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**GENRE ANALYSIS OF INTERNATIONALLY PUBLISHED
ALGERIAN MEDICAL RESEARCH ARTICLES**

**A Dissertation Submitted in partial Fulfillment of the Requirements for a
Degree of Master of Arts in Applied Linguistics and ELT.**

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ABSTRACT

There is a rising importance of genre studies, and the need for the description of specialized academic genres, not to mention the importance of understanding the structure of academic writing, the sequencing and the lexico-grammatical features. As an attempt to provide a solution to the above mentioned incidences, this research aims at analyzing the moves structure, the lexico-grammatical features and the communicative purposes of internationally published Algerian Medical Research Articles. Swales' (1990) Create a Research Space model is followed to analyze and describe the three targeted features of this research: move structure, lexico-grammatical features and the communicative purposes. The results indicated that most of the Algerian Medical Research Articles adopted a Move one to Move two to Move one then Move three structure. Concerning the lexico- grammatical features, the present simple tense was the dominant tense. In terms of voicing, the active voice dominated the Algerian Medical Research Articles. The results of this study can be used by teachers of writing and students of medicine in order to teach/ learn academic writing.

Key words: Genre, Genre Analysis, Algerian Medical Research Articles move structure, lexico- grammatical features, communicative purpose.

DEFINITION OF KEY TERMS

Genre: Refers to a set of communicative events, the members of which share some set of communicative purposes (Swales, 1990).

Genre analysis: Is the study of contextualized linguistic behavior (swales, 1990 and Bhatia, 1993).

Move: Is a discursal or rhetorical unit that performs a coherent communicative function in a written or spoken discourse (Swales, 2004, p.29).

Move structure: Is comprised of moves, steps and the way they are organised.

Move analysis: A the technique that is used in ESP to unveil these moves is called (Swales, 1990; Bhatia, 1993).

Lexico- grammatical features: Are specific language features of the text.

Research article: reports the results of the original research, assesses its contribution to the body of knowledge in a given area, and is published in a peer-reviewed scholarly journal.

Medical English: medical language traditionally used by specialists to communicate with each other.

CARS (Create a Research Space): refers to the analysis of the organization of the introduction section of a research paper.

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DEDICATION

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LIST OF ABBREVIATIONS

AMRAs: Algerian Medical Research Articles

CARS: Create a Research Space

EAP: English for Academic Purposes

ELT: English Language Teaching

EMP: English for Medicine Purposes

EMS: English for Medicine Students

EOP: English for Occupational Purposes

ESP: English for Specific Purposes

GA: Genre Analysis

IPMRC: Introduction, Purpose, Method, Product and Conclusion

RA: Research Article

SFL: Systemic Functional Linguistics

MRA: Medical Research Article

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**GENERAL
INTRODUCTION**

GENERAL INTRODUCTION

Content:

1. Research Background.....Erreur ! Signet non défini.
2. The importance of the study.....Erreur ! Signet non défini.
3. Statement of the problem.Erreur ! Signet non défini.
4. The Aim of the Study and Research QuestionsErreur ! Signet non défini.
5. Research Methodology.....Erreur ! Signet non défini.
6. The Structure of the Thesis**Erreur ! Signet non défini.**

GENERAL INTRODUCTION

1. Research Background

It is agreed among all the members of academic community that English is the global Lingua Franca for Medical Publications. Therefore, it is preferred that all medical Researchers publish in English whether they are native or non- native speakers. Most medical students in Algeria or non native speakers of the English language elsewhere in the world find difficulties in writing Medical Research Articles (MRAs) in English since English is a foreign language to them. This may be due to an insufficient English language proficiency in either Academic or Scientific writing in English.

2. Statement of the problem.

In Algeria, university professors- researchers carryout research, and publish their works in international journals in English language. English is used as the language of international publication. In fact, Algerian professors- researchers use French as a means of communication for academic and professional purposes, English is only the second foreign language. This raises the need to determine their English writing proficiency and efficiency. Meanwhile, until now, no research work has been carried out in our university to describe the features of medical research writing of these Algerian researchers published in English in international journals. Additionally, there is a rising importance of genre studies, and the need for the description of specialized academic genres, and also a necessity of understanding the structure of academic writing, their sequencing and the use of lexico-grammatical features.

3. Research Questions

Three research questions were treated in this study:

- 1) What move structure do Algerian Medical Researchers adopt in their research articles?
- 2) How are these moves realized to depict the communicative purpose?
- 3) What lexico- grammatical features are present in their articles?

4. The Aim of the Study and

The objective of this study is to provide a description of the Introduction section of AMRAs based on three main elements: move structure, lexico-grammatical features and the communicative purposes.

5. Research Methodology

This present research follows a mixed methods design; it uses both qualitative and quantitative methods. The analytical approach adopted is ESP genre analysis. It follows Swales' (1990) CARS (Create a Research Space) Model to analyze the Introduction section of this study's corpus. Algerian Medical Researchers is the target population of this study. That is to say: Algerian university lecturers in the faculty of medicine who are concerned with doing scientific research about medical issues in Algeria. The corpus consists of 11 (eleven) Algerian Medical Research Articles that were retrieved from an online research publishing site Hindawi. The target features studied by this research work included: Move structure that included Move frequency, sequencing and the steps of each Move. Secondly, the analysis of the lexico-grammatical features was carried out, where in, verbs, tenses and the voicing are the major focus. Finally, the analysis of the communicative/ rhetorical purposes of each Move is also carried out.

6. The importance of the study

This research aims at analyzing the move structure, the lexico-grammatical features and the communicative purposes of Algerian Medical Research Articles in internet journals and retrieved from an internet site called Hindawi. This may in return help non native speakers and novice writers interested in the medical field. By means of GA (Genre Analysis), an understanding of medical discourse is provided in terms of the way the MRAs are written, the different lexico- grammatical features used in this writing and the communicative/ rhetorical purposes they convey.

Consequently, didactic suggestions that are seemingly important to both students and professionals may be drawn from this study since GA is one of the most important devices for the analysis of the Introduction sections of the specialized texts. The ultimate aim of this study is to carry out a Genre Analysis on Algerian Medical Research Articles (AMRAs) published in International Medical Journals in order to help students whose native language is

not English and also novice writers in the medical field who may not be familiar with the expectations of the genre of MRAs.

7. The Structure of the Thesis

This is organized into five main parts: General Introduction, Theoretical and Empirical Background, Methodology and Analysis of the Results, Discussion and conclusions, and General Conclusion.

The General Introduction of this thesis serves as the opening statement in which a reader is provided with the background of the research, its aim as well as research questions. This is proceeded with chapter one of theoretical and empirical backgrounds. This chapter is comprised of three main sections: English for Medicine, Genre Analysis and a review of some studies that have been conducted on Genre Analysis.

The second chapter deals with the methodology and the results. It is divided into two sections: methodology and data analysis. In the methodology section, a description of the methodology adopted was provided in addition to the corpus of the study, statement of the problem, research questions, data tools and the significance of the study.

The third chapter deals with discussion and the interpretation of the finding in relation to the theoretical framework and previous research findings. Additionally, this chapter presents the major conclusions that have been deduced from the results.

The general conclusion serves as the closing statement for this study. Wherein, a process of this study was provided in addition to a summary of the findings, pedagogical implications and the limitations.

CHAPTER ONE: THEORETICAL AND EMPIRICAL BACKGROUND

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CHAPTER ONE: THEORETICAL AND EMPIRICAL BACKGROUND.

Introduction

The aim of this chapter is to critically expose the concepts and topics of overriding importance to the present research work, that is to say is to: English for Medicine and Genre Analysis. As a result, this chapter has been divided into three main sections. The first section deals with the notions related to English for Medicine. It discusses the two major concepts: English for Specific Purposes and English for Medical Purposes.

The second section deals with Genre Analysis including definitions, objectives and the description of models by different scholars.

The third section deals with the previous studies carried out on Genre Analysis in the medical field and English for Specific purposes in the different parts of the world.

Section one: English for medicine

Introduction:

The present section aims at exposing and discussing concepts and issues related to ESP in general and Medical English in particular. As far as ESP is concerned, this section starts with a definition and an overview of its emergence. It, then, moves on to deal with the different types of ESP and with different classifications. After that, it proceeds to a definition of Medical English. It also exposes the different types of ME and examines its discourse features.

ESP is an acronym that stands for English for Specific purposes. This refers to the teaching and learning of English in particular disciplines. Through this chapter, a brief overview on how ESP emerged, its definition and classification by different scholars is presented. Then, different notions like; the definition of EMP, types, importance and medical terminology.

1. The emergence of ESP

According to (Tom Hutchinson, 1987) many factors led to the emergence of the ESP movement in the 1950s. Hutchinson and Waters (1987, p.6) mentioned that ESP was just a development of different and common point of views. It is certain that a lot can be written regarding the origins of ESP. However, according to Hutchinson & Waters (1987) it can be summarized under the three main reasons which are common to the commencement of all

ESP: the demand of the brave new world, a revolution in Linguistics and the developments in Educational Psychology.

Firstly, the demand for a brave new world one of the reasons that contributed to the emergence of ESP. Hutchinson and Waters (1987, p. 6) underlined that, after the end of World War II, a notable and unprecedented expansion in the field of science, technology and commerce had occurred. This growth gave birth to new views in term of an international level; and then resulted in the growth of English as Lingua Franca. The development made the international changes in commerce, science and technology easier. In the 1970s, Oil crises caused a sudden increase in the need for learning the English language.

Secondly, there was a revolution in Linguistics that created a need for this specialized English language. (Widdowson, 1978) cited in (Tom Hutchinson, 1987, p. 7) claimed that the emergence of English as a Lingua Franca led to the appearance of new divisions in the English language teaching in different fields such as English for Medical Purposes (EMP), English for business and economics (EBE) and so on. During the 1970s, some of the researchers such as Swales (1971), Latorre (1969), Selinker and Trimble (1976) as cited in (Tom Hutchinson, 1987, p. 7) focused their research on the description of scientific and technical features of the scientific discourse.

Last but not least, , the development of Educational Psychology is considered as one of the three reasons that led to the emergence of ESP. Hutchinson and Waters (1987, p.8) stated that the development of ESP brought out an emphasis on knowing learners' needs and wants, and the focus on the learning process rather than the final product. The courses were planned as to proportionate the learners' needs and meet their communicative objectives in different situations and use language appropriately.

Consequently, the demand of the brave new world, the emergence of the USA as an economical power, the revolution in Linguistics and the shift of focus on the learners' needs and wants, contributed all together to the emergence of ESP language teaching and learning.

2. Definition of ESP

English for Specific Purposes is an approach to teaching and learning English for specific disciplines. Many scholars and researchers regarded English for Specific Purposes as one of the prominent areas in the EFL teaching. Among these scholars Hutchinson and Waters (1987), Dudley Evans and ST John (1998), Robinson (1991) and Stevens cited in Dudley Evans (1997) . Hutchinson and Waters (1987) cited in Dudley Evans and St John (1998, pp. 2-3) claimed that ESP is seen as “an approach rather than a product”.

Hutchinson and Waters (1987) cited in Dudley Evans and St John (1998, pp. 2-3) asserted that ESP is viewed “as an approach rather than a product”. Hutchinson and Waters (1987) said that “the foundation of ESP is the simple question: why does this learner need to learn a foreign language?” This means that ESP as an approach to language learning depends on the learners’ needs and doesn’t relate to any particular methodology or method of teaching. All in all, Hutchinson and waters provide an inclusive definition to ESP which assumes that “*ESP is an approach to language teaching in which all decisions as to content and method are based on the learner’s reason for learning*” Hutchinson and Waters (1987, p.19).

Stevens (1988), on the other hand, proposed a set of ESP features, which he divided into absolute and variable characteristics as shown in the table below:

Table 1: Stevens’ (1988) distinction between absolute and variable characteristics

Absolute characteristics	Variable characteristics
<ul style="list-style-type: none"> • Encountering and achieving specific needs of the learners is one of the target objectives of ESP. • ESP focuses on content which means themes and topics, mainly disciplines, occupations and activities. • It has different principles and characteristics which are opposed to general English. <ul style="list-style-type: none"> •ESP fosters the use of language relevant and suitable to the activities in the different linguistic subfields like syntax, lexis, discourse, semantics and the analysis of the discourse ...etc. 	<ul style="list-style-type: none"> • ESP is somehow typical and limited to the learning of skills needed in language learning such as, reading, writing...etc. •ESP is methodology-free, that is to say no pre-ordained or determined methodology is used to teach it.

However, for Robinson (1980, p .15) it was significant to underline that the purpose of an ESP course is the performance of occupational or educational roles successfully. It stands on a rigorous analysis of student’s needs and should be tailor-made which means that the need of learners started to be taken into account (consideration).

Meanwhile, in her recent work, Robinson (1991, p .3) cited in Dudley Evans and ST John (1998, p. 3) claimed that ESP course is based on two main principles: defining criteria and a number of characteristics that make a real ESP course. These criteria are goal oriented and Needs Analysis base courses. Her characteristics are narrowed down to homogeneity of ESP classes and limitedness of time in which the adult learners are taught in terms of specific register which will be used either for academic or professional purposes.

Consequently, Dudley- Evans and ST John (1998, p.4) modified and reviewed Stevens (1988) definition of ESP. They developed a new distinction between absolute and variable characteristics as represented in the table below:

Table 2: distinction between absolute and variable characteristics (Dudley -Evans and ST John, 1998)

Variable characteristics	Absolute characteristics
<ul style="list-style-type: none"> • ESP has strong bonds and links with specific disciplines. • The teaching situations and methodologies used in ESP are distinct from those used I general English. • ESP is typical for adults, either in professional work situations or at a tertiary level. <ul style="list-style-type: none"> • Intermediate or advanced students are the focus of ESP. 	<ul style="list-style-type: none"> • The learners’ needs have to be considered and valued if the aim is a successful ESP teaching. • The disciplines related to ESP serves this latter by providing methodologies and activities to be exploited for the benefits of learners. <ul style="list-style-type: none"> • ESP drives great attention to, First, language; which means, the development of its sub -fields like grammar, lexis, register. Second, skills. Third, discourse and finally, genre appropriate to the divergent activities.

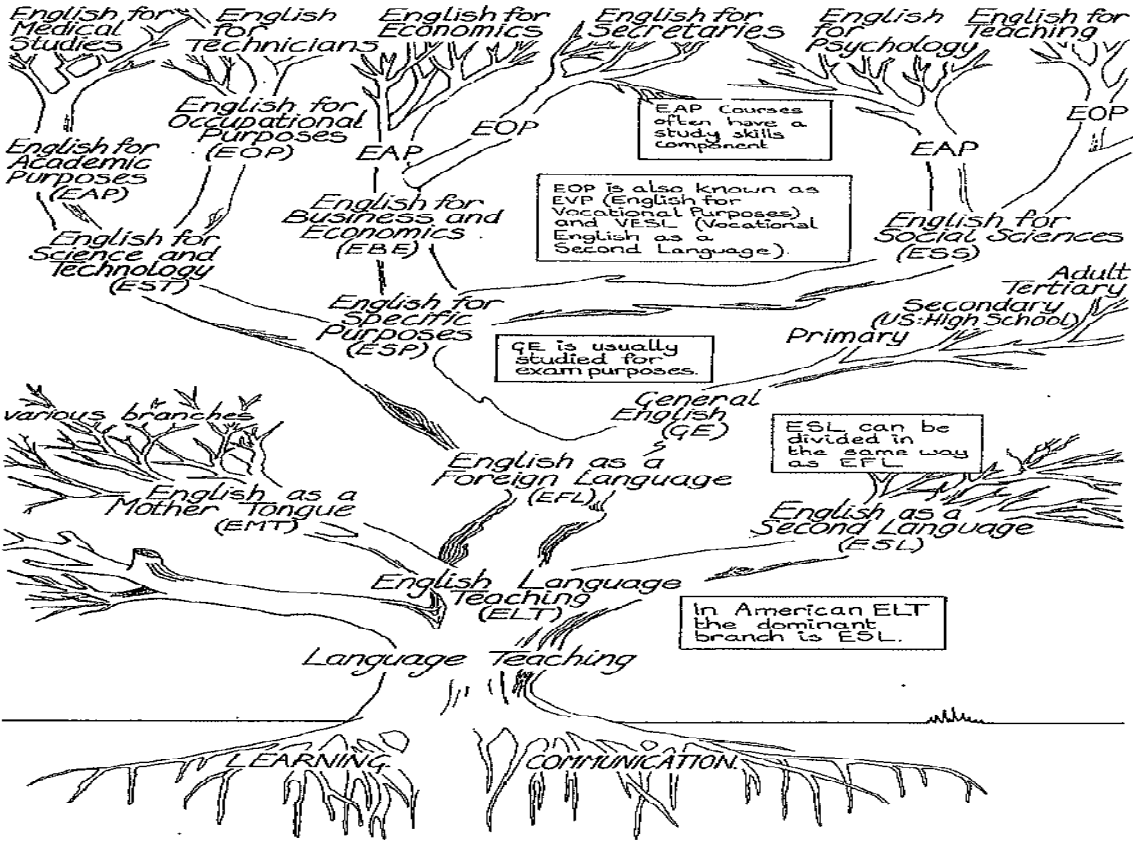
3. Types of English for Specific Purposes

English for specific purposes has various divisions. Many researchers distinguished its different types: for instance, Dudley-Evans and St John (1987), Hutchinson and Waters (1987), Carver (1983) cited in Gatehouse (2001).

