino, se ha llegado a la hipótesis de que este tipo de anestesia representa un alto riesgo de derrame cerebro vascular en comparación con la anestesia neuroaxial cuando se aplica a mujeres con pre eclampsia severa que se someten a cesárea.

Paragraphs 6 and 7 were also divided into two paragraphs in order to distribute information and have fluency in the text. Doing translation of both passages involved to include the last nominal group from paragraph 5 (*the long-terms effects of…)* due to its information structure had relation with the elements of text 6. The relation among them is about contrasting two concepts having and adversative idea. In order to keep this relation in the TT, a binding conjunction was used as in the previous paragraphs. In this case it was used the conjunctive locution "Si bien" to establish a similar idea the ST has.

In addition, there was a syntactic change in the last nominal group of paragraph 5, the passive construction (*are largely unknown)* was moved to the first part of the paragraph in order to permit to have the adversative relation with paragraph 6. As for the translation of

the internal structure of the nominal group a plain translation was followed taking care of following correctly the order in the TT.

As it can be seen conjunction are playing an important role in getting a textual equivalence in the TT, and paragraph 7 is not the exception. There is a causative relation in this passage, so, a causative link was used to join the sentences in which the nominal groups were incrusted. The causative element that serves as a more dynamic element in the TT is "puesto que" this conjunction is often used in the academic register of the TT. As for internal translation of nominal groups, the group *Caesarean delivery in women with severe preeclampsia* was omitted since it was expressed tow times.

Translation of paragraphs 8 and 9

Source text: English	**Target text: Spanish**
Data sources	**Fuente de datos**
The study used 2002-7 anonymized data from Taiwan National Health Insurance Research Data base that was published by the National Health Research Institutes and released for public access for research purposes.	El estudio utilizo información anónima de la Base de Datos del Seguro Médico Nacional de Taiwan correspondiente al periodo 2002-2007, cuyos datos fueron publicados por los Institutos de investigación Médica Nacional para el acceso al público con fines de investigación.
Initiated in March 1995, the National Health Insurance program, in which the government is the	El programa del Seguro Médico Nacional, iniciado

sole insurer, provides a comprehensive benefit package covering preventive, dental, and medical services to all citizens in Taiwan. The National Health Insurance program provides universal coverage and access to any medical institution of the individual patient's choice. The National Health Insurance Research Database provides registries of medical institutions that contract with the Bureau of the National Health Insurance in Taiwan and monthly claim summaries for all inpatients.	en 1995, en el cual, el gobierno es el único asegurador provee a los ciudadanos de un paquete integral de beneficios que incluye servicios preventivos, dentales y médicos. Dicho programa tiene cobertura universal y acceso a cualquier institución médica que el paciente decida escoger. La Base de Datos del Seguro Médico Nacional proporciona los registros de las instituciones que contrata con el Departamento del Seguro Médico Nacional y mensualmente solicita los historiales clínicos de todos los pacientes hospitalizados.

The process of this translation in paragraph 8 involved syntactic and the addition of some lexical features. As it is seen the TT rebuilt the first nominal group placing its first into and adjective phrase (*correspondiente al period 2002-2007)* this movement permits to add the binding conjunction "cuyo" and incrust the next nominal group (*National Health Reasearch Data Base)* into a subordinated sentence. This group followed a plain translation taking care of the logical relation previously analyzed in the linguistic study. So, adding such conjunction helped the Spanish translation have a more elaborated text in its grammar.

As for the second paragraph where two nominal groups are founded, there were changes that are related with cases of vocabulary and cohesion. In the first group (*comprehensive benefits…)* a lexical change was done, the word "comprehensive" was substituted in the target text for the word "integral" since its meaning has more relation with the total meaning of the nominal group. This is what Baker (1992) calls "translation by a more

expressive word" the word in the Spanish text is more congruent with the words that are surrounding it.

This also was done with the ST word "covering" which was translated by the general word "incluye" this substitution allowed the TT to have a more dynamic text because some grammatical changes were done such as the addition of a relative clause (*que incluye…)* this way of unpacking the group in the TT helps the text to have fluency in their grammar. As for the second group, the feature of "reference" as a good strategy to avoid repetition was used to reduce the amount of unnecessary words in the TT.

The group *National health Insurance program* was translates in the TT with the referential element "dicho programa" in this way the TT is more comfortable for the receptor of the text. In this groups was also added a relative sentence with the purpose of having fluency (*que el paciente decida escoger).* As it has already seen adding grammatical elements is necessary to have a more adequate text for the receptor of the language, in other words, esthetic elements are also important when translating.

Translation of paragraph 10

Source text: English	**Target text: Spanish**
Study sample *The study sample was based on the records of deliveries in hospitals or obstetric clinics between January 2002 and December 2006. CS delivery cases were identified form the database by the group codes 0371A (CS delivery) and 0373B (maternally requested CS delivery). For those women with*	**Muestra de estudio** La muestra para este estudio se obtuvo a partir de cada parto registrado en hospitales o clínicas de obstetricia, entre el periodo de enero del 2002 y diciembre del 2006. Los casos de cesárea se identificaron usando la base de datos de los diagnósticos de grupo en los códigos 0371A (partos

multiple caesarean deliveries during the observation period, only the first CS was counted. There were a total of 305330 cases of CS. These CSs were carefully inspected to screen for outliers. Two subjects with a peculiarly long hospital stay for the caesarean delivery were identified and subsequently excluded. To ease comparison between our study and a previous study, subjects with extreme values (i.e. younger than 16 years or older than 49 years) of maternal age were excluded as in the previous study. Subjects with missing data were further excluded, resulting in a total of 303 862CSs. *Individuals diagnosed with preeclampsia were identified from the database by ICD-9-CM codes 642.4-642.7. a total of 8567 cases were identified.*	por cesárea) y 0373B (cesárea electiva). Para aquellas mujeres que tuvieron más de un parto por cesárea durante el periodo de observación, solamente el primero fue registrado. Se encontraron un total de 305 330 casos de cesárea. Tales casos se inspeccionaron cuidadosamente para detectar valores atípicos. Dos mujeres con una estancia larga en el hospital fueron identificadas y excluidas del estudio. Con el propósito de facilitar la comparación entre nuestro estudio y un estudio anterior, los pacientes con altas valoraciones (i.e. menor de 16 años o mayor que 49 años) de edad maternal fueron excluidos tal como se hizo en el estudio anterior. Personas con datos incompletos fueron estrictamente apartados, dando como resultado un total de 303 862 casos. Se identificaron un total de 8567 casos de pacientes con preeclampsia usando los códigos 642.4-642.7 de la base de datos CIE-9MC.

Translating paragraph 10 involved lexical and syntactic changes with the purpose of achieving cohesion and coherence when translating the three nominal groups that are part of this paragraph. The first grammatical change consisted on rewriting ST passive sentence into an active sentence in the TT. At the beginning of the ST, the first sentence is in passive voice (*the study sample was based on…)* however in the TT, the same sentence was turned into an active sentence in order to rebuilt the structure of the ST nominal group (*the records of deliveries…).* Hence, changing the passive sentence into active allowed to rebuilt the nominal group in the TT by using verbs instead of nouns, the verb that were used in the TT are "obtener" and "partir". Doing substitution or replacing the word order is one of the

characteristics of what Nida (1969) calls "dynamic translation". In addition, taking into a count this idea, some words like "period" were added in order to have a more explicative sentence in the TT and avoid the ST grammatical style.

In the second nominal group, (*the database by the group…)* translation was a similar; the ST sentence was turned into an active in order to have a better grammatical construction in the TT, nevertheless, there were a significant lexical change that helped the TT to be more acceptable for the receptor language. The nominal group "maternally requested CS delivery" was not translated strictly in grammar features but looking for an equivalence of the whole concept in the TT, hence, such concept was "cesarean electiva" which involves the information that the whole nominal group of the ST has. This is what Baker, (1992) calls "equivalence from the aspect of meaning".