According to Dudley-Evans and St. Johns (1998), ESP can be divided into: English for Occupational Purposes (EOP) and English for Academic Purposes (EAP). Focusing on the fact that English for Medical Purposes is categorized both as EAP and EOP is very crucial. In terms of EAP, among the things that could be categorized as EAP needs, is the necessity that urges medical students to read textbooks, articles and write essays. Additionally, Dudley-Evans & St. Johns, 1998 spoke about EOP needs in terms of practicing doctors' requirements such as: reading articles, preparing papers, presenting conferences, and interacting with patients in English mainly in an English speaking country.

Hutchinson and Waters (1987, p.17) elaborated an ELT tree diagram to highlight the three main branches of ESP which they named as follows: English for Science and Technology (EST), English for Business and Economics (EBE) and English for social sciences (ESS). Every one of these branches has two main other subdivisions which are; English for Academic Purposes (EAP), and English for occupational purposes (EOP).

Figure 1: Classifications of ESP: Tree Diagram



Carver (1983) made another categorization of English for Specific purposes. He mentioned three divisions: English as a restricted language, English for academic and occupational purposes and English with specific topics (EST).

As far as ESP is concerned, Carver (1983), defined English as a restricted language as the language used in order, to communicate effectively in a very specific setting. To go deeper in the explanation of this type, Mackay and Mountford (1978) dealt with the distinction between “*restricted language and common language referring to the specialized register used in the air traffic control*”.

In addition to this, English for academic and occupational purposes (EAOP) was largely debated by Carver (1983). They drew attention to the necessity of putting the English language “*at the heart of the ESP course*”. Furthermore, they claimed that English for Academic and Occupational Purposes is effective and helpful in professional and vocational purposes like English for medical technicians, English for engineers or English for business executives.

Carvers’ third type of ESP is English with specific topics; this type is divergent from the other ones because it drives its attention to the topic as a focal point rather than the purpose. Carver (1983) defined this idea as the focus on topics that are in agreement with the anticipated future English needs of learners. Example of this type includes scientists requiring English for postgraduate reading studies, attending conferences, or working in foreign institutions.

4. Definition of English for Medical purpose (EMP)

Maher (1986, p. 114) proposed that the birth of EMP concept goes back to 1960’s, which was acknowledged as a subtype of ESP. He defines English for Medical Purposes as the teaching English for the medical crew like doctors, nurses, and other personnel in the medical professions. This definition is suitable for the issue under study because it focuses on medical personnel.

Maher (1986, p.112) carried on a study which resulted into more explanations of EMP. That study targeted the fulfillment of the specific English language needs of the medical learner (e.g. nurse, dentist), valuing themes and topics specific to the medical field; in

addition to the restricted range of skills which are needed by medical learners (e.g. writing a medical paper, preparing a talk for a medical meeting).

5. Types of EMP

Maher suggested two major branches of EMP: English for Medicine for Educational Purposes (EM-EP) (as cited in Alfehaida, 2011). It is crucial to point out the view of Dudley-Evans and St John (1998, p. 49) in which they made reference to the two previously mentioned branches as: Medical English for Academic Purposes and English for Medicine for Occupational Purposes (EM-OP) respectively.

According to Maher (1986, p. 115), the priority in EM-EP is language training as an important part of medical or healthcare studies. Dudley-Evans and St John (1998, p.49) in their turn, evidenced the obligation of reading textbooks and articles and writing essays and short clinical reports; students mainly.

On the other hand, EM-OP is linked to “active professional requirements” (Maher, 1986, p. 115). This may include: consultation skills and conference presentation. In addition to this, practicing doctors in EM-OP may need to read specialist articles and prepare papers and slide presentations for conferences (Dudley-Evans and St John, 1998, p. 49).

Maher (1986, p. 115) identified and explained a set of points which are common between EM-EP and EM-OP, taking into consideration such skills as reading medical reports and sharing content. The distinction between these two branches lies in levels such as: the teaching procedures, knowledge levels and the specific purposes. The divergence is common among doctors and students as a result of the distinction in motivation or the goal of the studied branch. As a basis for the various elaborated cases, this proved that students differ because of the context which is the centre of the material to be taught.

Maher (1986, p. 116) argued that most courses in EMP are “*structured according to the essential frames*” which are: the types of the learners involved, the main groups like nurses and doctors, as well as the main purpose of the courses (e.g. teaching professional test preparation, practice in reading, writing, or doctor- nurse interaction). These two central frames can be identified and structured thanks to the analysis of needs.

The undertaken study of (Maher, 1986) conditioned by English as a foreign language. He said that EMP values much more the needs of doctors and less importance is given to medical students, nurses and paramedical staff. The results of his study showed that, in such situations, no description of the language needs of medical students and the “result is an incomplete picture of EMP in operation overseas_ in medical education especially”. Therefore, this study tried to solve the lacks and the weaknesses by targeting on one of the above mentioned situations.

6. Medical discourse

Keresztes (2010) described the medical language as a language basically used by specialists to communicate with each other. This was based on the view that medical studies have a specialized jargon that only specialists do understand because the terminology represented in the medical jargon is different from the words used in daily life.

Concerning Medical genres, they include: research articles, case reports that are rarely examined, review articles and peer reviews are some of the written genres by which one can communicate medically. Therefore, this present study considers research articles as the central focus of this study because an analysis is carried out on them to determine the different features that are characterized by medical writing.

Piqué- Angordans & Posteguillo (2006) argued that the majority of these written medical genres follow the IMRAD structure. That is to say: Introduction, Methods, Results and Discussion. The Introduction section is what this present day research focuses on to attain the main objective

As for the medical discourse overview, methodological changes in the medical field studies led to different changes in the ways in which medical proceedings like surgical procedures were described This kind of change caused a need for a specialized language or terminology in order to enable efficiency in terms of medical communication. Hence, a different way was forged in order to express medical opinions (Gotti, 2006).

Therefore, in order to analyze the specific features found in the AMRAs, it is important to explain some characteristics of the Medical English language and the restricted language of health care personnel.

In terms of vocabulary, Faulseit (1975) argues that a lot of medical vocabulary is comprised of Latin or Greek multilingual items (as cited in Laar, 1998). This was further explained based on the origin of the English language which is from a Germanic language

origin (cited in Laanza, 2005). With such an origin, combined with the great influence of Latin, one can easily explain why there is a multilingual aspect in the medical vocabulary.

Additionally, Erten (2003), observed that regarding the register of medical English, words of day to day language are used differently. That is to say, Medical English adopts a special terminology that differs from the daily language used by English speakers. For example: uterus for womb, delivery for birth...

Furthermore, concerning the abbreviations, Erten (2003), explains that some special abbreviations are used for some terms such as ABS (Acute Brain Syndrome) and IV (intravenous). She further points out that some abbreviations represent more than one meaning, for example CT is used for cellular therapy, cerebral tumor, clotting time, connective tissue and so on, so their representations can be inferred from the context. Similarly, Christy (1979, cited in Maher, 1986b) notes that doctors, in their daily conversations, frequently use abbreviations like DOA (dead on arrival) and DKA (diabetic ketoacidosis).

In terms of morphology, as cited in Maher (1986), Bakey (1966) argues that in Medical English, nouns tend to become verbs. For example: adrenalectomize was derived from adrenalectomy, laparatomize derived from laparotomy, thoracotomize originally from thoracotomy, hospitalize from hospital... furthermore, Johnson (1980) provided other transformations of such cases (as cited in Maher, 1986). For instance, medical specialists tend to use 'urinalysis' instead of urinoanalysis, or 'contraception' instead of contraconception (Johnson, 1980 cited in Maher, 1986). As mentioned before, this language tends to be used by specialists.

Additionally, the stylistic features of the medical language are unique as compared to the other written genres. As cited in Maher (1986), Ingel finger (1976) argues that the medical discourse is characterized the use of the passive voice. This may be due to the fact that it allows the foregrounding of medical terms making them the subject of the sentence. Furthermore, nouns also tend to be used as adjectives in a frequent manner (Maher, 1986, p. 119).

Furthermore, word formation of written medical English is a flexible though complicated feature. Yang (2005) argues that this linguistic feature of medical genre is comprised of two characteristics: firstly, the majority of the medical terms adhere to both roots and affixes. These affixes are further divided into prefix and suffix (Yang, 2005). Secondly, the grammatical system of the medical jargon is more of open than closed. This means that the

there is a lot of creativity in terms of word formation due to the multilingual aspect of this genre (adopted from Yang, 2005).

Conclusion:

In this section, English for Specific Purposes (ESP) was explained in terms of its distinguishing points from English for general purposes, the development process and its course types. Then, the literature about English for medical purposes (EMP) was reviewed in terms of the field of EMP and its importance, the characteristics of medical English, research studies and ways of teaching EMP. The next section deals with Genre Analysis.

Section 2: GENRE ANALYSIS

Introduction

The aim of this section has been to deal with Genre Analysis and its relating concepts and issues. These latter include: the definitions of genre and genre analysis, the approaches of GA and the models of genre analysis.

2.1. Definitions of Genre

Hyland (2004) uses the term genre to refer to grouping texts together, representing how writers typically use language to respond to recurring situations. This could be argued that genre is based on the idea that members of the discourse community have fewer problems to identify similarities in the texts regularly used and are capable to draw on their recurrent experiences with such texts to read, understand and write them relatively easily (Hyland 2006 p. 46).

Additionally, according to the works of Swales (1990, p. 58),

“A genre comprises a set of communicative events, the members of which share some set of communicative purposes. These purposes are recognized by the expert members of the parent discourse community and thereby constitute the rationale for the genre. This rationale shapes the schematic structure of the genre and influences and constraints choice of content and style. Communicative purpose is both a privileged criterion and one that operates to keep the scope of a genre as here conceived narrowly focused on comparable rhetorical action. In addition to purpose, exemplars of a genre exhibit various patterns of similarity in terms of structure, style, content and intended audience.”

Therefore, a genre is a social action and a speech event that has a communicative goal shared by the members of a particular discourse community. Discourse community is one that has a broadly agreed set of common public goals (swales, 1990).

Bhatia (1993) defines genre as:

“A recognizable communicative event characterized by a set of communicative purpose(s) identified and mutually understood by the members of the professional or academic community in which it regularly occurs. Most often it is highly structured and conventionalized with constraints on allowable contributions in

terms of their intent, positioning, form and functional value. These constraints, however, are often exploited by the expert members of the discourse community to achieve private intentions within the frame-work of socially recognized purpose(s)”

Bhatia (1993, p. 13)

It can be noticed that the definitions above by Swales (1990) and Bhatia (1993) share some common aspects like the key roles of communicative purpose and discourse community. The communicative purpose is said to identify the structure of the texts as different genres are derived from different purposes of writing. These are in turn, characterized by particular text structures and linguistic features. On the other hand, a discourse community is a group of people involved in a particular genre with a clear understanding of means and conventions of that genre.

2.2. Genre Analysis

Different definitions of Genre Analysis can be encountered in the literature. The most important and the mostly referred to in the literature are the one suggested by John Swales (1981, 1990), Richards & Schmidt (2002), Dudley Evans (1987), etc.

According to the works of Swales (1981), genre analysis is defined as “a system of analysis that can reveal a system of organizing genre” (Swales, 1981 p. 1). Similarly to Swales, Richards & Schmidt (2002) viewed genre analysis as an approach to text analysis which seeks to discover the communicative purposes of the genre as well as the different stages that writers go through to fulfill the function of genre. Genre Analysis may also study the way the schematic structure of a given genre is realized linguistically.

Dudley Evans (1987) described genre analysis as having characteristic aspects of style and form that are recognized by those who used it. As cited in Jordan (1997), Dudley Evans used an example of the research article, to argue that there is a clear public purpose and conventions about the standardized structure and style.

Additionally, Robinson (1991) defined genre analysis as an approach that considers the role of the language within texts and looking at the text as a system of features and choice. Thus, it is the communicative purpose of the text which constrains the language choice. This idea was supported by Bhatia (2004) who asserted that both of the shared purposes and the communicative events are important elements of any genre, that is to say the linguistic

features of the genre and the conventions are important alongside the role considered by the communicative event and the common purposes (Bhatia 2008, p. 14).

Therefore, we can conclude that, genre analysis refers to the study of contextualized linguistic behavior (swales, 1990 and Bhatia, 1993). This in turn can be helpful to the medical researchers and non-native speakers because it gives a description of language used in a specific context. And in reference to our study, genre analysis is a process of looking at several samples of a particular genre to analyze their move structure, sequencing, lexicogrammatical features and the different communicative purposes.

2.3. Objectives of Genre Analysis

GA has various objectives among which: understanding the realities of the world of texts, provide an excellent linguistic description of the text in study, investigate instances of institutionalized textual artifacts in the disciplinary practices, procedures and cultures, understand how members of specific discourse communities formulate, interpret and use these genres to achieve their community goals and find out why a discourse community writes these genres the way they do (Swales, 1990).

2.4. Approaches to Genre Analysis

In applied linguistics, there are three approaches to Genre: The English for specific purposes (ESP) approach by Swales (1990) and Bhatia (1993), the functional-systemic approach by Australian students of Mak Halliday like Martin (1992), Martin and Rose (2008) and The New Rhetoric approach by A.M.Johns and Miller.

a- The ESP Approach

ESP scholars like Swales (1990) and Bhatia (1993) paid attention to deep formal characteristics of genres and gave less focus on the specialized functions of texts and their surrounding social contexts (Helan, 2012).. This resulted in a distinctive method of genre analysis called structural move analysis. Swales (1990) explored academic genres such as research article while Bhatia (1993) focused more on business and legal genres. Their aim was pedagogic in nature, (i.e.) to help the development of ESP materials and pedagogy. Subsequently, it is believed that a text is composed of a number of moves and steps that serve communicative purposes. Basing on this idea, Swales proposes a model which he called CARS (Create a Research Space) to analyse the research article introductions. Bhatia, on the other hand, suggested a model for the analysis of sales letters. Moreover, the aim of the

analysis of the different genres is to display their generic structure and distinctive features to non native speakers of English (cited in Helan, 2012).

In addition to this, the ESP approach is concerned with the analysis of the lexico-grammatical features of the sentences in both academic and particular disciplinary discourses. The research of those features includes hedges, passive and active forms, personal pronouns and verb tense. The present study follows an ESP approach since it focuses on the analysis of Medical Research Articles in terms of move structure, lexicogrammatical features and the communicative purposes. It attempts to reveal their generic structure and to analyse their lexico-grammatical features in terms verb tense and passive and active form and the communicative purposes.

The Swales CARS Model has been used to analyse research articles (research perspective), and to teach academic writing (pedagogical perspective). But the use of this approach by Swales with “consciousness raising “rather than overt teaching (Flowerdew, 2011) Arguments in favour of its use in teaching claim that it provides non-native speakers with linguistic and rhetorical tools needed to cope with tasks required of them (Dudley Evans, 1997). Another approach with a similar view of genre analysis is introduced in the next phase.

The Australian Approach

The Australian approach also known as the Sydney school or the systemic functional linguistics school (SFL), designed as theory of text in social context. It is social in perspective and is associated with the works of Halliday and Martin on the systemic functional linguistics, which aims to show the relation between the forms and functions of discourse and texts which constitute the main characteristic of specific genres. Hyland (2007:153) considers the Sydney School as *‘perhaps the most clearly articulated approach to genre both theoretically and pedagogically.’*

Systemic Functional Grammar viewed language as performing three major functions (meta-functions): the ideational function, the interpersonal function, and the textual function. These are closely related to different registers or language which base on key elements of the surrounding social context called field (the ongoing activity), tenor (the relationship between participants) and mode (the channel of communication). These three elements together determine the register of the language (Halliday, 1993)

There are many differences between ESP and SFL genre approaches, these also share many similarities. As far as similarities are concerned, scholars tend to teach different genres explicitly meaning they are more interested in the construction of models and materials for teaching genres (Hyon, 1996). Concerning the differences, SFL focuses on teaching basic genres structures to primary and secondary schools students, whereas ESP emphasizes on teaching professional and academic genres to university and graduate level students.

Unlike these SFL and ESP approaches, the third approach called New Rhetoric School takes into account the social context rather the language. This next approach is explained in the next stage.

The New Rhetoric Approach

This approach is followed by scholars like A. M. Johns and Miller. The New Rhetoric Approach is also known as North American Genre Theory. It studies genres in social context, rather than its linguistic forms differently from the ESP and SFL approaches. According to Hyon (1996), this approach also focuses on social purposes and actions being the outcome of such purposes, within a particular setting.