So, in the third nominal group followed a plain translation taking care of following the correct order of the nominal group in the Spanish target text.

Translation of paragraph 11

Source text: English	**Target text: Spanish**
Definition of variables	**Definición de variables**
The independent variable of interest was the mode of anaesthetic procedure, which was defined by the order codes(96020C-96022C for general anaesthesia; 96007C and 96008C for spinal anaesthesia; 96005C and 9600C for epidural anaesthesia). The endpoint under investigation in this study was whether an individual had been	El procedimiento anestésico fue la variable independiente y se definió usando los códigos de orden (96020C-96022C para la anestesia general; 96007C-96008C para la anestesia espinal;96005C-96006C para la anestesia epidural). Lo último en investigar fue saber si el paciente había sido hospitalizado para el tratamiento de algún tipo de

hospitalized for the treatment of any type of stroke. To identify all stroke cases, each case was tracked from the index date until the end of 2007. For those who suffered from multiple stroke events, only the first stroke event after delivery was included. The stroke- free survival time was defined as the period between the index delivery and admission for any type of stroke.	accidente cerebrovascular. Para identificar todos los casos de accidente cerebrovascular se registró cada uno de ellos desde la fecha de ingreso hasta el final del año 2007. Para aquellos que sufrieron más de un evento de accidente cerebrovascular, solo el primero de estos fue registrado a partir del parto. Se reconoció el tiempo de supervivencia libre de accidente cerebrovascular como el periodo entre el parto y la presencia de algún tipo de accidente.

This translation seems to follow a simple procedure due to it has a great amount of simple nominal groups that have an equivalent in the TT, nonetheless, some grammatical aspects were taken into consideration such as, changing the word order, and changing some vocabulary for some words that have more adequate in the TT.

At the beginning of the paragraph there is a syntactic change, the group that was functioning as predicative in the ST (*the mode of anesthetic procedure)* is the subject of the sentence in the TT having as predicative the group that was functioning as the subject in the ST (*the independent variable).* This movement was done with the purpose of establishing a paratactic order among grammar in the sentences and achieving a well-constructed grammar in the TT. Instead of having two sentences joint by a relative word (*which),* it can

be used use the Spanish conjunction "y" which gives the text the possibility of using a group of verbs (*se definio usando)* in order to have a more appropriate grammar in the TT. In regard to the amount of simple nominal groups, the translation was done by taking care of the word order in the TT. They had a closer meaning in the Spanish text. So, a literal translation was done.

The last three noun groups suffered considerable modification in the TT. The word "multiple" in the group *multiple stroke events* had a lexical substitution, with the purpose of avoiding the condensed structure this group had. Such word was replaced in the TT for the adverbial phrase "más de un evento" which permits to have more fluency in the Spanish grammar. In the next nominal group (*the stroke free survival time)*, a literal translation was performed since there was accuracy in the meaning of both languages (Baker, 1992).

Translation of paragraph 12

Source text: English	**Target text: Spanish**
To determine the impact of modes of anaesthesia on the risk of stroke, it is important to take into consideration the influences of possible confounding variables. We thus extracted variables frequently associated with peri- and- postpartum stroke. These included the patient's age in years, multiple gestation, comoborbidites chronic hypertension, pregnancy- related hypertension, antepartum haemorrhage, disorders of electrolytes/ acid- based	Es importante tomar en cuenta las posibles variables que influyen en la determinación de los efectos de cada uno de los tipos de anestesia respecto al riesgo de accidente cerebrovascular. Por esta razón se excluyeron las variables frecuentemente asociadas con el accidente cerebrovascular antes y después del parto. Tales variables incluyen, la edad del paciente, la gestación múltiple, hipertensión crónica, hipertensión en el embarazo, hemorragia ante parto,

balance and heart disease	desordenes en el fluido, electrolitos y en el balance acido base, así como enfermedades en el corazón.

Translation of paragraph 12 followed a similar process to translation of paragraph 11. There was a syntactic change in the first sentence of the paragraph, the nominal group "the influences of possible confounding variables" was placed at the beginning of the paragraph with the objective of avoiding a condensed grammar in the TT. The next part of this passage is full of simple nominal groups whose meaning has a closer relation with the literal meaning in the language of the TT. Most of them were translated taking into a count the grammatical order of the elements and paying special attention in the literal meaning of the ST and the TT. Propositional meaning played an important role here.

Translation of paragraph 13

Source text: English	**Target text: Spanish**
Statistical analysis *The statistical Package for the Social Sciences, version 16.0 was used to perform the statistical analyses in this study. The Mann-Whitney U-tests and x2 test were used to examine the differences between modes of anaesthesia. The stroke-free survival rate was estimated by the Kaplan-Mejer method. The log-rank test (Mantel- Cox) was used to*	**Análisis estadístico.** Se usó la versión 16. 0 del programa de estadística de las Ciencias Sociales para realizar el análisis estadístico del presente estudio. Asimismo se usaron la prueba Mann-Whitnney y las prueba x2 para examinar las diferencias entre cada uno de los tipos de anestesia. El índice de supervivencia libre de accidente cerebrovascular se realizó mediante el

examine the difference in the effect on the stroke-free survival rate of the three modes of anesthesia. The Cox proportional hazards models were used to estimate the association of general anaesthesia with stroke.	análisis de Kaplan-Meher, por otra parte, la diferencia en los tres tipos de anestesia sobre el intervalo de supervivencia libre de accidente cerberovascular se examinó mediante la prueba de Mantel-Cox o prueba de rangos logarítmicos. Los modelos de riesgo proporcional Cox se usaron para estimar la relación de la anestesia general con el accidente cerebrovascular.

Most of the translation of this paragraph was performed by changing some grammatical patterns such as turning the passive construction into the active construction. As for the translation of the complex nominal group some words were added and some syntactic changes were done. The elements that go at the end of the nominal group (*the three modes of anesthesia)* were replaced at the beginning of the group in order to have dynamism.

Translation of paragraph 14

Source text: English	**Target text: Spanish**
Results **CS, preeclampsia, mode of anaesthesia, and the risk of stroke** *Among the 303 862 parturients receiving CS, we identified 378 women who suffered at least one stroke event within the 6 year follow-up period. It has been computed the distribution of stroke rates by status of preeclampsia and by mode of anaesthesia*	**Resultados** **Cesárea, pre eclampsia, tipo de anestesia y riesgo de accidente cerebrovascular.** Durante la observación del sexto periodo, 378 mujeres sufrieron al menos un accidente cerebrovascular de entre los 303 862 partos por cesárea. Los índices de accidentes cerebrovasculares fueron valorados tomando en cuenta el estado de pre

within the 6 period. We computed the propensity score by using logistic regression with the dependent variable being mode of anaesthesia and independent variables being the potentially confounding variables. *The distribution of in-hospital stroke rates per 100 000 deliveries after CS delivery and stroke rates per 100 000 deliveries during the 6 follow-up period by status of preeclampsia and by mode of anaesthesia is presented in table 1.*	eclampsia y el tipo de anestesia durante el sexto periodo. El nivel de propensión se calculó utilizando una regresión lógica teniendo en cuenta dos variables, el tipo de anestesia; variable dependiente, y las variables altamente desconcertantes; variables independientes. La valoración de los índices de accidentes cerebrovasculares ocurridos dentro del hospital por cada 100 000 partos después de la cesárea y los índices de accidente cerebrovasculares por cada 100 000 partos durante el seguimiento del sexto periodo tomando en cuenta el estado de pre eclampsia y el tipo de anestesia se presentan en la tabla 1.