This approach suggests that Genre Analysis Methodologies need to be ethnographic rather than linguistic. Thus, researchers should conduct their studies on issues as attitudes, beliefs, values and patterns of behaviour of the discourse community involved in the Genre. In so doing, more importance is given to the “context of situation”. In comparison to the works of Coe (2002) cited in Flowerdew (2011 p. 132), argues that, in this context, “genres are not text types because, they imply/invoke/create/reconstruct situations (and contexts), communities, writers and readers (that is, subject positions).

Therefore, New Rhetoric Studies focus on the situational contexts in which genres occur than their forms and place more emphasis on the social purposes fulfilled by these genres within these situations.

In a nutshell, there are three approaches to genre analysis: the ESP approach, the SFL approach, and the North American Rhetoric approach. The goal of the ESP approach is to provide students or professionals with a guide for communication. Thus, this approach adopts a structural moves analysis framework in an EAP, tertiary education, and second language context. On the other hand, the Australian approach considers primary, secondary and adult migrant education as context. Thus, they adopt an explicit genre description framework in

order to empower students. Last but not least, the New Rhetoric approach promotes students' awareness of social action genres in the context of native tongue tertiary education. Thus, no explicit framework is followed.

2.7. Models of Genre Analysis

ESP genre theorists and scholars proposed many frameworks to genre analysis. Scholars as Bhatia, Swales and Hyland who are pioneers the area of Genre Analysis, conducted analyses of different genres and came out with universally common models of genres.

Bhatia (1993) developed the Genre Model further, by suggesting a framework for the analysis of ESP texts (Bhatia, 1993, 2004). This frame-work was comprised of steps as shown in the figure below:

Figure 2: Bhatia (1993) Genre Analysis Model

Step 1: Placing the given genre-text in a situational context

Step 2: Refining the situational/contextual analysis

Step 3: Surveying existing literature

Step 4: Selecting corpus

Step 5: Studying the institutional context

Step 6: Levels of linguistic Analysis: is divided into three sub-levels,

Level 1: Analysis of lexico-grammatical features

Level 2: Analysis of text-patterning or textualisations

Level 3: Structural interpretation of the text-genre

Step 7: Specialist information in genre analysis: suggests that the analyst consults a specialist informant, typically a practicing member of the discourse community.

In this model, Bhatia claimed that the steps sequencing can be varied. Thus, the analysis of the texts should neither necessarily follow the organization of the seven steps as shown in figure 02 above nor be tied to it (Bhatia, 1993).

Furthermore, as cited in Sabouri (2013, p. 485) Bhatia (1994) proposed a four move model of research abstracts. He argued that, abstracts should provide information on four aspects of the research article. This model is made up of the four moves as follows:

Figure 3: Bhatia's (1994) Model of Research Abstracts

Move 1: Introducing the purpose;

Move 2: Describing the methodology;

Move 3: Summarizing the results;

Move 4: Presenting the conclusions;

In his model, Swales affirmed that genres are purposive and that the communicative purpose is realized by a move structure that is realized by rhetorical strategies. In his analysis that was based on 48 research articles, Swales (1981, 1983, and 1984) recognized a move pattern of four moves that seemingly occurred the introduction section: 1) establishing the field, 2) summarising the previous research 3) preparing for the present research and 4) introducing present research (in Jordan, 1997).

In 1990, Swales further studied the previous model in which he identified a pattern used in the introduction section of English research articles that he called CARS. The CARS (Create a Research Space) model includes three moves that are in turn made up of steps: Move 1: Establishing a territory comprised of three steps: Step 1 (Claiming centrality) and/or Step 2 (Making topic generalizations) and/or Step 3 (Reviewing items of previous research), Move 2: Establishing a niche with four steps: Step 1a (Counter-claiming) or Step 1b (Indicating a gap) or Step 1c (Question-raising) or Step 1d (continuing a tradition) and Move 3: Occupying the niche with three steps: Step 1a (Outlining purposes) or Step 1b (Announcing present research) Step 2 (Announcing principle findings) and Step 3 (Indicating Research article structure) as shown in table 03.

2.8. Elements of the CARS model.

The CARS model is composed of three moves. In its turn, each move is composed of a number of steps. In addition to the analysis of the move structure and sequencing, the CARS model also examines the communicative purposes of moves and steps, and the lexico

grammatical features of the moves and steps. Genre analysis in general and CARS in particular also includes a study of Hedging.

a)The move analysis

Move in genre analysis “is a discursual or rhetorical unit that performs a coherent communicative function in a written or spoken discourse” (Swales, 2004, p.29).

A move structure is comprised of moves, steps and the way they are organised. Each move has its own purpose and helps to achieve the whole communicative purpose of the genre. Steps are the elements that make up the move. So, the technique that is used in ESP to unveil these moves is called move analysis (Swales, 1990; Bhatia, 1993).

According to the works of Swales (1981, 1983, and 1984), four moves usually appear in the introduction section of research articles:

- 1) establishing the option,
- 2) summarising the previous research
- 3) preparing for the present research and
- 4) Introducing present research (in Jordan, 1997).

With these findings, Swales revised this model in 1990 and identified a pattern used in the introduction section of English research article that he called CARS including three moves and a number of steps as represented in the table below;

Table 3: the Create a Research Space model (Swales, 1990)

<p>Move 1: Establishing a territory</p> <p>Step 1. Claiming centrality and/or</p> <p>Step 2. Making topic generalizations and/or</p> <p>Step 3. Reviewing items of previous research</p>
<p>Move 2: Establishing a niche</p> <p>Step 1a Counter-claiming or</p> <p>Step 1b Indicating a gap or</p> <p>Step 1c Question-raising or</p> <p>Step 1d continuing a tradition</p>
<p>Move 3: Occupying the niche</p> <p>Step 1a Outlining purposes or</p> <p>Step 1b Announcing present research</p> <p>Step 2 Announcing principle findings</p> <p>Step 3 Indicating Research article structure</p>

Move 1: Establishing a Territory

Here, the author sets the context for the research by providing necessary background on the topic using one or more of the following steps (Swales, 1990)

Step 1: Claiming Centrality

The author asks the discourse community (the audience for the paper) to accept that the research about to be reported is part of a lively, significant or well established research area. To claim centrality the author might write: "Recently there has been a spate of interest in" Or "Knowledge of X has great importance for . . ." (Swales, 1990)

Step 2: Making Topic Generalizations

The author makes statements about current knowledge, practices, or phenomena in the field. For example: "The properties of X are still not completely understood." **Or** "X is a common finding in patients with . . ." (Swales, 1990)

Step 3: Reviewing Previous Items of Research

The author relates what has been found on the topic and who found it. For example: "Both Johnson and Morgan claim that the biographical facts have been misrepresented."
"Several studies have suggested that . . . (Gordon, 2003; Ratzinger, 2009)."

"Reading to children early and often seems to have a positive long-term correlation with grades in English courses (Jones, 2002; Strong, 2009)."

In citing the research of others, the author may use *integral citation* (citing the author's name in the sentence, as in the first example above) or *non-integral citation* (citing the author's name in parentheses only, as in the second and third examples above). The use of different types of verbs (e.g., *reporting verbs* such as "shows" or "claims") and verb tenses (past, present perfect, or present) varies across disciplines (Swales, 1990).

Move 2: Establishing a Niche

In this move, the author argues that there is an open "niche" in the existing research, a space that needs to be filled through additional research. The author can establish a niche in one of four ways:

Step 1a: Counter-claiming

The author refutes or challenges earlier research by making a counter-claim. For example: "While Jones and Riley believe X method to be accurate, a close examination demonstrates their method to be flawed." (Swales, 1990)

Step 1b: Indicating a gap

The author demonstrates that earlier research does not sufficiently address all existing questions or problems. For example: "While existing studies have clearly established X, they have not addressed Y." (Swales, 1990)

Step 1c: Question-raising

The author asks questions about previous research, suggesting that additional research needs to be done. For example: "While Jones and Morgan have established X, these findings raise a number of questions, including . . . (Swales, 1990)

Step 1d: Continuing a Tradition

The author presents the research as a useful extension of existing research. For example: "Earlier studies seemed to suggest X. To verify this finding, more work is urgently needed." (Swales, 1990)

Move 3: Occupying a Niche

Here, the author reveals the solution to help fill the gap, answer the specific question or continue a research tradition that has been presented in **Move 2**. (Swales, 1990)

Step 1A: Outlining Purposes

The author indicates the main purpose(s) of the current article. For example:
"In this article I argue . . ." "The present research tries to clarify . . ."(Swales, 1990)

Step 1B: Announcing Present Research

The author describes the research in the current article. For example:
"This paper describes three separate studies conducted between March 2008 and January 2009."(Swales, 1990)

Step 2: Announcing Principal Findings

The author presents the main conclusions of his or her research. For example:
"The results of the study suggest..." or "When we examined X, we discovered"(Swales, 1990)

Step 3: Indicating the Structure of the Research Article

The author previews the organization of the article. For example: "This paper is structured as follows" (Swales, 1990).

a) Analysis of the communicative purpose

Based on the Swales' (1990) CARS framework, the moves identified in the Introduction sections of Medical Research articles can be described rhetorically using a problem-solution model. Thus, all the moves form communicative purposes or rhetorical purposes. This kind of analysis is applied in this study to complete the analysis of the communicative purposes of the moves identified in the corpus.

Furthermore, Aristotle, the father of rhetoric, described the three main types of rhetorical appeal as: Pathos (emotions), Ethos (credibility) and Logos (logic). Similarly, computational linguists Teufel and Moens (2002, p.412), explained that scientific work seemingly does not have Pathos in the strictest sense but rather appeals to different social purposes including persuasion. In their study of the types of appeals found in scientific writing, further divided the rhetorical components of scientific writing into three other categories as follows: Firstly, Rhetorical status in terms of problem solving: What is the goal and contribution of the paper? Secondly, Rhetorical status in terms of intellectual attribution: What information is claimed to be new, and which statements describe other work? Lastly, Relatedness among articles: What articles is this work similar to, and in what respect?

Similarly, as suggested by Teufel and Moens (2002) these features have been adapted in the present study in an attempt to identify the communicative purposes of each moves and steps. Especially, the prominent four structures: problem- solution, scientific argumentation,

intellectual attribution and attitude towards other people's works. "Problem-solution": through problems that is to say the gap in the previous studies and solutions that can be revealed in the purpose. The "intellectual attribution" structure where in, authors do two things for their work stand out: show how they have used existing works by others as a foundation from which they build, and compare their work to the work of others, cited or discussed, either negatively or positively. The "Scientific argumentation" structure in which scientific authors use to convince the reader that their work is valid and beyond reproach. "Attitude towards other people's work" is a structure used by authors to pass judgment on previous studies.

C) Analysis of the Lexico-grammatical features

This kind of analysis focuses on the specific language features of the text. It brings to fore the common features in a text, the linguistic realization of the moves like the use of verb tenses and the voice. Similarly, this study will use the mentioned features to complete the analysis.

For instance, an analysis of a text in terms of word classes, tenses, or clauses used and determine the frequency of these specific features (Bhatia, 1993, p.25). This method enables researchers to determine whether language users successfully use the appropriate tenses and voice in each move.

Bhatia still draws emphasis on the limitations of this kind of investigation as it does not give much information on the communicative purpose. All analyses of these lexico-grammatical features emphasize on surface features (Bhatia, 1993, p.25).

d) The study of Hedging

According to Swales (1990) hedges are rhetorical devices to protect one's reputation as a scientist. As cited in Jordan (1997), Hedging represents academic writing to indicate the writer's commitment in different levels. Thus, by using hedges the authors indicate their attitude toward their utterances. Hedges could be expressed in different ways like: Modal verbs (may, might...etc), lexical verbs (seems, appear, suggest...), Modal adverbs (probably, possibly, apparently...), Modal adjectives (certain, probable, undoubted....), Modal nouns (assumption, possibility...), Expressions (like "I believe""to our knowledge" which express the author's doubt or direct involvement...), Non numerical -vague quantifiers(lots of, a bit of, several. ...), emotionally-charged intensifiers (like extremely interesting, particularly encouraging, unexpectedly) (Jordan, 1997, p.240-242)

Hedges expressing tentativeness and possibility, according to earlier studies are central elements of scientific communication, especially of MRAs (Myers, 1989, Hyland, 1998). Furthermore, hedging is used to express that the information presented may not be certain or precise.

Therefore, hedging is primarily used by researchers to express caution in all sections of the research article. This may be done by using a modest way to present their own contribution or research. For instance: they indicate the possible limitations, inaccuracies and weaknesses of the research or draw conclusions and generalizations by expressing caution.

In addition to the preceding models, Hyland (2000) proposed five moves to analyse academic abstracts. These include: introduction, purpose, method, product and the conclusion. These moves consist of steps as shown in figure 05 below:

Figure 4: Hyland’s (2000) model of RA abstracts

- 1. Introduction** (Establishes context of the paper and motivates the research.)

 - Step 1:** Arguing for topic prominence,
 - Step 2:** Making topic generalizations,
 - Step 3:** Defining terms, objects, or processes,
 - Step 4:** Identifying a gap in current knowledge

- 2. Purpose** (Indicates purpose, thesis or hypothesis, outlines the intention behind the paper.)

 - Step 1:** Stating the purpose directly

- 3. Method** (Provides information on design, procedures, assumptions, approach, data, etc.)

 - Step 1:** Describing the participants
 - Step 2:** Describing the instruments or equipment
 - Step 3:** Describing the procedure and conditions

- 4. Product** (States main findings or results, the argument, or what was accomplished.)

 - Step 1:** Describing the main features or properties of the solution or product

- 5. Conclusion** (Interprets or extends results beyond the scope of the paper, draws inferences, points to applications, or wider applications.)

 - Step 1:** Deducing conclusions from results,
 - Step 2:** Evaluating value of the research,
 - Step 3:** Presenting recommendations

(Adopted from Sabouri, 2013 p. 486)

Conclusion:

Having dealt with notions related to Genre Analysis that are significant to this present day study, previous works done by different researchers around the world in relation to this study are presented in the section that follows.

Section 03: Previous studies

This space is dedicated to providing an overview of studies that were carried out on Genre Analysis throughout the different parts of the world. Studies conducted within the field of medical English are dealt with firstly and then other studies in English for specific purposes are provided.

Davis, Richard Hill (2015), conducted studies in genre analysis of Medical Research Articles in which he looked at the significance of GA on language learners and language users. By understanding the features and contexts of a genre it assists learners and users to have the know-how of the prospective impact on the text from its context. Reviewing a text from the view point of GA makes it possible to infer a number of expectations of the users of that genre.

Alexandra Csongor (2013) conducted a research on Rhetorical Moves and Hedging in Medical Research Articles and their Online Popularizations. The results of the study concluded that discourse structure of popularization is quite different from the medical research papers. Furthermore, the study provided a detailed rhetorical and lexico-grammatical analysis of Medical Research Articles. She interpreted lexical devices and compared some aspects of linguistic phenomena in two genres.

Nasrin Sayfour (2010) did a contrastive study on Iran and United States of America research articles and discovered that there are differences and similarities in linguistic and cultural aspects between the rhetorical styles used in Systemic and ESP Genre analysis of English Research Article in Iran and English American Medical Journals.

Li and Ge (2009), used Nwogu's research findings of the eleven moves that were found in the introduction section of medical research articles to analyze the frequency of occurrence of these moves as a part of their study that was comprised of two corpora: corpora A included twenty-five RAs published between 1985 and 1989 and corpora B, 25 RAs published between 2000 and 2004.

Ricart Vayá (2008) discovered four moves in the conclusion section of the English and Spanish medical RAs. The conclusion was divided into Background, Summarizing, Limitation and Further Research. Despite the similarities that were established, there are

differences in the way moves are realized in these languages. Additionally, the study established equivalences between the linguistic patterns of the moves.

Mahzari (2007) analyzed the introduction section of English medical RAs and Iranian ones in Persian Language and discovered that there are similarities concerning move frequency. Furthermore, it was established that there are radical differences in terms of realization of moves in these two languages. (Mahzari, 2007). In that respect, the realization of the moves is similar to Nwogu's Sub-moves.

Daniel Lees Fryer (2007) used a Multidimensional Genre- Based Discourse Analysis of a Corpus of English Language Research Articles in which he used a broad analytical perspective as a way of describing the generic features of the written medical research articles.

Méndez-Cendón and López-Arroyo (2003) exposed that semantic strategies used in scientific research papers in the abstract section. There were some rhetorical and phraseological structures essential genres to scientific knowledge such as collation, irreversible binomials, idioms, routine formulae and combinatorial patterns.

Marco (2000) employed a genre methodology to study the grammatical frameworks of the medical research paper. The study scrutinized the use of collocation framework or discontinuous sequences of words in medical research articles. The study discovered the intermediate words or collocates were used in the medical frameworks.

Nwogu (1997), examined the moves deployed in different sections of medical RAs (1997, p 120). The medical RAs used schematic structure of information which were used by Swales' (1981, 1990) in genre analysis model. However, Nwogu employed the model beyond the introduction by applying it to the whole body of the research article.

Gledhill (1995) tried to assimilate the ethnographic approach used in Swales' genre analysis with the phraseology analysis of Sinclairs' corpus linguistics as a way to characterize the phraseology of grammatical items sections such as Titles, Abstracts, Introductions, Methods, Results and discussions in 150 articles of cancer. The study discovered that collocation differs systematically from a rhetorical section to another. The notion of phraseology was suggested as an articulating and delimited set of semantic and communicative roles.

Skelton (1994) used Swales' (1990) move analysis framework to analyze 50 original research papers that were published in the British Journal of General Practice. In his study, he described the structure of the above mentioned research articles. The aim of his work was to provide a guideline for the researchers and trainers on how to successfully write and teach medical language based on the medical research articles.

Salager-Meyer (1994) attempted to determine how the communicative purpose of the different rhetorical sections of research papers and case reports in medical English written discourse influences the frequency and category distribution of hedges used in each section. The results indicated that the Discussion/comment sections are the most heavily hedged sections, whereas the Methods and the Case Report sections are the least-hedged rhetorical divisions (Salager Meyer, 1994).

Now other studies conducted in other ESP cases;

Handelshojkolen I Arhus (2005) carried out a descriptive and analytical research on parts of texts from a system description for a technical system. His analysis was based on six texts that form parts of a complete technical description of a system for handling pallets with piles of cardboard. The primary objective of his analysis was to establish the homogeneity of the six texts in terms of genre and then the applicability of the analytical model on the used genre texts.

Vijay K Bhatia (2002) carried out a research that attempted to understand and resolve the tension between two seemingly contentious perspectives to answer the question: is generic description a reflection of reality, or a convenient fiction invented by applied linguists?

Inger Askehave (1999) examined medical case-reports focusing on the notion of communicative purpose as a means for classifying these medical case-reports primarily and also the general difficulties associated with the functional approaches to genre classification as a whole.

Conclusion:

In conclusion, genre analysis is applied to different fields to offer a clear description of language in specialized contexts. Texts are identifiable through form, purpose, theme, writer and intended reader as opposed to merely perceived as form and content. Additionally, genre is no longer seen as the socio pragmatic form in which content is reflected. This is proved in our following chapter that presents details of this methodology.

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CHAPTER TWO: METHODOLOGY AND DATA ANALYSIS

Introduction

This chapter has two main objectives. To start with, it seeks to describe and explain the methodology of the recent research project. In addition, it presents analyses and reports the result of the research. As a result, two main sections have been proposed to achieve the two objectives: section one attempts to introduce the research methodology, section two concerns the analysis of the results.

Section 1: Methodology

Introduction:

This section presents the research methodology applied in this study. It includes the following parts: purpose of the study, statement of the problem, research questions, research context, analytical frame work (CARS model), corpus description, research assumptions, and the tools for data analysis.

2.1 The purpose of the study

The aim of this research work is to analyze the move structure, the lexico-grammatical features and the communicative purposes of Algerian Medical Research Articles (as the corpus) that were retrieved from an internet site called Hindawi.

2.2 Research questions

There are three research questions dealt with in this present research work,

- 1) What move structure do Algerian Medical Researchers adopt in these research articles?
- 2) How are these moves realized to depict the communicative purpose?
- 3) What lexico- grammatical features are present in these articles?

2.3 Statement of the problem

In Algeria, university professors- researchers, carryout research, and publish them in international journals in the English language. English is used as the language of international publication. Considering, that all these Algerian professors- researchers use French as a means of communication for academic and professional purposes, English is only the second foreign language. This raises the need for the determination of their English writing proficiency and efficiency. Meanwhile, until now, no research work has been carried out to

describe the features of medical research writing of these Algerian researchers published in English in international journals.

2.4 The description of the research context

This research focused on Algerian Medical Researchers, that is to say, Algerian university lecturers in the faculties of medicine who are concerned with doing scientific research about medical issues in Algeria.

The medical researchers were doctors, teachers or professors that carry out scientific research about medical issues in Algeria whose articles were published in international journals with indexed data bases. Their tasks are therefore, to carry out scientific research about medical issues, publish their findings in international journals for visibility and credibility and transfer medical knowledge through writing articles about their findings and all medical cases.

There are twelve medical faculties in Algeria according to American board of addiction; foreign medical schools in Algeria; faculty of Medicine Bone, I.N.E.S.S.M. Mostaganem, I.N.E.S.S.M. Tizi-Ouzou, University Institute of Tlemcen, Institute of Medical Sciences Sidi-Bel-Abbes, Institute of Medical Sciences of University of Setif, Institute of Medical Sciences , Annaba, Institute of Medical Sciences Batna, National Institute of Higher Education In the Medical Sciences, University of Alger, National Institute of Higher Education In the Medical Sciences, Constantine, National Institute of Higher Education In the Medical Sciences, Oran; University of Blida.

Among the types of medical research writing, we can mention: research articles, case reports and medical reviews. The present study focused on the genre of medical research article, and targeted the introduction of these. What follows is a description of the corpus of texts used in this study.

2.5 The corpus of text.

The corpus of texts involves the eleven research articles produced by Algerian Medical Researchers in International Journals registered under Hindawi, which is an online research publisher.

Hindawi is one of the world's largest research publishers in the world, with Open Access Journals indexed by particular data bases and abstracts. These journals are peer-reviewed. They include many areas of science, technology, medicine and social science. They

display research writings published in eminent research databases and journals like the Web of Science, Scopus, PubMed, INSPEC, Mathematical Reviews, and Chemical Abstracts as well.

For this study, eleven texts were selected for analysis. Eight articles were published in the journal of BioMed Research International, one article in Neurodegenerative Disease, another in Canadian Respiratory Journal, and one in International Journal of Experimental Diabetes. For medical specialization, Genotyping, Pompe Disease, Cancer, Epidemiology, Dietary, Genes Coding, Air Pollution, Diabetes, each have one article apart from Bacteriocin that has three articles. This research was carried out in different laboratories of different Algerian universities namely: the universities of Oran and Algiers with three article each, the University of Constantine with two articles and for the University of Annaba, Tlemcen and Bejaia with one article each. The lengthiest article has fourteen pages, followed by three articles with eleven pages each, one article with ten pages, three articles with nine pages each, two articles with seven pages each and one article with six pages. All these texts were written by collective authors.

2.6 The analytical framework (CARS model).

The analytical framework used in this research work concerns Swale's CARS model of 1990. The following paragraphs describe the CARS model in terms of definition, features and objectives, advantages and how to use it in this context.

According to Swales (1990), there is a standard structure for scientific articles known as IMRAD. This stands for; Introduction, Methods, Results and Discussion. He introduced a model that studies the introduction section of a research article which he called the CARS model. This model (CARS), which stands for Creating a Research Space as suggested by Swales (1990), refers to the analysis of the organization of the introduction section of a research paper. In his analysis, Swales (1990), expresses each rhetorical move via steps. These moves are referred to as "discoursal or rhetorical units that perform a coherent communicative function in a written or spoken discourse" (Swales, 2004.p. 228), and steps as the elements that make the move.

The CARS model (Swales, 1990), describes the introduction in terms of three basic moves; 1) establish a territory, 2) establish a niche, 3) occupy the niche, as represented below;

Table 4: the CARS model adapted from John M. Swale’s Genre Analysis, 1990

<p>Move 1: Establishing a territory</p> <p>Step 1. Claiming centrality and/or Step 2. Making topic generalizations and/or Step 3. Reviewing items of previous research</p>	}	situation
<p>Move 2: Establishing a niche</p> <p>Step 1a Counter-claiming or Step 1b Indicating a gap or Step 1c Question-raising or Step 1d continuing a tradition</p>	}	problem
<p>Move 3: Occupying the niche</p> <p>Step 1a Outlining purposes or Step 1b Announcing present research Step 2 Announcing principle findings Step 3 Indicating Research article structure</p>	}	solution

The afore mentioned moves and steps are used in this research to analyze the introduction section of the Algerian Medical Research Articles. Thus, focus on the move analysis by means of the moves that are present in these articles and the sequence they follow. Additionally, an analysis of how each move is realized and what authors do in each move, to determine the steps used in each move to accomplish a communicative purpose. Lastly, analysis of the number of main verbs used in each tense(past, present and future), the tense that is mostly used in order to inform students on how they should write each move in its

appropriate tense, and also the voice in which these verbs are used, whether active or passive. This is to determine the lexico- grammatical features present in the research articles.

The objectives of the CARS model are;

- a) To analyze the introduction section of English Research Articles
- b) To identify a series of moves common to a specific genre
- c) To describe the content and linguistic choices most commonly observed in a genre.

The CARS model has got many advantages among which: the description of the introduction section of scientific research articles in terms of three basic moves, 1) establish a territory, 2) establish a niche, 3)occupy the niche; and the identification and realization of moves by specific grammatical and lexical markers.

2.7 The tools of data analysis.

The move structure and lexico- grammatical features of the selected texts were analyzed using Microsoft excel. Therefore, statistical tables and diagrams were used to present the results.

Conclusion

This section described how the CARS model, as presented by Swales(1990), was applied in this research work to study the moves structure, lexico- grammatical features and the communicative purpose of Algerian Medical Research Articles as published by Algerian Medical Researchers on Hindawi. This helps one understand how these researchers write. A profound analysis of the corpus using CARS model is presented in the following section.

Section 2: Data analysis

Introduction:

The aim of this section is to provide a descriptive analytical framework of the corpus (eleven Algerian Medical Research Articles) based on move analysis, the communicative purpose and the lexico- grammatical features.

2.1. Move analysis

The aim of this stage was to determine the move structure of the Introduction section of AMRAs. Eleven articles were analyzed. The table below represents moves and steps that are present in the corpus.

Table 5: move analysis of AMRAs Introduction section

Moves and steps	Number of occurrences	Absolute frequency (%)
Move 1	11	100
Step 1	7	63.6
Step 2	11	100
Step 3	8	72.7
Move 2	9	81.8
Step 1A	1	9.1
Step 1B	8	72.7
Step 1C	0	0
Step 1D	0	0
Move 3	11	100
Step 1A	5	45.5
Step 1B	6	54.5
Step 2	0	0
Step 3	0	0

A. Move structure

As shown in the table 05 above, it can be noticed that all the three moves (**Move 1:** establishing a territory, **Move 2:** establishing a niche and **Move 3:** occupying the niche), are

present in the Introduction section of the eleven articles of the corpus. Moves 1 and 3 occur in all the articles of the corpus with a frequency of 100% and Move 2 appears with a frequency of 81%. This means that all of the three moves are obligatory in Algerian Medical Research Articles although it is hard finding all the three moves with an absolute frequency of 100%. That is why Move 2 appears with a frequency of 81%. This indicates that two medical research articles of the corpus did not have this move. That is to say, authors of articles X and XI concentrated on presenting their medical situation using some steps of Move 1 and reported the purpose of their research through strategies of Move 3.

B. Step use

As for the steps which constitute each move, it can be observed from the table 05 above that, all the eleven articles have the three steps (Step 1: claiming centrality, Step 2: making topic generalizations and Step 3: reviewing items of previous research) that make up Move 1. Step 1: claiming centrality has a frequency of 63%. This means that authors of the rest of the four articles in the corpus consider claiming centrality as an optional step. Step 2: making topic generalizations appears 100% in the corpus. Thus, authors of AMRA consider it essential to make topic generalizations in the introduction section of their articles. And, Step 3: reviewing items of previous research has a frequency of 72%. Authors consider it an important step to fulfill the first Move which is establishing a territory. Therefore, in this corpus, all the above three steps of Move 1 are obligatory according to the authors in order to fully describe and give a proper layout of the research area.

Furthermore, concerning the steps of Move 2, step 1A: counter-claiming is non obligatory because it appears with a frequency of 9%: it only occurred in one article of the corpus. Step 1B: indicating a gap is obligatory with 72% as frequency. Authors used this step in order to show a gap or problem that needs to be solved which consequently show how important their choice of research area is because it provides a solution to what previous research was not able to do. Step 1C: question-raising is non obligatory with 0% as well as step 1D: continuing a tradition with 0%. This means that authors prefer to indicate a gap in the previous research as a way of establishing a niche that is to be filled in Move 3 using one of the steps.

In addition, with the steps of Moves 3, step 1A: outlining purposes has 45%. That is to say, it is optional. Authors can either use or not. This depends on what their area of research is about. Step 1B: announcing present research is obligatory with 54%. Authors use this step to

provide the discourse community with the reasons why they carried out that specific research and also reveal a solution to the gap that was indicated in move 2. Both steps 2 and 3(announcing principle findings and indicating research article structure) are non obligatory with 0% each. This means that Algerian Medical Researchers do not announce their research findings in the introduction section.

C. Move sequencing

The table below shows the sequencing of Move 1(establishing a territory), Move 2(establishing a niche) and Move 3(occupying a niche) in the Introduction section of AMRAs.

Table 6: move sequencing of the introduction section of AMRAs

Articles	Move sequencing
I	M1- M2 - M1- M3
II	M1 – M2 – M3
III	M1-M2-M1-M3
IV	M1-M2-M1-M3
V	M1-M2-M1-M3
VI	M1-M2-M1-M3
VII	M1 – M2 – M3
VIII	M1-M2-M1-M3
IX	M1-M2-M1-M2-M1-M3
X	M1-M3
XI	M1-M3

As shown in table 06 above, authors always start with Move 1(establishing a territory) at the beginning of their articles in order to establish the primary subject area of the problem that the article will discuss. It is in this move that authors focus on their research area and draw the reader’s attention to the importance of their field. This Move is followed by Move 2 (establishing a niche) in which authors present a problem that their research intends to solve. This brings us to Move 3(occupying a niche) where a solution to the problem is revealed. Authors of some articles like II and VII follow this pattern exactly whereas others mix it. For instance in articles I, II, III, IV, V, VI, VIII and IX, authors begin with Move 1 then Move 2 and go back to Move 1 then Move 3. This pattern is a result of step sequencing. Having

presented the problem, authors provide more information in terms of topic generalizations. This step belongs to Move 1. That's why the Move pattern is M1-M2-M1-M3 for those articles. Some authors completely leave out Move 2 as shown in articles X and IX. Thus the Move sequence M1-M3. This pattern appeared in the articles of the corpus where authors were presenting diagnosis. This explains the pattern because all they did was a reporting of disease diagnosis. We can affirm that AMRAs follow Swale's 1990 CARS model a technique used to analyze the introduction section of the medical research articles. M1-M2-M1-M3 move pattern is dominant in AMRAs.

D. Step sequencing

The table below shows how steps are arranged in the introduction section of the AMRAs. The steps are numbered according to the moves. For example, Move 1, Step 1 is represented in the table below as: (1, 1), Move 2, Step 1A as (2, 1A) and Move 3, Step 1A as (3,1A). The same is done for the rest of the steps in each move.

Table 7: Step sequencing of AMRAs

Articles	Step sequencing
I	1, 1- 1, 3 - 1, 2 - 1, 3 - 2,1B - 1, 1 - 1, 2 - 1, 3 - 1, 2 - 3,1B.
II	1, 1 - 1, 2 - 2,1B - 1, 2 - 1, 3 - 3,1B.
III	1, 2 - 1, 1 - 2,1B - 1, 2 - 1, 3 - 3,1B.
IV	1, 1 - 2,1B - 1, 1 - 1, 2 - 1, 1 - 1, 3 - 1, 2 - 3,1B.
V	1, 2 - 2, 1B - 1, 2 - 1, 1 - 1, 2 - 1, 3 - 1, 2 - 3,1A.
VI	1, 2 - 1, 3- 2,1A - 1, 3- 1, 2 - 1, 3 - 3,1A.
VII	1, 2 - 1, 3 - 2,1A - 1, 3 - 1, 2 - 1, 3 - 1, 2 - 3,1A.
VIII	1, 3 - 1, 2 - 1, 3 - 1, 2 - 2,1B - 1, 3 - 3,1B.
IX	1, 2 - 1, 3 - 2,1B - 1, 2 - 1, 3 - 2,1B - 1, 2 - 1, 3 - 3,1A.
X	1, 2 - 3,1A.
XI	1, 1 - 1, 2 - 3,1B.

As presented in the table above, the steps of the articles of the corpus are arranged in a mixed up pattern. This is due to the fact that authors do present information of different steps belonging to different moves in a paragraph that constitutes of different phrases. A phrase of a sentence can be taken for a step depending on the author's writing style. Taking an example of article IX, authors shift from reviewing items of previous research (1, 3) to indicating a gap (2,1B) then back to making topic generalizations. Step 2(making topic generalizations) appears to be used frequently by authors as an opening line for their research situation. To conclude the introduction section, authors frequently announce the present research. They use this as another strategy to reveal the purpose or aim of their research which embeds the solution to the problem indicated before.