As it was mentioned in the grammatical analysis, this paragraph has a great level of condensed nominal groups, so, it was necessary to make grammatical changes in order to have a coherent text in the TL. Even though the firs nominal groups in the paragraph were not analyzed there were syntactic changes in this first part. The nominal group 6yr follow-up period was replaced at the beginning of the paragraph with the purpose of having a more dynamic text and having a more adequate grammatical structure in the TT.

As for the two nominal groups that were analyzed, a different procedure was conducted. The nominal group that has the two finite clauses in the ST, had to be reordered in the TT using punctuation marks and having good distribution of the information, The punctuation

marks were semicolons which permitted to have fluency in the TT and keep the paractactic oreder that ST had. The second nominal group (*the distribution of in-hospital…)* followed a literal translation taking care on not affecting the sense of the ST and paying attention on the word order in the TT.

4.3 Translation Review

Another issue that is relevant in the translation process is the specific field context of the text, since some nominal sentences are themselves difficult to translate on the grounds that there is a particular jargon in the medicine field. Due to this reason, consulting an expert in the field can help to solve some problems, particularly with certain vocabulary or phrases which can be structured in a different way having a special translation in the field context.

It is observed that experts are interested in a precise meaning to avoid ambiguity as much as be possible, therefore there must be an appropriate grammatical construction. When consulting the expert, (a physician who is specialized in the field of anesthesiology) he

commented that the translation was very acceptable since there was coherence among the paragraphs and a good usage of technical terms. Once he point out such translation aspects, he was asked to comment about the nominal phrases previously selected. To this respect, the anesthesiologist remarked that the complex nominal groups were decoded in suitable way due to the information that they convey was comprehensive and satisfactory for the medical register.

In addition, he also stressed the importance of doing translation in the field on anesthesiology due to most of their colleagues tend to have difficulty when interpreting the information encoded in a complex grammar such as the one founded in the text "Differential impacts of modes of anesthesia on the risk of stroke among preeclampitc women who undergo Caesarean delivery: a population based study". Finally, he concluded that this translation was well managed in terms of terminology and grammar.

Chapter V

5 Introduction

One of the most important conclusions that this paper pretends to point out is the role that the grammatical aspect plays in the translation process. Such grammatical aspect is focused on the generation of nominal phrases in the scientific texts, so with the objective of reaching an accurate conclusion, the Hallidayan functional grammar served as a tool to analyze and understand those complex structures since focuses on how language works in terms of the functional relationships of its constituent parts. Therefore, nominal phrases constitute a relevant matter in developing conclusion, nevertheless, there are two more

considerations that were developed during the process of research and definitely belong to the purposes of stating conclusions.

Those considerations focus on two perspectives: the translation process, in regard to the translation strategies that were useful to accomplish an adequate text in the target language (Spanish), and the way the translation was accepted by its receptor. When describing the reception of the text, the comments of a physician were taken into a count in order to reach a concrete determination.

Therefore, this research will have three perspectives which serve as final statements and illustrate the conclusion that were achieved as a result of the whole research. In sum, such three conclusions will be focused on the grammatical analysis of the nominal phrases, the process of translation and the reception of the text in the target language.

5.1 Grammatical analysis

As stated before the tool that was useful to analyze the grammatical composition of nominal phrases was the functional analysis by using the tables of Bloor and Bloor, 2004 (appendix A). When doing the analysis it was necessary to identify the nominal phrases by observing its internal structural composition and the function inside the clause. So, most of the times when nominal groups were incrusted in a clause they fulfill the function of subjects, direct objects, indirect objects and complements. As for their internal structure they follow a structure that makes them to fall into a complexity. Such complexity basically lies in two parts of the nominal group: before the head noun and after the head noun, this is what functional grammar calls premodification and postmodification. These two aspects are

found in the object of study with peculiar characteristics that makes the nominal group difficult in its grammatical structure.