To sum up the move analysis, the introduction section of AMRAs follows the CARS model framework of Swales (1990). This means that all the three moves (establishing a territory, establishing a niche and occupying a niche) are used by authors to present their research area situation. Move 1 (establishing a territory) and Move 3 (occupying a niche) are used by all the authors of the articles in this corpus. Move 2 (establishing a niche) was absent in the two articles of the corpus. This is because the works of these authors were on diagnosis. Nevertheless, all the three moves are considered obligatory since they all appeared with a frequency of more than 50%. As for the steps, some were absent in this study. The steps of Move 1 are considered obligatory in this corpus with a frequency of more than 50% each. Only two steps of move 2 were presented compared to the four steps as suggested by Swales (1990). Step 1B (indicating a gap) was mostly used by authors to present the problem that their research area aims to solve. Meanwhile, step 1A (counter claiming) appeared in only one article. Only two steps (outlining purposes and announcing the present research) out of four of move 3 were identified in the articles of this study. Authors presented the solution to the problem indicated in move 2 by revealing what their research aims to do in order to fill the gap. They used either one of the two steps: step 1A (outlining purposes) and step 1B (announcing the present research) to show how their research will fill the gap. The last two steps (announcing principle findings and indicating research article structure) of move 3 were not used by authors of the articles used in this study.

The next stage deals with the communicative purposes in order to understand what authors do in each step.

2.2. Communicative purpose analysis.

This phase involves the analysis of how each step of each move is realized in the Introduction section of the corpus. As reviewed in the move analysis stage, the articles of this corpus contain the three moves: Move 1 (establishing a territory), Move 2 (establishing a niche) and Move 3 (occupying the niche). The moves and steps of this corpus are mixed up, but each move and step is explained following the order presented by Swales (1990) CARS model framework.

2.2.1. Move 1: Establishing a territory.

In Move 1 (establishing a territory), authors use different strategies or steps to give a general background or describe a layout of their research area. They either use one or all of the following steps to: claiming centrality (step 1), making topic generalization (step 2) and reviewing items of previous research (step 3) to provide the required information.

A. Step 1: Claiming centrality.

In step 1 (**claiming centrality**), authors try to convince their discourse community to accept their research area by using topic sentences that captivate their attention. As shown in article I:

“Camel milk **has** antimicrobial activity and a good conservation aptitude.” (p.1)

These topic sentences are followed by evidence to justify the usefulness of the author’s area of research. This step can be the opening statement, a sentence in the middle of the first paragraph or in the second paragraph depending on the writer. Authors mostly use the present simple tense in active voice to communicate.

In the following articles, step 1 appears in different parts of the introduction section. For example,

In the article III, step 1 is realized in the third sentence of paragraph one:

“Among air pollutants, suspended particulate matter (PM) is extensively recognized as the most important air pollutant in terms of human health effects considering that many epidemiological studies substantiate significant associations between concentration of PM in the 2 air and adverse health impacts.”

In article VII, step 1 is depicted in the third sentence of the first paragraph:

“The process is progressive and finally destroys the muscle architecture and function...”

In the article V, step 1 is indicated in the third paragraph of the introduction section:

“Carbapenemases have now become a major concern worldwide.”

This shows how authors randomly place step 1 in the different paragraphs of the introduction section.

B. Step 2: Making topic generalizations.

As for the second step (**making topic generalizations**) of move 1 (establishing a territory), authors provide their audience with statements concerning the current state of knowledge, description or practice of their field of research. All this is done in order to inform the discourse community about the current state of the research area. Authors use different strategies to provide knowledge about the research area. Statistics and qualitative description are some of the techniques used by authors to provide knowledge about the field to their discourse community. For instance, in article X, authors provide knowledge in the first four paragraphs of the introduction section: the first paragraph describes the field qualitatively then ends with quantitative description as shown below:

“Xeroderma pigmentosum (XP, OMIM 278700–278780) is a rare inherited autosomal recessive disorder characterized by an inability to repair DNA damage.....”

Then the qualitative description:

“XP affects both sexes equally [7] with an incidence of 1/1 000 000 births in the USA and Europe [8], 1/20 000–100 000 in Japan [9, 10], and 1/10 000–30 000 in North Africa.”

More knowledge is given in the following three paragraphs about the field as indicated below:

In the second paragraph,

“XP is found in all races worldwide and caused by defect in seven complementation groups (XP-A to XP-G) involved.....Europe”

The same is done in the third and fourth paragraph.

In the second paragraph of article XI, authors describe the field qualitatively:

“During diabetes, atherosclerosis process is accelerated. The increased SMC proliferation is an abnormality, which aggravates the process [111 as well as the contractile.”

Concerning article III, in the second paragraph of the introduction section, authors provide statistics about their research field:

“Yet, the constantly increasing number of vehicles, their age (average of 8.5 years), and the tendency to dieselization (52.9% in 2014) are reasons that make Bejaia vehicle fleet a major source of air pollution.”

As for article V, authors provide the necessary information throughout the first three paragraphs of the introduction section. Step 2 is mixed with other steps of either the same move or a different move. For example, authors start with step 2, move 1 and then shift to step 1B, Move 2 and then back to step 2, Move 1. So the step can be realized in just one or more statements in the same or different paragraph:

In paragraph three, in addition to the first two paragraphs, more knowledge about the topic is given through qualitative description of the topic:

“They are an increasing concern for global healthcare due to their association with resistance to β -lactam antibiotics and to other classes of antibiotics..... They have.....plasmids.”

Referring to article II, step 2 comes just after the first step of Move 1 in the first paragraph and other paragraphs. Authors provide both quantitative and qualitative description in the first paragraph:

“It is estimated that Salmonella spp. are responsible for 93.8 million cases of human gastroenteritis and 155,000 deaths worldwide each year [3]. In the European Union, over 100,000 cases of salmonellosis were reported to EnterNet in 2003 [4] and over 90,000 cases in 2012, even though human salmonellosis cases have decreased regularly since 2005.”

C. Step 3: Reviewing items of the previous research.

In this step, authors relate what was found about their topic to whom found it. This is done in different ways: some authors use the names of the founders and others just mention years with the name of the founder in brackets. For instance, in article VIII, authors use step 3 in the first seven paragraphs among other steps. They only mention the names of the founders:

“Maternal diabetes during pregnancy represents a significant risk of fetal overnutrition leading to fetal obesity or macrosomia, resulting from the combined effects of excessive transfer of maternal nutrients, and to fetal hyperinsulinemia as discussed by **Mohammadbeigi et al.** [1], which has been associated with the development of glucose intolerance, obesity, and diabetes during childhood and adulthood as discussed by **Martin-Gronert and Ozanne.**”

The same thing is done in article I in the first paragraph, where authors state findings on the research area with the names of the authors:

“**Barbour et al.** [1] reported that camel milk inhibits some pathogenic bacteria because of several protective proteins found in the milk, including lysozymes, lactoperoxidase, lactoferrin, immunoglobulin, and vitamin C. For these reasons, **Yagil et al.** [2] support that pasteurization is not essential for camel milk if the camels are in good health.”

In the next article III, authors use step 3 in the second paragraph of the introduction section of their medical article. They used the findings of their previous work to realize this step:

“In a precedent paper [30], we have presented a descriptive study of the impact of air pollution as assessed through vehicles counts on Bejaia population. We have shown that at the population level exposure to vehicle air pollution is a cause of increased prevalence of respiratory diseases.”

As shown in the third paragraph of article V, authors use the year to display the previous findings on the area of research:

“The first description of carbapenemase-producing enterobacteria (NmcA) was in 1993.”

That is how the three steps of move one are realized in the introduction section of the corpus of this study. The next step shows what authors do in each step of Move 2 (establishing a niche) in order to communicate to their audience.

2.2.2. Move 2: Establishing a niche.

After establishing their research territory, medical researchers try to establish a niche by either showing a gap in the previous research that needs to be filled or by revealing how incomplete the previous research is. They use words that express contrast or negative evaluation. For instance: Contrast (however, but, yet, nevertheless, unfortunately...), quantity (few, less, little, no, none...), verbs (fail, ignore, lack, prevent, hinder, challenge....) and adjectives (scarce, elusive, ineffective, unclear, difficult, limited...). Although there are four steps in this move: counter-claiming, indicating a gap, question-raising and continuing a tradition, only the first two do exist in the corpus of the present study. These include: step 1A (counter-claiming) and step 1B (indicating a gap).

A. Step 1A: Counter-claiming.

In this step, authors challenge the findings of earlier research by pinpointing the weaknesses. This step normally follows step 3 (reviewing items of previous research) of Move 1 (establishing a territory). For instance, in the fourth line of article VI, authors make a counter-claim using a word that shows contrast as indicated below:

“The incidence of PC in Algeria is considered as low when compared with some western countries such as Norway and Sweden (129.7 and 119.0 cases diagnosed and approximately 18 deaths per 100,000, resp.), **but** it is still high compared to many Asian countries especially China, Korea, and Bhutan (5.3, 3.2, and 1.2 cases diagnosed and 2.5, 1.3, and 0.7 deaths per 100,000, resp.) [2].”

The rest of the articles contain step 1B (indicating a gap) as explained in the following step.

B. Step 1B: Indicating a gap.

In this step, authors indicate that earlier research does not answer all the existing problems. For example:

In article V:

“**However**, this scenario **has changed** with the emergence in the last few years of carbapenem resistant bacteria both in nonfermenters (*Acinetobacter baumannii* and *Pseudomonas aeruginosa*) and in fermenters (Enterobacteriaceae) Gram-negative bacilli.”

In article I, words of contrast of quantity are used to indicate the gap in earlier research:

“**However, few** studies have been conducted on the isolation and characterization of LAB from camel milk [7–9] or on the antimicrobial activity.”

In article IX, authors use both contrasting and quantitative words to indicate a gap:

“The importance of *Leuconostoc* strains in the dairy industry is widely recognized; **however**, knowledge of their physiology and genetics is **less** developed than that of *Lactococcus*.”

In article III:

“Studies on health impact of air pollution carried out in Algeria are **few** and **limited** to Algiers where air pollution is monitored through one air quality (AQ) station.”

The next part focuses on the steps of Move 3 (occupying the niche).

2.2.3. Move 3: Occupying a niche.

The introduction section of the corpus of this study has two steps in this move: outlining purposes and announcing present research. In occupying the niche, authors provide their solution to help fill the gap. They use the above mentioned steps to accomplish it. This move is frequently the last paragraph of the introduction section of the Medical Research Articles. The steps of this Move are described as following:

A. Step 1A: Outlining purposes.

This step is the “why” of the research. Here, authors introduce their solution to the problem mentioned in Move 2 (establishing a niche). They do so by stating the purpose or

aim of their research. Two verb tenses (present simple and past simple) are used to show whether the concept is physical or abstract. For instance: Authors use the present simple tense when the aims of the study are described in terms of the written product physically handled in the hands of the reader:

- 1) The aim of this paper **is** to....
- 2) The purpose here **is** to....

The past tense is used when the aims of the study are described in terms of abstract concepts:

- 1) The aim of this study **was** to...
- 2) The objective of this research **was** to....

Our purpose **was** to....

The following examples, show how step 1A (outlining purposes) is realized in different articles .Firstly using the present simple tense and secondly the past simple tense.

In article V, authors use the present simple tense to introduce the aim of their study:

“The aim of this review is to describe the epidemiology of the main carbapenemases circulating in the Mediterranean countries, a region of the world with a great diversity and population mixing..... (Algeria, Egypt, Libya, Morocco, Tunisia).”

Secondly, in the four articles below, authors use the past tense to reveal their solution:

In article VI,

“The aim of this study was to examine the relationship between dietary habits, family history of PC, alcohol, and smoking and PC risk in an East Algerian population.”

In article VII,

“The aim of our study was to report the phenotype of six patients from 5 families with PD, all from the East of Algeria.”

In article IX,

“Therefore, the objective of this study was to isolate and identify L. mesenteroides strains exhibiting antibacterial activity from Algerian raw camel milk and use MALDI-TOF MS to determine protein biomarkers useful.....mesenteroides.”

In article X,

“In the present study, we aimed to screen and detect for the first time the most common mutations in XPA and XPC genes presented in unrelated XP patients from.....gene.”

The next phase deals with the second step of Move 3 (occupying the niche).

B. Step 1B: Announcing the present research.

In this step, authors show the “what, who, how, where and when”. This step is another technique alternative to step 1A. Using step 1B, authors describe their aims in terms of what the study sets out to accomplish or to do. Authors use either human or inanimate means to present the same information as shown below:

With human agents:

- 1) **In this study, we present.....**
- 2) **In this paper, we describe.....**

For example:

In the last two paragraphs of article II:

“In this study, we report on the epidemiological investigation of a certain number of serovars, isolated from broiler breeding farms, slaughterhouses, and human patients within the Constantine region.....”

In article III at the beginning of the last paragraph:

“In this paper, we present for the first time results for HAIAP in Bejaia city. Our HAI provided estimates of the number.....levels.”

Or

With inanimate agents:

This research presents....

This study focuses on.....

For instance:

In the last paragraph of article IV:

“The present work involved the isolation and characterization of new haloalkal tolerant and haloalkaliphilic bacteria and..... enzymes.”

That indicates how authors announce their research to the readers by telling them what they did as a solution to the identified problem.

Therefore, authors use different steps of different moves for communicative purposes. Each phrase, sentence and paragraph is used by authors to create and continue a conversation or discussion with their readers. Each move can be realized with at least one step. A paragraph can consist of either one or two moves. A step can be made within a statement. Authors communicate to their audience through the three moves that are realized by one or more steps. For instance, authors use move 1 (establishing a territory) to set a stage for the conversation that is to be continued in the next two remaining moves. In move 2 (establishing a niche), authors begin a discussion with the readers by appealing to their sense of logic. They do so by

establishing a niche through pointing out a gap in the previous studies. This discussion is continued in the last move, move 3 (occupying a niche) wherein, a solution is provided. With these findings, we can affirm that Algerian medical researchers first present their situation using move 1, then the problem using move 2 and lastly the solution through move 3. These can be referred to as the communicative purposes behind each move.

The next part deals with the identification of lexico- grammatical features that are used in the introduction section of AMRAs.

2.3. The analysis of Lexico-grammatical features.

This stage focused on the number of verbs (main verbs) used in each tense, what tenses are mostly used and the voicing. The data is given in terms of tables and statistics.

2.3.1. The use of tenses in AMRAS.

In this step, data on the number of tenses used and the number of verbs in the introduction section of the AMRAs is given in form of tables and explained statistically. The table below shows the tenses present in the corpus of this present study:

Table 8: The global use of tenses in the introduction section of AMRAs:

Moves	Move 1			Move 2		Move 3		total	Percentage s (%)
	Step1	Step 2	Step 3	Step1 A	Step1 B	Step1 A	Step 1B		
Present simple	14	99	10	1	6	5	6	141	58.5
Present perfect	1	20	15	0	8	0	3	47	19.5
Past simple	0	10	15	0	3	5	19	52	21.5
Future simple	0	0	0	0	1	0	0	1	0.41
Total	15	129	40	1	18	10	28	241	100
Percentag e	0.6	53.5	16.6	0.41	7.47	4.1	11.6	100	

As shown in the table above, there are 241(two hundred and forty-one) main verbs present in the corpus of this study. Five tenses are used in the introduction section of the AMRAs. That is to say: present simple tense, present perfect, past simple and future simple. The present simple tense is the most used in the introduction section of the eleven AMRAs (58.5%). This is followed by past simple tense with 21.5%, the present perfect tense with 19.5% and future simple with 0.41%.

A. Use of tenses in Move 1(establishing a territory) in the Introduction section of the AMRAS of this corpus.

The table below shows occurrences of different tenses used in Move 1 of the introduction section of AMRAs.

Table 9: Tense use in move 1(establishing a territory):

Tenses	Number of occurrences	Total number of verbs	Percentages (%)
Present simple	123	184	66.8
Present perfect	36	184	19.6
Past simple	15	184	8.2

According to the table above, 184(one hundred and eighty-four) is the total number of verbs present in Move 1(establishing a territory) in the introduction section of the eleven AMRAs. Three tenses (present simple, present perfect, and past simple) are used in Move 1 in the introduction section of the AMRAs. That is to say: the present simple tense with 66.8%, present perfect with 19.6% and past simple with 8.2%. The present simple tense is the dominant tense used in move 1.

The next table provides more details about the tenses used in each of the three steps of move1.

A.1. Use of tenses in step 1(claiming centrality).

In this step, data about occurrences of tenses of verbs used to realize step 1(claiming centrality) of Move 1(establishing a territory) in the introduction section of the eleven AMRAs is shown together with the total number of verbs.

Table 10: Occurrence of each tense in step 1(claiming centrality)

Tenses	Number of occurrences	Total number of verbs	Percentages (%)
Present simple	14	15	93.3
Present perfect	1	15	6.7

As shown in table 10, fifteen verbs exist in step 1(claiming centrality) of move 1(establishing a territory) in the introduction section of the eleven AMRAS. Wherein, two tenses are used: present simple tense (93.3%) and present perfect (6.7%).

Verb tenses used in step 2(making topic generalizations) of move 1(establishing a territory) are discussed in the table below.

A.2. Use of tenses in step 2(making topic generalizations)

In the table below, the number of verbs, the tenses of the main verbs used in step 2(making topic generalizations) of Move 1(establishing a territory) in the Introduction section of the eleven AMRAs are shown.

Table 11: occurrences of verb tenses in step 2

Tenses	Number of occurrences	Total number of verbs	Percentages (%)
Present simple	99	129	76.7
Present perfect	20	129	15.5
Past simple	10	129	7.8

As shown in table 11, 129(one hundred and twenty-nine) main verbs makeup step 2(making topic generalizations) of Move 1(establishing a territory) of the introduction section of the corpus. Three tenses dominant this step: present simple tense (76.7%), present perfect (15.5%) and past simple (7.8%).

The next table focuses on the third step of move 1.

A.3.Tense use in step 3(reviewing items of previous research)

This part reveals data on step 3, move 1. This includes the occurrences of the tenses and the total number of verbs used in reviewing items of previous research as shown in the table below;

Table 12: Occurrences of tenses in step 3(reviewing items of previous research):

Tenses	Number of occurrences	Total number of verbs	Percentages (%)
Present simple	10	40	25
Present perfect	15	40	37.5
Past simple	15	40	37.5

The table 12 shows that, 40(forty) is the total number of verbs used in step 3, Move1. These appear in three tenses: present simple tense (25%), present perfect (37.5%) and past simple (37.5%). Three tenses are used and there is no dominant tense.

Therefore, present simple tense is the dominant tense used in steps 1&2 of move 1.

The following stage shows data on Move 2(establishing a niche) and the steps that makeup this move as found in the Introduction section of the eleven AMRAs.

B.The use of tenses in move 2(establishing a niche)

This part focuses on the verbs and tenses used in Move 2(establishing a niche) in the introduction section of the corpus as shown in the table below;

Table 13: Occurrence of tenses in move 2(establishing the niche);

Tenses	Number of occurrences	Total number of verbs	Percentages (%)
Present simple	7	19	36.8
Present perfect	8	19	42.1
Past simple	3	19	15.8
Future simple	1	19	5.3

According to the table 13, there are 19(nineteen) main verbs used in Move 2(establishing a niche) in the introduction section of the eleven AMRA. These verbs are used in four tenses: present simple (36.8%), present perfect (42.1%), past simple (15.8%) and future simple (5.3%). So, the two dominant tenses are the present simple and present perfect.

The next step focuses on the tenses of verbs used in the each step of Move 2 (establishing a niche).

B.1.The use of tenses in step 1A (counter-claiming).

In this part, the tense and number of verbs used in step 1A (counter-claiming) of Move 2(establishing a niche) in the corpus are shown in the table below:

Table 14: Occurrence of tenses in step 1A (counter-claiming):

Tenses	Number of occurrences	Total number of verbs	Percentages (%)
Present simple	1	1	100

According to the table above, one verb is used in step1A, Move 2 in the introduction section of the eleven AMRAs. Meaning, the one verb appears in the present simple tense (100%).

The step deals with the use of tenses in step 1B (indicating a gap) of Move 2(establishing a niche).

B.2. the use of tenses in step 1B (indicating a gap).

In this phase, tenses and number of verbs used in step 1B (indicating a gap) of move 2(establishing a niche) of the Introduction section of the eleven AMRAs are depicted in the table below:

Table 15: Occurrence of tenses in step 1B (indicating a gap)

Tenses	Number of occurrences	Total number of verbs	Percentages (%)
Present simple	6	18	33.3
Present perfect	8	18	44.4
Past simple	3	18	16.7
Future simple	1	18	5.6

As shown in the table above, there are eighteen (18) mains verbs in total in step 1B, Move 2 found in the corpus. Four tenses are used to complete these verbs: present simple with 33%, present perfect (44%), past simple (16%) and future simple (5%). Therefore, the present perfect tense is the most used tense in this step 1B, Move 2 with 44%. So, the two dominant tenses are the present simple and present perfect.

The next phase shows data on Move 3(occupying the niche) and its steps as found in the corpus.

C. The use of tenses in Move 3(occupying the niche).

Here, the number of occurrences of the tenses used in Move 3(occupying the niche), are shown in the table below:

Table 16: Use of tenses in Move 3(occupying the niche):

Tenses	Number of occurrences	Total number of verbs	Percentages (%)
Present simple	11	38	28.9
Present perfect	3	38	7.9
Past simple	24	38	63.2

As shown in table 16, there are 38(thirty-eight) main verbs in total in Move 3 in the introduction section of the eleven AMRAs. These verbs occur in three tenses: present simple (28%), present perfect (7%) and past simple (63%). The past simple tense is the most used tense in Move 3(occupying the niche). The dominant tense in move 3 is the past simple tense. The next analysis involves the occurrences of tenses in each step of Move 3(occupying the niche) in the Introduction section of the corpus of this present study.

C.1.The use of tenses in step 1A (outlining purposes).

This part is dedicated to the presentation of data concerning tenses and verbs used in step 1A (outlining purposes) of Move 3(occupying the niche) in the introduction section of the corpus. More details are shown in the table below:

Table 17: Occurrence of tenses in step 1A (outlining purposes):

Tenses	Number of occurrences	Total number of verbs	Percentages (%)
Present simple	5	10	50
Past simple	5	10	50

As shown in table 17, 10(ten) main verbs exist in step 1A (outlining purposes) of Move 3(occupying the niche) in the introduction section of the corpus of this study. Two tenses are used, wherein, both the present simple and the past simple tense occur 50% times each. The dominant tenses in step 1A are present simple and past simple.

The next stage focuses on the use of tenses in step 1B (announcing present research) of Move 3(occupying the niche) in AMRAs.

C.2.The use of tenses in step 1B (announcing present research).

In this phase, the number of occurrences of tenses found in step 1B (announcing present research) of Move 3(occupying the niche) in the introduction section of the corpus of the present study, are shown in the table below.

Table 18: use of tenses in step 1B (announcing present research)

Tenses	Number of occurrences	Total number of verbs	Percentages (%)
Present simple	6	28	21.4
Present perfect	3	28	10.7
Past simple	19	28	67.9

In the table above, 28 (twenty-eight) main verbs appear in step 1B (announcing present research) of Move 3(occupying the niche) in the Introduction section of the corpus of this study. Three tenses are used to portray these verbs: present simple 21%, present perfect 10% and past simple tense 67%. Therefore, the majority of verbs are in past simple tense (67%) in step 1B (announcing present research) of Move 3 (occupying the niche) in the introduction section of the corpus. The dominant tense in step 1B is the past simple.

In the next step, data about the use of voice in the introduction section of the corpus is presented.

2.3.2. The use of voice in the introduction section of AMRAs.

In this phase, the number of occurrences of the voices used in the verbs of the corpus of this present research is presented in the table below:

Table 19: the use of voice in AMRAs:

Moves	Move 1			Move 2		Move 3		Total	Percentages (%)
Voice	Step 1	Step 2	Step 3	Step 1A	Step 1B	Step 1A	Step 1B	7	
Active	12	86	28	1	10	10	16	163	67.6
Passive	4	43	11	0	8	0	12	78	32.4
Total	16	129	39	1	18	10	28	241	100
Percentages (%)	6.6	53.5	16.2	0.4	7.5	4.1	11.6		

According to table 19 above, the active and passive voice are used in the total number of 241 (two hundred and twenty-one) main verbs. Of which, the active voice appears 69% whereas the passive voice 32%. Therefore, the active voice is the most used voice in the introduction section of the eleven AMRAs.

A. The use of voice in Move 1(establishing a territory)

The table below shows how authors use voice to describe their area of research using Move 1 (establishing a territory).

Table 20: the use of voice in Move 1(establishing a territory)

Voice	Number of occurrences	Percentages (%)
Active	126	68.5
Passive	58	31.5
Total number of verbs	184	100

As shown in the table above, authors use the active voice to describe their research area. For instance, in article **I**, authors use the active voice to show how important Camel milk is:

“Camel milk **has** antimicrobial activity and a good conservation aptitude.”(p.1)

The active voice appears with the frequency of 68%. This indicates that a lot of importance is allocated to the subject of the sentence being the doer of the action. The passive voice also appears with 31% as frequency. Some authors prefer using passive voice to make scientific concepts and object the grammatical subject of the sentence. Therefore the active voice is the dominant voice of move 1. What follows is the frequency of each voice in each step of Move 1.

A.1. the use of voice in step 1(claiming centrality).

The below shows the number of times each voice is used by authors to convince their discourse community that their research area is worth investigating.

Table 21: Voice use in claiming centrality (step 1):

Voice	Number of occurrences	Percentages (%)
Active	12	75
Passive	4	25
Total number of verbs	16	100

As shown in the above table, it can be noticed that authors mostly use active voice (75%) to justify the useful nature of their research area. For example, in article **II**:

” Salmonella **remains** a major cause of illness in both humans and animals worldwide” (p.1)

The passive voice appears with 25% as frequency. This means that authors rarely use passive voice when claiming centrality in the introduction section of AMRAs.

A.2 The use of voice in Step 2 (making topic generalizations)

In the table below, frequencies of each voice used by authors to provide their readers with important information about their research area is shown:

Table 22: Voice use in Step 2:

Voice	Number of occurrences	Percentages (%)
Active	86	66.7
Passive	43	33.3
Total number of verbs	129	100

It can be observed from the table above that authors use the active voice to make topic generalizations (66%). For example, in article **X** in the second paragraph:

“XP is found in all races worldwide and caused by defect in seven complementation groups.....”

The main verb of the sentence is in active voice which indicates that the action of the sentence is attributed to the subject which in this context is the area of research. Nevertheless, some authors use passive voice (33%).

A.3. Use of voice in Step 3(reviewing items of previous research)

Authors use the active voice to give credibility to their work. They do so by providing their discourse community with what has been done and found by researchers in the same field of study in order to show expertise in their area of study. Although some authors use the passive voice, the active voice is dominant in this step as shown in the table below:

Table 23: voice use in Step 3:

Voice	Number of occurrences	Percentages (%)
Active	28	71.8
Passive	11	28.2
Total number of verbs	39	100

According to the table above, the active voice occurs 71 percent times in the AMRAS. This means that authors rarely use the passive voice. That’s why it appears with a frequency of 28%. The next stage deals with how authors use voice to establish a niche.

B. Use of voices in Move 2(establishing a niche)

Authors frequently use the active voice to indicate gaps in the previous research that enables them to reach out to their readers' sense of logic. The frequency of active voice usage is represented in the table below:

Table 24: use of voice in Move 2:

Voice	Number of occurrences	Percentages (%)
Active	11	57.9
Passive	8	4.2
Total number of verbs	19	62.1

It can be observed in the table above that the active voice is dominant in this move (57%) as compared to the passive voice (4%). What follows is a detailed voice usage in each of the two steps of move 1.

B.1. the use of voice in Step 1A (counter-claiming)

This step is fully realized using the active voice (100%). The passive voice is totally absent (0%) as shown in the table below:

Table 25: use of voice in Step 1A:

Voice	Number of occurrences	Percentages (%)
Active	1	100
Passive	0	0
Total number of verbs	1	100

Although the passive voice is absent in counter-claiming, authors use it concurrently to indicate weaknesses in existing research as shown in the following step.

B.2. Use of voice in Step 1B (indicating a gap)

Authors use both the passive and active voice to pin point a gap in research done before. The passive voice occurs in cases where medical concepts are made grammatical features of the sentence. The table below shows how frequently both passive and active voice is used to express a medical problem:

Table 26: the use of voice in Step 1B (indicating a gap):

Voice	Number of occurrences	Percentages (%)
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Active	10	55.6
Passive	8	44.4
Total number of verbs	18	100

It can be observed from the table above that both active and passive voices are relatively used in this step. The two overlap as shown in the number of occurrences: active voice with a frequency of 55% and passive voice with a frequency of 44%.

C. Use of voice in Move 3 (occupying the niche)

As authors present the purpose of their research area, they mostly use the active voice although the some authors use the passive voice too as shown below:

Table 27: use of voicing in move 3:

Voice	Number of occurrences	Percentages (%)
Active	26	68.4
Passive	12	31.6
Total number of verbs	38	100

The table above shows that authors frequently use the active voice to reveal the solution to the problem identified in Move 2. This explains why active voice appears with a frequency of 68% and the passive voice with the frequency of 31%. The next phase shows the use of voicing in each step of Move 3 (occupying a niche).

C.1. Use of voice in Step 1A (outlining purposes)

Authors reveal the solution to the identified problem by outlining the purpose of their research. Only the active voice was identified in the articles of the corpus where authors used this step as a means to reveal their solution.

Table 28: Use of voice in Step 1A (outlining purposes)

Voice	Number of occurrences	Percentages (%)
Active	10	100
Passive	0	0
Total number of verbs	10	100

It can be affirmed from the table above that the active voice fully dominates 100%. This explains why the passive voice has a frequency of 0%. Authors do not use it. Authors use another strategy to present the purpose of their study as shown in the following step.

C.2. Use of voice in Step 1B (announcing present research)

Announcing present research is another means used by authors to present what their study sets out to do. Though passive voice is used to present the research aims by some authors, the active voice is used by the majority as presented in the table below:

Table 29: Use of voice in Step 1B (announcing present research):

Voice	Number of occurrences	Percentages (%)
Active	16	57.1
Passive	12	42.9
Total number of verbs	28	100

As shown in the table above, authors use more of active voice than passive voice to alternatively mention the purpose of their study. Hence, active voice appeared with 57% as frequency and 42% for passive.

To conclude the analysis of the lexico-grammatical features, the focus was on tenses and voicing. Four tenses were identified wherein; three were prominent in the corpus of this study. The present simple, present perfect, past simple and the future simple tense were used by authors to realize the three moves found in the introduction section of the AMRAs. The majority of the verbs are in the present simple tense, present perfect tense belonging to the first two steps of Move 1. This is so because authors are describing the field of their research. The past simple tense appears in step 3 because authors review previous research which was done in the past. In Move 2, authors use present perfect tense mostly to discuss the failings of in the previous studies which they intend to rectify. Present simple is used in this move to show that the problem to be examined is current. As for move 3, the past simple is frequent when the authors describe what they already did especially in step 1A and the present simple is used when authors describe what they intend to do. Concerning the voicing, the active voice is dominant throughout all the moves but the passive appears too. Authors use the active voice mostly to make the subject the action performer. This makes their writing strong and emphatic. The passive voice is used to make medical concepts action performers. This directs more focus on the medical terms and concepts in the article.

Conclusion:

To sum up, this second chapter presented how the CARS model (Swales, 1990) was used to analyze the introduction section of AMRAs in section one. The second section concentrated on data analysis, wherein, results of the move analysis, communicative purpose analysis and the analysis of the lexico-grammatical features were drawn. The following chapter focuses on the discussion of the results, conclusions and limitations of the study.

**CHAPTER THREE: DISCUSSION
AND CONCLUSIONS**

CHAPTER THREE: DISCUSSION AND CONCLUSIONS

Content:

Introduction	Erreur ! Signet non défini.
Section 1: Discussion and answers to research questions.....	Erreur ! Signet non défini.
Introduction	Erreur ! Signet non défini.
3.1.1.Question one: What move structure do Algerian Medical Researchers adopt in their research articles?	Erreur ! Signet non défini.
3.1.2.Question two: How are these moves realized to depict the communicative purpose?.....	Erreur ! Signet non défini.
3.1.3.Question three: What lexico- grammatical features are present in their articles?.....	Erreur ! Signet non défini.
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CHAPTER THREE: DISCUSSION AND CONCLUSIONS.

Introduction

This chapter is a follow-up of the preceding chapter two. It is divided into two sections: discussion and conclusions. The discussion section aims at discussing the findings of the present study, and section two: conclusions, attempts to draw conclusions of the investigation.

Section 1: Discussion and answers to research questions.

Introduction

This section deals with the discussion of findings of the present study. Its aim is to provide answers to the three research questions and compare the findings of this research with the findings of other previous works carried out by different researchers as presented in chapter one, section three. The questions are as following:

- 1) What move structure do Algerian Medical Researchers adopt in their research articles?
- 2) How are these moves realized to depict the communicative purpose?
- 3) What lexico- grammatical features are present in their articles?

3.1.1. Question one: What move structure do Algerian Medical Researchers adopt in their research articles?

This question deals with two parts: move structure and move sequencing. Firstly, we explain what move structure is followed then the move sequencing in order to fully answer question one.

A move analysis was carried out on the eleven Algerian Medical Research Articles and the results showed that all the three moves do exist in the Introduction section of the Algerian Medical Research Articles: Establishing a territory (Move 1), establishing a niche (Move 2) and occupying the niche (Move 3). Move 1 (establishing a territory) and Move 3 (occupying a niche) are used by all the authors of the articles in this corpus. Move 2 (establishing a niche) was absent in the two articles of the corpus. This is because the works of these authors were on diagnosis. Nevertheless, all the three moves are considered obligatory since they all appeared in the majority of the articles of the corpus. As for the steps, some were absent in this study. The steps of Move 1 are considered obligatory in this corpus. Only two steps of move 2 were present compared to the four steps as suggested by Swales (1990). Step 1B (indicating a gap) was mostly used by authors to present the problem that their research area aims to solve. Meanwhile, step 1A (counter claiming) appeared in only one article. Only two steps (outlining purposes and announcing the present research) out of four of move 3 were identified in the articles of this study. Authors presented the solution to the

problem indicated in move 2 by revealing what their research aims to do in order to fill the gap. They used either one of the two steps: step 1A (outlining purposes) and step 1B (announcing the present research) to show how their research will fill the gap. The last two steps (announcing principle findings and indicating research article structure) of move 3 were not used by authors of the articles used in this study.