Nominal groups that were identified with pre modification followed a hypotactic pattern that it is called "sub modification" whose structure goes from the simple nominal group to the complex group as shown in the next structures: Deictic + Head noun, Deictic + Numerative + Head noun, Deictic +Numertive + Epithet + Classifier + Head noun. This is the structure found in the source text and the level of difficulty lies in the amount of modifiers each nominal group had. So, nominal groups detected in the text had a level of complexity that goes from two modifiers to 5 modifiers as in the case of *a 24 hour urinary protein excretion…* 5 modifiers was the maximum level of pre modification.

On the other side, in post modification the pattern that was found was different from the previous one. Nominal groups identified with post modification had a pattern which was based on three features: a) a nominal group being post modified by prepositional phrases with a nominal group inside such as: *Differential impacts of modes of anaesthesia on the risk of stroke among preeclamptic women…* or *the long-term effects of different modes of anaesthesia in terms of the incidence of maternal postoperative complications,* b) a nominal group being modified by a relative clause such as: *a greater risk of stroke when compared with neuraxial anaesthesia in preeclamptic women who undergo caesarean delivery* and c) a nominal group being modified by finite or non-finite clause such as: *the severely preeclamptic women requiring Caesarean section*.

As it is seen, post modification has higher complexity when compared to pre modification in the nominal groups detected in the text. There is more complexity due to the elements that surround the text are equally or bigger units than the head nominal group. So, this grammatical awareness found in the linguistic analysis helps the translator to find the logical relations among words in order to perceive the cohesion and coherence of the ST paragraph and restructure it into the TT if it is the case.

5.2 The process of translation

Once the grammatical features of the text were identified the process of translation took place. As stated in chapter 3 some translation theorists were used and therefore some of their strategies were applied to the text with the purpose of achieving an accurate translation in the TT. Hence, the previous linguistic analysis was a good tool to choose the more appropriate translation procedure that could reach the proper grammatical structures in the TT (Spanish) and therefore a coherent and cohesive text.

Taking into a count the analysis of the nominal groups, the translation strategies that were useful were the ones that had to do with "grammatical adaptation" from Baker (1992) and the strategies of "dynamism" stated by Nida (1969). The dynamic strategy of Nida was

helpful in the sense that morphological and syntactic changes were done in the TT due to the grammatical elements of the ST do not correspond with the grammatical procedures in the TT. Thus, restructuring the composition of the sentences in the target text involved to switch passive sentences to active voice and to alter the word order in order to make sense in the target text.

From the strategy suggested by Baker (1992), grammatical adaptation, the cohesive devices that such strategy state were important since they are a resource to have textuality in the creation of a text. When doing the translation the devices that were more useful were the *referential, omission, lexical substitution.* These three aspect from the theory of Baker were highly important from three points of view: 1) the ST has lots of words that were unnecessary and could be omitted since their meaning was implied in other word in the TT, 2) the repetition of words in the ST could be replaced in the TT for the anaphoric resource and this permitted to have a more fluently text. Finally the third point, some words were replaced by a more expressive vocabulary that permitted to rebuilt the grammatical construction of the ST in the TT. Thus, after having the linguistic study before doing the translation, it can be concluded that the strategies of "grammatical adaptation" and "dynamism" were highly useful due to the grammatical characteristics the nominal phrases had in the ST. Hence, applying such translation procedures seemed to be proper due to the acceptable reception of the translation, which is explained in the next stage.

5.3 The reception of translation

As stated before the translation process satisfied the grammatical requirements that were involved in the ST. At this stage the translation was ready to be exposed before its target

reader in order to see his reaction in relation to the specialized medical text. Such translation was shown to only one physician who is specialized in anesthesiology due to the limitations that exist when finding a group of professionals in the field that could dedicate enough time to express their opinion about the accuracy of a translation in the field of anesthesiology. However, the comments expressed by the person that spent some minutes of his time were highly relevant for the procedure of this research. Even when the arguments of the physician were not focused specially on the linguistic aspect of the TT, they served as a parameter that tested the adequacy of the translation in the field and on the other side, his opinions brought out the awareness of learning the process of decoding the condensed grammar not just for translators but also for English learners in the area of medicine.