In comparison to the findings of the studies carried out earlier by different researchers: Nwogu (1997), Li & Ge (2009) and Kanoksilapatham (2005), three moves were identified in their works: Move 1 (presenting background information), Move 2 (reviewing related research) and Move 3 (presenting new research) similar to those of Swales (1990) CARS Framework were identified in the Introduction section. Nwogu (1997) examined Medical RAs. The aim of his research was to allow the application of the findings by researchers across all Medical Research Articles. His corpus comprised of articles published in 1985 and 1987. He described eleven moves with three belonging to the introduction section similar in number and different in naming to those discovered in this study. Following the findings of Nwogu (1997), Li and Ge (2009) examined two corpora of MRAs in order to study the effect of time on moves. Their study findings revealed that moves and their steps can change over time. This may explain the changes in the move sequencing identified in articles used for the move analysis of this present study. Li and Ge (2009) study findings also showed that, move 2 (review related research) constitutes of two steps (A & B). In step A, authors refer to previous research. Similar to our study findings, this step is realized in move 1 (establishing a territory), step 3 (review of previous research work). Additionally, in step B of Li and Ge (2009) wherein, authors refer to limitations of previous research, in these study findings, is step 1B of move 2 in which authors pin point weaknesses of previous research to establish the niche. Three moves were also identified in this study although they are named differently: move 1 (establishing a territory), move 2 (establishing a niche) and move 3 (occupying a niche). The naming of these moves is exactly similar to those found by Swales (1990). This is because Algerian medical researchers follow the CARS framework of Swales (1990). In this study, authors present background information using the second step of Move 1: making topic generalizations. This, one of the three steps that make up Move 1 (establishing a territory) is a move itself according to the works of Nwogu (1997). Move 2 (reviewing related research) is a third step of Move 1 (establishing a territory) in this study. This is due to the fact that, the work findings of Nwogu (1997) do not include steps of the moves. The moves stand alone without steps included. Authors of articles of the corpus of this study do the same thing in Move 3 (presenting new research) as discovered earlier by the above mentioned three

researchers. We can deduce that the move structure adopted by Algerian medical researchers is similar to that used by other researchers in the world. Consequently, the move sequencing differs from that proposed by Swales (1990) in his research findings of the CARS model.

As for the move sequencing, contrary to the findings of Swales (1990), authors of the articles in this corpus adopt another move pattern. That is to say: M1-M2-M1-M3. This is due to the step sequencing followed by the authors when presenting their medical arguments. As shown in the previous chapter two (data analysis) in the second section, statistical data shows that Move 1 (establishing a territory) and move 3 (occupying a niche) appear with a frequency of 100% in the articles of this corpus whereas, move 2 (establishing a niche) has a frequency of 81%. Therefore, moves 1&3 are the dominant moves in this corpus. Consequently step 1 (claiming centrality) appears 71% times in the corpus, step 2 (making topic generalizations) is used by all authors in of this corpus (100%), step 3 (reviewing items of previous research) carries a percentage of 72, step 1A (counter-claiming) appears with a frequency of 9%, step 1B (indicating a gap) with 72% , steps 1C (question-raising) and 1D (continuing a tradition) with 0% each, step 1A (outlining purposes) with 45%, step 1B (announcing present research) with 54% and steps 2 (announcing principle findings) 3 (indicating research article structure) with 0% each. Meaning, step 2 (making topic generalizations) is the dominant step in the corpus. It appears 26 times in total in this corpus. This step frequency accounts for this move pattern: M1-M2-M1-M3. Step 2 (making topic generalizations) belongs to move 1 (establishing a territory) but it generally appears after Move 2 in AMRAs and in some articles it can serve as an opening statement.

What follows is an example of how some articles have step 2 of Move 1 as an opening statement and how it is used after step 1B of Move 2. For instance, in article V, authors use step 2 of move 1 as an opening statement to their article:

“Carbapenems are β -lactam group of drugs that are often used as antibiotics of last resort for treating infection due to multidrug-resistant Gram-negative bacilli.”(p.1)

This opening statement as clearly indicated above is general information about the research topic which is “**Epidemiology of Carbapenemase-Producing Enterobacteriaceae and *Acinetobacter baumannii* in Mediterranean Countries**”. Authors of this article use it as a means to establish their territory and capture the reader’s attention. Having done that, they shift to indicate a weak link in the available information. The strategy used here is step 1B of Move 2:

“However, this scenario has changed with the emergence in the last few years of carbapenem resistant bacteria both in nonfermenters (*Acinetobacter baumannii* and

Pseudomonas aeruginosa) and in fermenters (Enterobacteriaceae) Gram-negative bacilli” (p.1)

Now we can clearly see how their research topic is introduced in the line above by indicating a gap in the existing information about the research area. Authors continue to talk about this kind of resistance in the second paragraph. This causes a shift back to move 1, step 2:

“Resistance to carbapenems is mediated mostly by two main mechanisms: (i) production of a β -lactamase (derepressed cephalosporinase or ESBL) with nonsignificant...”

The third paragraph is opened with an eye catching statement which reaches out to the sense of the reader that the above mentioned mechanisms are a significant scientific fact to the human livelihood:

“Carbapenemases have now become a major concern worldwide.” (p.1)

Clearly this is persuasive and logically should have been the opening sentence in the first paragraph of this article. We suppose that authors of this article used what Swales (1990) refers to as claiming-centrality (step 1, move 1) in the third paragraph to either imply that the precedent general information on the topic is as important as the rest of the information or introduce a fourth move. This step is usually at the beginning of the article. Meaning in the first paragraph or second. Not all authors use step 1. Others use either step 2 and/ or step 3 of move 1. Using step 2 (making topic generalizations), authors provide evidence, supporting statements and arguments for the indicated gap in move 2. With step 3, authors still present their arguments by referring to the works already done. This is referred to as reviewing previous research. They, then conclude their introduction section with move 3:

“The aim of this review is to describe the epidemiology of the main carbapenemases circulating in the Mediterranean countries, a region of the world with a great diversity and population mixing...”

In this article, this move was depicted in the fourth paragraph which is the last paragraph of this section. Authors used step 1A (outlining purposes) of move 3 (occupying a niche) to outline their study purposes. The shift from one step of one move to another step of a different, and the interjection of one and/ or two steps of move 1 in between move 2 and move 3 shows why the move sequencing adapted by most of the authors follows M1-M2-M1-M3 of pattern. This pattern depicts cohesion and coherence in the organisation of the above mentioned now four moves for it is the general objective of the move structure. This pattern portrays a meaningful message. The communicative purposes to the intended discourse community and audience are shown in how authors are spontaneous in their writing. We can

confirm four moves present in the introduction section of the AMRAS. This is supported by Skelton (1994) whose study findings, utilizing the CARS framework, a Swales' 1990 move analysis technique in Applied Linguistics showed that the four moves in the Introduction section of medical RAs follow a certain pattern. Skelton (1994) identified the following moves: Move 1 (Importance of the field of study), Move 2 (Discussion of previous literature), Move 3 (Gap in the literature) and Move 4 (The writer's aim). According to his findings, medical researchers followed that four move structure to write their medical research articles. His moves did not constitute of steps although they performed the necessary purposes. The present study findings also depict the same number of moves of the move structure but with steps as constituents of each move. The messages made in these moves form communicative purposes embedded in each step of each move. The what, how and why these moves are organised in such a pattern is explained in the second question dealing with the communicative purposes behind these moves. This brings us to the next question that deals with the communicative purposes.

3.1.2. Question two: How are these moves realized to depict the communicative purpose?

According to the findings in the corpus, we can confirm that there is a great influence of the works of Swales (1990) in this present study. AMRAs analyzed in the present corpus seem to follow a move structure similar to the CARS proposed by Swales (1990). The same thing was done by Swales in his CARS model frame-work. In fact, Swales described his moves as Rhetorical moves (P.138) and these can be viewed in rhetorical terms as problem-solution model as suggested by some rhetoric scholars like Taboada & Mann (2006). The same is followed by Algerian medical researchers.

Move one: Establishing a territory.

In this study, authors use Move 1 (establishing a territory) to describe a layout of their research area. This Move consists of three steps: step 1: claiming centrality, step 2: making topic generalizations and step 3: reviewing items of previous research. In the first two steps: claiming centrality and making topic generalizations, authors are both persuasive and informative to their audience. They try to reason with their readers by appealing to their sense of logic and attempting to answer their anticipated questions before discussing the topic. In reference to the works of Fryer (2012) on research articles, academic publication with medical research articles inclusive is a form of discussion or conversation between the authors and the audience. In this present study, authors appeal to the readers' sense of logic by attempting to answer the predicted reader's questions and create a conversation platform. Move 1 is used as

a strategy to open the discussion. In step 1 (claiming centrality), authors tend to use it as an opening statement to establish a territory. For example, in article II,

“*Salmonella* remains a major cause of illness in both humans and animals worldwide.” (p.1)

We can say that authors are presenting a claim that is both significant to human’s livelihood and informative. This opening statement is used to help authors set a debate like atmosphere between themselves and the audience. This means that, if the audience accepts this initial claim, they are likely to accept the rest of the information in the paper as being significant. Hence they are being persuasive. In the second step: making topic generalizations, authors use it to present evidence or arguments to support their claim. It is in this step that authors really convince their readers. Taking an exempt from article II, in the second line immediately after step 1, authors provide their readers with concrete proof about their claim:

“It is estimated that *Salmonella* spp. are responsible for 93.8 million cases of human gastroenteritis and 155,000 deaths worldwide each year. In the European Union, over 100,000 cases of salmonellosis were reported to EnterNet in 2003 and over 90,000 cases in 2012, even though human salmonellosis cases have decreased regularly since 2005.” (p.1)

As shown in the example above, authors seem to make statements that concern the current state on their topic. These kinds of arguments backup their initial claim in step 1. step 2 (making topic generalizations) appears after step 1 and also after Move 2 in this study findings. That is why it can be proposed as a fourth move because many authors tend to use it after move 2 which still denotes the same rhetoric function. Therefore, they appeal to the readers’ sense of logic and persuade them at the same time. In step 3: reviewing items of previous research, authors give a history of the situation to show how others have dealt with the subject in order to provide a detailed background of their topic. This kind of discussion sets a platform for the conversation between the authors and readers. This is why it is called presenting the situation and is done in Move one. For instance, in first paragraph of article I:

“Barbour et al. [1] reported that camel milk inhibits some pathogenic bacteria because of several protective proteins found in the milk, including lysozymes, lactoperoxidase, lactoferrin, immunoglobulin, and vitamin C. For these reasons, Yagil et al. [2] support that pasteurization is not essential for camel milk if the camels are in good health.” (p.1)

Here authors relate what has been found with who found it. They are providing a background of their research area. Fryer (2012) also supports that authors use Move one to relay the

background knowledge of the situation to the audience, state the setting of the paper and cover all the available general knowledge to the audience (p.9). Authors are demonstrating to their readers that they have knowledge about their topic which is a sense of expertise. Therefore, scientific argumentations and intellectual information is provided to the readers in order to persuade them. We can therefore affirm that authors use the move 1 to establish a territory using one or all of the above mentioned strategies. And by doing so, they appeal to the readers' sense of logic and persuasion to accept their research article.

Similarly, with the study findings of Kanoksilapatham (2005), she also separates her division of Move 1 into three Steps: step 1 as the first being an opening statement that claims centrality, Step 2: making topic generalizations, and step 3: a review of previous research. The same steps were identified in this present study. In relation to her study findings, authors use step 1 to make an initial claim, step 2 to fully persuade their readers and step 3 to give them a detailed background on the research area by relating what is claimed to whom claimed it.

In contrast to the study findings of Skelton (1994), his Move 1 (importance of the field of study), that is considered as step 1 (claiming centrality) in this present study because it serves the same purpose and Move 2 (discussion of previous literature) which corresponds to step 3 (reviewing previous items of research) are taken as steps belonging to one move in this present study because they have a common rhetorical function or communicative purpose which is intellectual attribution and scientific argumentation.

Consequently, referencing Teufel and Moens' (2002) framework, I argue that authors use intellectual attribution and scientific argumentation as rhetorical means to persuade their readers. They describe the layout of their research area and introduce the reader to their arguments in move one. Henceforth, the sense of validity and uniqueness is accorded to their work as compared to the works of others. Having established a territory, authors go on to present a gap in the existing research which is accomplished in move 2.

Move two: Establishing a niche.

Following the CARS model frame- work (Swales, 1990), four steps make up this move, but in this study, only two steps were identified. It is important to note that this move was used in 81% of the articles in this present study corpus. Of which, step 1A appeared with a frequency of 9% and the rest was for step 1B. This move not appearing 100% in the articles of the corpus can be explained by the choice of the authors to explicitly describe their study situation instead of trying to claim a niche. Having described their research territory in Move 1, authors establish a niche for their study through counter-claiming (step 1A) or indicating a gap (step 1B). In this study, indicating a gap is the dominant step of this move with 72% as

frequency. The rhetorical purpose of this move is to introduce the problem. We can say that the four different scientific rhetoric structures presented by Teufel and Moens (2002) are included in this move. That is to say: “problem-solution structure” for authors show that it is the problem and this matches with step 1B (indicating a gap), secondly “intellectual attribution” as authors find weaknesses in previous research that they intend to rectify. This corresponds with step 1A (counter-claiming), thirdly “scientific argumentation” wherein, authors present a problem (step 1B) and lastly, “attitude towards other people’s work” in which authors pin point the limitations in existing research (step 1B). The example below shows how authors establish a niche using step 1A (counter-claiming):

“The incidence of PC in Algeria is considered as low when compared with some western countries such as Norway and Sweden (129.7 and 119.0 cases diagnosed and approximately 18 deaths per 100,000, resp.), **but** it is still high compared to many Asian countries especially China, Korea, and Bhutan (5.3, 3.2, and 1.2 cases diagnosed and 2.5, 1.3, and 0.7 deaths per 100,000, resp.).” (p.1)

As shown in the except of article VI above, authors use this step to introduce an opposing point of view contrary to the existing research findings. We can say that authors oppose the existing research in order to create a platform for their study. This can be done also by using step 1B (indicating a gap) as shown in the example below:

“Studies on health impact of air pollution carried out in Algeria are **few** and **limited** to Algiers where air pollution is monitored through one air quality (AQ) station.”

As shown in the extract of article III, authors state the limitations in the previous research that will be later addressed in their research. This is the rhetorical function behind this step.

In comparison to the research findings of Skelton (1994), his Move 3 (gap in the literature) is similar to step 1B (indicating a gap) of this present study findings. Kanoksilapatham (2005), her Move 2 (prepare for the present study) constitutes of two steps: step A (indicate a gap) is similar to this study’s step 1B (indicating a gap). However, her step B (raising a question) is contrary to this study’s second step which is in fact step 1A (counter-claiming). Therefore, this move together with its two steps as identified in this present study findings introduce the problem. Having identified the problem, authors logically draw the reader’s focus to the solution but in this study findings, the majority of authors shift back to statements of generalizations, a step that belongs to move 1 as explained before in move sequencing. Nevertheless, these topic generalizations are still under the same rhetoric function umbrella of move 1. This makes a smooth shift to Move 3(occupying a niche) in which the solution to the identified gap is revealed.

Move 3: occupying a niche.

In this present study's construction, Move 3 is comprised of two steps. This is contrast to the findings of Swales (1990) in his CARS frame-work. Nevertheless, authors use this move to reveal the solution to the problem identified in move 2 above. This move is at the end of the introduction section so it can be taken as a conclusion for this section. The two steps used by authors of articles in this corpus to complete this move are: step 1A (outlining purposes) and step 1B (announcing present research). As stated by Swales (1990) in his CARS model frame-work, authors use this move to fill the niche created in move 2 and that is why it is named occupying a niche. For instance, in article V authors show how they use step 1A (outlining purposes) to occupy a niche:

“The aim of this review is to describe the epidemiology of the main carbapenemases circulating in the Mediterranean countries, a region of the world with a great diversity and population mixing..... (Algeria, Egypt, Libya, Morocco, Tunisia).”

The same step can be realized differently as shown below taken from article IX:

“Therefore, the objective of this study was to isolate and identify *L. mesenteroides* strains exhibiting antibacterial activity from Algerian raw camel milk and use MALDI-TOF MS to determine protein biomarkers useful.....*mesenteroides*.”

We can clearly see that authors are explicitly stating the aim of their study differently in both articles. So the rhetorical function of this step is to report why the authors are attempting to find the solution.