APPENDIX A

FUNCTIONAL GRAMMAR ANALYSIS OF NOMINAL PHRASES

LOGICAL FUNCTION		
Modifiers/Pre-modifiers Determiners, adjectives, Numerals and sometimes nouns	Head Noun which represents the thing	Post-modifiers Prepositional phrase

EXPERIENTIAL FUNCTION

Deictic	Numeratives	Classifiers	Epithet	Thing	Qualifiers
Demostratives Articles Pronouns	Numbers Many Much A lot of	Adjectives (Subset of types of things)	Adjectives (a particular characteristic)	Head	Prepositional phrase

REFERENCES

Baker. M. (1992). In other words; a coursebook on translation. London: Routledge.

Beke, R. (2002). Introducción a la lectura en inglés (Cuadernos de Postgrado

No. 30). Caracas: Universidad Central de Venezuela.

Bernhardt, E. (1991). Reading development in a second language. Theoretical,

empirical and classroom perspective. New Jersey: Ablex Publishing

Bloor, T. & Bloor M. (2004). The functional analysis of English: a Hallidayan approach.

London: Edward Arnold.

Butt, D., Fahey, R., Feez, S., Spinks,S., Yallop,C. (2000). Using functional grammar: an explorer´s guide. Sydney: National Centre for English Language Teaching and Research.

Eggins S. (1994). An introduction to systemic functional linguistics. Oxford University Press.

Halliday, M (1985), Spoken and Written language, Oxford University Press.

Halliday, M (1994) An Introductory to Functional Grammar. (Second Edition). London, Great Britain: Arnold.

Halliday & Martin. (1993). Writing Science: Literacy and Discourse Power. London, Great Britain: The Falmer Press.

Hamilton-Toovey, S. y Mateluna, M. (2000-2001). La traducción al español de los nominales complejos del inglés. Boletín de Filología, t. XXXVIII, 128-166.

Hatim B. & Mason I. (1990). Dicourse and the translator. London: Longman.

Hernanz, M. L. y Brucart, J. M. (1987). La sintaxis. Barcelona: Editorial Crítica.

Jespersen, O. (1964). Essentials of English grammar. Alabama: The university of Alabama Press.

Knowles, F. (1998). New versus Old. In L. Hickey (Ed), The pragmatics of translation. Clevedon: Cromwell Press Ltd.

Lookwood, D. (2002). Syntactic analysis and description. London: Continuum

Martin, J. R., Matthienssen, C. M. M. & Painter, C. (1997). Working with Functional Grammar. Great Britain: Arnold.

Martin, J R. (1992). English text: system and structure. Pennsylvania: John Benjamins.

Martin, J.R. & Veel, R. (1998). Reading Science. Routledge.

Myers, G. (1992). Textbooks and the sociology of scientific knowledge.

English for Specific Purposes, 11, 3-17.

Munday, J. (2001). Introducing Translation studies: theories and applications. London: Routledge.

Nida E. & Taber C. (1969). The theory and practice of translation. United Bible Societies.

Newmark, P. (1995). Approaches to translation. New York: Phoenix.

Patricia K. Werner. Third Edition. Mosaic one: A Content-Based Grammar Mc Graw-hil.

Quirk R. (1990). Grammar of the English language. Cambridge: University Press

Richards, J. C. (1997) Functional English Grammar: An Introduction for Second Language Teachers. USA: Cambridge Language Education.

Trimble, L. (1985). English for science and technology. A discourse approach.

Cambridge: Cambridge University Press.

van Dijk, T. y Kintsch, W. (1983). Strategies of discourse comprehension.

Nueva York: Academic Press.

Van Valin, R. (1997). Syntax: structure, meaning and function. Cambridge: Cambridge University Press.

Ventola, E. (1996). Packing and unpacking of information in academic texts. Amsterdam: John Benjamins.