To compare with the research findings of Skeleton (1994), in his Move 4 (writer's aim) a description of who is being studied is given in a context of what the present study findings reveal as step 1A (outlining purposes). The same objective can be obtained differently using another strategy. This is step 1B (announcing present research). Using an excerpt of article II as an example to show how authors announce the present research:

“In this study, we report on the epidemiological investigation of a certain number of serovars, isolated from broiler breeding farms, slaughterhouses, and human patients within the Constantine region.....”

The rhetorical function of this step is to show how authors intend to resolve the established niche as shown in the above example. There is also another way to announce the present research as show below:

“In this paper, we present for the first time results for HAIAP in Bejaia city. Our HAI provided estimates of the number of health events attributable to PM10 in the target population. We proposed two scenarios: we first considered a scenario where the

PM10 annual mean is decreased by 5 $\mu\text{g}/\text{m}^3$ and then a scenario where the PM10 annual mean is decreased to 20 $\mu\text{g}/\text{m}^3$ (WHO-AQ). To this extent, we conducted an *ad hoc* campaign to objectively assess PM10 levels.” (p.1)

In article III above, authors clearly show what they did in terms of a solution to the problem identified in move 2. This move therefore, helps the reader to understand the intended purpose behind the research area of the given medical research article. Different linguistic features are used to perform these rhetorical moves as one can clearly notice. This brings us to the third question that deals with the lexico-grammatical features that were used to perform these rhetoric functions.

3.1.3. Question three: What lexico- grammatical features are present in their articles?

This study, focused on the identification of tenses and voicing. These are the two main lexico- grammatical features that were taken into consideration. Having conducted a manual recording and counting the frequency of occurrence of the main verb tenses in each move of the corpus in this study, three main tenses were found to occur frequently in the articles: present simple, present perfect and past simple tense. The present simple appeared with a frequency of 58%, past simple with 21%, present perfect with 19% were used differently in each of the moves identified in the Algerian medical research articles. The future simple occurred with 0.4%. That is why it is not considered as important in this study. The three tenses that were found in the AMRAs seem identical to those that were identified in the studies carried out by Li and Ge (2009). Additionally, Heslot (1982) established that three verb tenses were frequently used in each move of the articles of his study corpus: the present simple tense, the past simple tense and the present perfect tense.

Concerning voicing, active constructions are dominant throughout the moves in the articles of this study. The active voice occurs with a frequency of 67% whereas the passive voice with 32%. Similarly, Heslot (1982) as cited in Swales (1990) found that the active voice is used more in the introduction section than in the other sections of the medical research articles.

Further, in comparison to the study findings by Martin (1993), there was an extensive use of the passive voice in the other sections of the medical research articles than in the introduction section. This seems to explain why the active voice is the dominant voice in the analysis of the present study since it was based only the introduction section.

In move 1 (establishing a territory), three tenses were used by authors to persuade their readers. The present simple with a frequency of 66%, the present perfect with 19% and past simple 8%. Among the three, the present simple is the dominant tense. This mainly happens

in step 1 (claiming centrality) where authors make their initial claim as shown in the article II below:

“*Salmonella* remains a major cause of illness in both humans and animals worldwide.” (p.1)

This demonstrates that the information is a truth that has been recognized. Therefore, authors use the present simple tense to present scientific argumentation and intellectual attributions as factual truths to their readers.

We can notice from the example above that the sentence is in active voice. Taking another example from article IV:

“There is an increasingly urgent need for new active biomolecules and enzymes for use in industry and therapy.” (p.1)

The opening statement of the article is always in active voice. So we can say that authors seem to foreground scientific items and attribute action to them in order to draw more attention towards the organ by the readers. So as far as voicing is concerned in move 1 (establishing a territory), 68% of the verbs are in active voice whereas 58% are passive constructions. Therefore, the active voice is the dominant voice in that authors use to persuade their readers using the initial move (establishing a territory). After getting the attention of the reader, authors try to establish a niche in the following move using different tenses and voicing as seen in the following phase.

In move 2 (establishing a niche), it was observed in the corpus of this study that four tenses were used even though three of the frequently occurred. The present simple had a frequency of 36%, the present perfect with 42%, the past simple with 15% and the future simple with 0.4%. It can be noticed that the present simple and the present perfect tense are the two dominant tenses that authors used to introduce a problem to their readers. The present simple tense was used when the problem to be examined was current. As shown in an excerpt of article III below:

“Studies on health impact of air pollution carried out in Algeria are few and limited to Algiers where air pollution is monitored through one air quality (AQ) station.”(p.1)

As shown in the third paragraph of article II above, authors used the present simple tense to indicate a current problem that needed to be resolved. Nevertheless, the same thing can be done differently using the present perfect tense. As shown in article IX:

“To date, raw camel’s milk has been under investigated as a potential source of food-grade LAB and has not generated a large industrial interest.”

In the above sentence, authors used the present perfect tense to demonstrate weaknesses in the previous research findings. Therefore, the two tenses can be used to introduce a problem. And as suggested by Teufel & Moen (2002), they encompass the four qualities of scientific rhetoric structures as explained in the communicative purpose phase above: problem-solution, intellectual attribution, scientific argumentation and attitude towards other people's work. Regarding the voicing, the active voice occurs with the frequency of 57% and the passive voice with 4%. This clearly shows that the active voice is the dominant voice in this move. For instance,

“Studies on health impact of air pollution carried out in Algeria are few and limited to Algiers where air pollution is monitored through one air quality (AQ) station.”(p.1)

In an extract from article III above, authors used an active construction to introduce the problem to the audience. The same constructions are used in the majority of the articles of this corpus. The example below shows how the minority used the passive constructions to introduce the problem:

“However, few studies have been conducted on the isolation and characterization of LAB from camel milk or on the antimicrobial activity.” (p. 1)

As shown in the example above, authors used the passive voice to show a weakness in the previous research. Therefore, active voice is the dominant voice in this move. Having indicated a gap in the previous studies, authors go ahead to reveal the solution in the next move.

In move 3 (occupying a niche), this study finding indicates that three tenses are used to realize this move: the present simple, present perfect and past simple. The present simple appeared with a frequency of 28%, the present perfect with 7% and the past simple with 63%. We can notice that the past simple tense is the dominant tense in this move. Authors frequently used the past simple tense to announce their research as shown below:

“The aim of our study was to report the phenotype of six patients from 5 families with PD, all from the East of Algeria.” (p.2)

As shown in an extract of article VII, in the last paragraph of the introduction, authors used the past simple tense to explicitly reveal the aim of their research. Concerning voicing, the active voice occurred with a frequency of 68% as compared to the passive voice with 31% as frequency. For example:

“The aim of this study was to examine the relationship between dietary habits, family history of PC, alcohol, and smoking and PC risk in an East Algerian population.” (p.2)

As shown in an extract of article VI, in the last line of the introduction section, authors used the active voice to reveal the solution to the problem identified in move 2. This was done by the majority of the authors in this study. Nevertheless, some authors used passive constructions to reveal the solution to the problem they introduced their readers to. This can be seen in the example below:

“Our study was carried out on aortic SMCs cultured from diabetic *Psammomys obesus*....Insulin influence at low dose on the SMCs of diabetic *Psammomys obesus* was also assessed.” (p.38)

The extract of article XI above, shows how authors used passive constructions to reveal what they did as a solution the problem in the previous studies.

Conclusion

In relation to the study findings of Li and Ge (2009), three verb tenses were frequently used by authors in this study. The present simple tenses, the past simple tense and the present perfect tense. The same findings by Heslot (1982) were recorded in each move of the medical research articles. The active voice is dominant in the AMRAs. As far as medical research articles are concerned, it is proven that active voice is dominant. This is supported by Banks (2008), Gustafsson (2006) and Halliday & Martin (1993) whose study findings showed that less passive constructions are used in medical research findings although they are common in scientific discourse depending on the genre.

Section 2: Major findings.

After discussing the major findings of the study in the preceding section, major conclusions are drawn to finalize the above discussed study findings. That is the aim of this section.

The first question was on what move structure is adopted in the Algerian Medical Research articles. This question was answered in two sub questions that involved two elements: move structure and move sequencing.

Concerning the first element which is the move structure, the study findings revealed that all the three moves proposed by Swales (1990) were present in the corpus. This means they are obligatory.

Regarding to the steps, Move 1 (establishing a territory) was realized by three steps: claiming centrality, making topic generalizations and review of items of previous research. Move 2 (establishing a niche) constituted of two steps: counter-claiming and indicating a gap. Lastly, Move 3 (occupying a niche) was comprised of two steps: outlining purposes and announcing present research.

Furthermore, with the move sequencing adapted in AMRAs, it is different from that proposed by Swales (1990). They seem to follow a new pattern as discussed in the above section. Therefore, we can conclude that the introduction section of AMRAs seem to follow the move structure proposed by Swales although the move sequencing differs. That is why we proposed a new move analysis model for the introduction of the AMRAs as shown in the table below:

Table 30: A proposed move analysis model for AMRAs

Move 1: Establishing a territory
Step 1: Claiming centrality
Step 2: Review of previous studies
Move 2: Establishing a niche
Step 1: Indicating a gap
Step 2: making topic generalizations
Move 3: Occupying a niche
Step 1: Outlining purposes
Step 2: Announcing present research

The second major conclusion concerns the second research question that deals with the communicative purposes. The three moves as shown in the table above in AMRAs serve rhetorical functions as suggested by Swales (1990) in whose study of moves referred to them as rhetorical moves. Therefore, in the present study, Move 1 (establishing a territory) was used rhetorically to persuade readers by means of scientific argumentation and intellectual attribution. Move 2 (establishing a niche) was used to introduce the problem to the audience and finally, in Move 3 (occupying a niche) the solution to the problem was explicitly revealed to the audience in order to show them what the aim of the research was. Therefore, we can conclude that the moves that were identified in AMRAs served rhetorical purposes respectively.

Finally, the third question was on lexico-grammatical features. The study findings showed that verbs, tenses and voice were used accordingly in the articles of this corpus. Three main tenses were found to occur frequently in the articles: present simple, present perfect and past simple tense of this study. The majority of the verbs are in the present simple and present perfect tenses belonging to the first two steps of Move 1. In Move 2, authors used present perfect tense to discuss the failings in the previous studies which they intend to rectify. Present simple was used in this move to show that the problem to be examined is current. As for move 3, the past simple is frequent when the authors describe what they already did especially in step 1A and the present simple is used when authors describe what they intend to do. Concerning the voicing, the active voice is dominant throughout all the moves but the passive appears too. Authors use the active voice mostly to make the subject the action performer. This makes their writing strong and emphatic. The passive voice is used to make medical concepts action performers. This directs more focus on the medical terms and concepts in the article.

Conclusion

This chapter reviewed and discussed the major findings of this study. Additionally, research questions were answered and the results were discussed following the CARS model of Swales (1990). The findings of this study were compared with the previous works done elsewhere in the world. Major conclusions were also drawn basing on the discussed findings.

GENERAL CONCLUSION

GENERAL CONCLUSION

Content:

Introduction**Erreur ! Signet non défini.**

- 1) Summary of study findings.....**Erreur ! Signet non défini.**
- 2) Pedagogical implications.**Erreur ! Signet non défini.**
- 3) Limitations and suggestions for further research studies..**Erreur ! Signet non défini.**

Conclusion.....**Erreur ! Signet non défini.**

General conclusion

Introduction:

This study began with a primary aim: to conduct a genre analysis of AMRAs in order to direct medicine students on how to write medical research articles. To do this, I combined a corpus of eleven of AMRAs from a publishing internet site Hindawi, examined them through a study of three elements: move structure, lexico- grammatical features and communicative purposes. Since the CARS model frame-work by Swales (1990) seemed to be the convenient model for this analysis, it was followed to analyze the introduction section of the articles of this investigation. A summary of the findings of this study is provided in the next phase. And since these study findings seemed to raise questions, suggestions for further research are given together with limitations of this study that are precede by pedagogical implications.

1) Summary of the study findings.

Concerning the move structure, all of the three moves proposed by Swales (1990) in his CARS model frame-work were present in the articles of this study corpus. They seemed obligatory because they appeared frequently in all the AMRAs that were under investigation.

Regarding the move sequencing, AMRAs seemed to adopt another move pattern different from that proposed by Swales (1990). Although three different move patterns were found, most articles seemed to follow M1-M2-M1-M3 move pattern.

Furthermore, at the level of steps, Move 1 (establishing a territory) was realized by three steps: claiming centrality, making topic generalizations and review of items of previous research. Move 2 (establishing a niche) constituted of two steps: counter-claiming and indicating a gap. Lastly, Move 3 (occupying a niche) was comprised of two steps: outlining purposes and announcing present research.

Additionally, these moves served rhetorical purposes. Move 1 (establishing a territory) was used rhetorically to persuade readers by means of scientific argumentation and intellectual attribution. Move 2 (establishing a niche) was used to introduce the problem to the audience and finally, in Move 3 (occupying a niche) the solution to the problem was explicitly revealed to the audience in order to show them what the aim of the research was.

In terms of lexico-grammatical features, three main tenses were found to occur frequently in the articles: present simple, present perfect and past simple tense of this study. The present simple tense was the dominant tense in Move 1 (establishing a territory), the present simple and the present perfect tenses were the two dominant tenses in Move 2 (establishing a niche) and the past simple tense was the dominant tense in Move 3 (occupying a niche).

As for the voicing, the active voice was the dominant voice throughout all the moves although the passive voice was used too. These findings have pedagogical implications that are discussed in the next phase.

2) Pedagogical implications.

This research was primarily motivated by the needs of the learners. So, this pedagogic approach to Genre Analysis of AMRAs provides an important foundation for understanding medical discourse and the expectations involved in the writing and organization of the introduction section of Medical Research Articles.

Additionally, analyzing AMRAs on the basis of move structure, lexico-grammatical features and rhetorical purposes provides a major understanding on the different features allocated to the three moves established in the introduction section of the MRAs. So teachers and learners explicitly know what to expect in the structural and lexico-grammatical features of the introduction section.

As noted in phase one, all the three moves proposed by Swales (1990) appeared in the AMRAs that were analyzed although they were sequenced. In fact, some articles did not have Move 2. These may be attributed to the structural difference in the medical fields. As for the verbs, tenses and voicing, the present simple tense was the dominant tense in Move 1 (establishing a territory), the present simple and the present perfect tenses were the two dominant tenses in Move 2 (establishing a niche) and the past simple tense was the dominant tense in Move 3 (occupying a niche). The passive voice appeared in some of the moves though the active voice was predominant throughout the articles of our corpus. This provides both learners and teachers some insight on how to use the different features according.

Furthermore, these moves served rhetorical purposes that presented a problem solution pattern Swales (1990) , scientific argumentation, intellectual attribution and attitude towards other people's works as rhetorical terms that do exist in scientific rhetorics as suggested by Teufel and Moens (2002) should be considered when writing Medical Research Articles.

Therefore, the description of the move structure, the lexico- grammatical features and the communicative purposes in the medical genre has a greater potential of value to the medicine students who are interested in acquiring writing skills with in the medicine discipline.

3) Limitations and suggestions for further research studies.

A number of limitations were experience during this study. And in addition to the limitations, the research findings seemed to raise a number of questions and possibilities that guaranteed suggestions for further studies as discussed in this stage.

The first limitation concerns the size of the corpus. Only eleven Algerian medical research articles were retrieved from Hindawi for this study. The study findings of the analysis cannot be generalized for all AMRAs. Therefore, an extensive analysis based on a larger corpus may be undertaken for further studies to compare with our research findings.

Regarding the articles of this corpus, due to time constraints, only the introduction section of these articles was analyzed. Further studies should be conducted on other sections of AMRAs like methods, results and discussion in order to reach on feasible findings that include all the sections of the articles.

The present study has embarked on only the move structure, rhetoric purposes and some of the lexico-grammatical features allocated to the introduction section. Further studies on other lexico-grammatical features like discourse markers and other probable rhetorical differences concerning other sections of AMRAs could be conducted for a more profound description of AMRAs.

Furthermore, in relation to the articles of this study corpus, as a linguistics student and not medicine, a greater risk of misunderstanding of medical content is bound to happen during the analysis of medical research articles and this may have resulted into misplacement of the assigned moves and steps. And as suggested by Holmes (1997), this kind of misunderstanding results into a certain degree of subjectivity that is perhaps unavoidable. However, my experience and familiarity with the discourse reduced the level of misinterpretation. Additionally, although there was a greater potential for this misunderstanding, effortful measures were taken by analyzing the text in terms of theme. Collaboration with a medicine student may also

have decreased misunderstanding of medical content but due to this research confines, this collaboration was not possible.

Conclusion

This study examined the move structure of the MRAs produced by Algerian Medical Researchers. It also analyzed the move and step sequencing, the lexico-grammatical features and the communicative purposes of each move and step. The outcome of this research is of paramount importance for the students of medicine and the teachers of academic writing. New research directions have emerged thanks to this one. Researchers can follow the suggestions to start new research projects.

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APPENDICES: