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Title

English in Professional Contexts: The Impact of Language Interference.

The case of First year Medical Students at the Faculty of Medicine - KasdiMerbah University – Ouargla -Algeria

Publicly defended:

On:

Before the jury:

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Dedication

I dedicate this work:

To my beloved FATHER, for being the first to believe in me.Thank you for making my dreams possible.

To my precious MOTHER,the source of my strength .Thank you for your endless prayers and the love that kept me going .

To my brothers ,for the laughter,the fun and for always being there,I am so lucky to have you all.
To "BOUCHKIOUA and TABLIT" families for the warm hearts and endlees support that made this journey possible
To my best friends,for all the laughs and for keeping me motivated when things got hard.

To my dear roommate , for making our room feel like home .

To my childhood friend Yakout , we started this journey together and here we are finishing it together .

JOUDA

Dedication

I dedicate this work to :

First and foremost, my parents, my safe place and my greatest blessing. Thank you for believing in me even when I doubted myself, for your endless sacrifices, and for every prayer when I needed it the most.

My sisters, you are more than just family to me; you are among my biggest motivations to keep going. I hope this achievement shows you that no dream is too big and that you can always reach whatever you set your hearts on. I will always be here for you, just as you have always been there for me in your own special way.

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This is not just my success; it is a reflection of all the love, support, and faith that surrounded me.

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Wherever you are, and whatever you have endured, may your stories be remembered, and your dreams never forgotten.

Abstract

This study investigates the impact of language interference on the syntactic and lexical production of first-year medical students at the University of KasdiMerbah, Ouargla. Employing a quantitative and qualitative research design, the study analyzes the errors identified through a multi-task elicitation intrumentconsisting of oral recordings and written tasks, applying the taxonomies of Dulay et al. (1982) and Swan and Smith (2001).” The findings reveal a high prevalence of both interlingual interference; specifically syntactic omissions such as copula deletion and intralingual developmental errors. Furthermore, the analysis highlights significant "Acronym Interference" arising from the students’ prior exposure to French medical terminology. These results suggest that while interference is a natural stage of language acquisition, it requires targeted pedagogical intervention. The study concludes with recommendations for ESP (English for Specific Purposes) curriculum adjustments that address these specific linguistic transfer patterns to facilitate a more effective transition into themedical academic field.

Keywords: English for Specific Purposes, Language Interference, Interlanguage Theory, Medical English, Error Analysis,Dulay’s taxonomy , Swan and Smith’s taxonomy .

Listof Abbreviations

KMUO	KasdiMerbah University of Ouargla
EA	Error Analysis
L1	First Language (Mother Tongue /Arabic)
L2	Second Language (French/English)
EMI	English as a Meduim of Instruction
EFL	English as a Forgein Language
ESP	English for specific Purposes
EMP	English for Medical Purposes
MSA	Modern Standard Arabic
SST	Surface Strategy Taxonomy (Dulay's)

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GENERAL INTRODUCTION

GeneralIntroduction

1. Background

Thelinguistic landscape of Algeria is characterized by a distinctive historical and sociolinguistic evolution that directly influences current educational reforms in higher education. Traditionally, Algeria has been marked by a complex form of multilingualism: Algerian Arabic (Darja) functions as the mother tongue and primary medium of daily communication, Modern Standard Arabic (MSA) serves as the formal language of schooling, and French has remained the dominant language of science and medicine. This colonial legacy has established a French based scientific paradigm that shapes how Algerian medical students acquire and organize academic knowledge.

Algeria's higher education system is currently undergoing a strategic shift toward English as a Medium of Instruction (EMI).As the Algerian Ministry of Higher Education implements this policy, students experience linguistic interference while navigating between their established linguistic repertoire and the new academic demands of English. This transition is particularly challenging in the medical field, where terminological accuracy is essential.

In medical education, English occupies a central position as the primary language of research and international healthcare cooperation.For first-year medical students at the University of KasdiMerbah-Ouargla, acquiring medical terminology in English constitutes learning a third language (L3), following their L1 (Algerian Arabic, with formal education in Modern Standard Arabic) and L2 (French). Since Algeria’s medical curriculum has historically been delivered in French, students experience substantial interlingual interference when learning English medical terminology. Such interference occurs when phonological, lexical, and syntactic features from Arabic and French are transferred to English, often resulting in non-target-like usage.

This linguistic complexity necessitates a rigorous Error Analysis approach. Rather than comparing language systems in abstraction, this study examines students’ actual linguistic output to identify specific interference patterns.

2. StatementoftheProblem

Despite the global shift toward English in medical education, Algerian first-year medical students face significant linguistic challenges resulting from multilingual interference. This interference involves their L1 (Algerian Arabic and its formal variety, Modern Standard Arabic) and L2 (French), which has historically dominated medical instruction.At the University of KasdiMerbahOuarglastudents frequently transfer phonological, lexical, and syntactic features from Arabic and French to English, whichnegativelyaffectstheirmasteryofmedicalterminology.

These interference patterns lead to persistent errors that compromise terminological accuracy and hinder students' ability to communicate effectively in medical English. Without systematic error analysis to identify and classify these errors, students continue to face linguistic barriers that limit their engagement with international medical literature and compromise their professional communication.

3. Objectivesof the Research

1- To identify and classify lexical, syntactic, and phonological interference patterns in the oral and written medical English of Algerian first-year medical students at the University of KasdiMerbah-Ouargla.
2- To examine the influence of French-medium scientific education on students' acquisition of English medical terminology, with particular attention to false cognates and misleading lexical equivalences.
3- To analyze the impact of Arabic (L1) structural differences and phonetic transfer on the grammatical accuracy of students' written medical discourse and the intelligibility of their spoken medical terminology.
4- To propose evidence-based recommendations for professional development of medical English instructors addressing the identified interference patterns and challenges during the transition from French-medium to English-medium instruction.
5- To offer pedagogical recommendations for improving the teaching and learning of medical English, grounded in the error analysis findings.

4. ResearchQuestions:

Q1: Whatarethemostfrequent lexical, syntactic, and phonological interference patterns in the oral and written medical English of Algerian first-year medical students?

Q2:To what extent does prior French-medium instruction influence students' acquisition of English medical terminology through false cognates and lexical transfer?

Q3: Which Arabic syntactic features most frequently cause grammatical errors in students' written medical English?

Q4:WhichArabicphonological features most frequently affect the pronunciation of English medical terms among Algerian first-year medical students?

5. ResearchHypotheses

It is hypothesized that Algerian first-year medical students' medical English is characterized by uneven patterns of linguistic interference, with Arabic-based syntactic and phonological interference occurring more frequently than French based lexical interference

6. ResearchMethods

This study employs a mixed-methods error analysis design combining qualitative and quantitative approaches. Qualitatively, errors are identified and classified using a dual taxonomy framework: Dulay, Burt, and Krashen's (1982) surface strategy taxonomy (omission, addition, misformation, misordering) and linguistic level classification (phonological, lexical, syntactic). Quantitatively, error frequencies are calculated and analyzed statistically to determine distribution patterns and source language contributions. Data are collected from 22 first-year medical students through written tasks (case descriptions, translation, controlled writing) and oral tasks (recordings of descriptions), yielding both written and spoken corpora for comprehensive analysis."

7. Structure of the Dissertation

This dissertation is organized into three main chapters:

Chapter I: Theoretical Framework establishes the theoretical foundations of the study. It reviews Second Language Acquisition (SLA) theories, with particular focus on language transfer, interlanguage, and third language (L3) acquisition. The chapter presents the Error Analysis framework, defines key concepts (interlingual and intralingual interference, phonological/lexical/syntactic interference), and provides contrastive analysis of Arabic, French, and English linguistic features. It concludes with a review of empirical studies on Arabic-English interference, French-English interference, and medical English in multilingual contexts, identifying the research gap this study addresses.

Chapter II:This chapter presents the research design, setting, and procedures adopted in the study. It explains the mixed-methods error analysis approach, participant selection involving 22 first-year medical students at the University of KasdiMerbah-Ouargla, and the data collection instruments, including written and oral tasks. The chapter also outlines the dual taxonomy framework used for error classification, together with the ethical considerations, inter-rater reliability procedures, and methods of data analysis.

In addition, the chapter presents and discusses the analysis of 270 identified errors across the phonological, lexical, and syntactic domains. For each error type, frequency distributions, representative examples, and source attribution analyses (Arabic L1, French L2, and developmental sources) are provided and interpreted. The discussion highlights the main patterns observed in

learners' performance, answers the research questions, and compares the findings with those of previous studies. General Conclusion synthesizes the main findings, discusses theoretical and pedagogical implications, acknowledges limitations, and suggests directions for future research

8. Significance of the Study

This study makes both theoretical and practical contributions. Theoretically, it advances research on English for Medical Purposes (EMP) within trilingual educational contexts by documenting interference patterns specific to Arabic-French-English learners. Unlike previous studies that examine bilingual interference (L1→L2), this research investigates trilingual transfer dynamics (L1+L2→L3) in a specialized medical discourse domain, contributing to third language acquisition theory and error analysis methodology. Practically, the study provides evidence-based insights that can inform more effective pedagogical approaches for medical English instruction during Algeria's transition to English-medium instruction. By identifying the most frequent and persistent interference patterns, the findings enable targeted curriculum design and teacher professional development that address the specific challenges faced by Algerian medical students. The research also has broader implications for other multilingual contexts undergoing similar EMI transitions.

CHAPTER ONE

CHAPTERONE

Introduction

Historically, our educational system in Algeria has been defined by a deep- rooted coexistence of Arabic and French . Not long ago, higher education has undergone a strategic shift toward English as a Medium of Instruction (EMI), especially within medical faculties this transition is described by Maraf and Osam (2023) as a "booming wave" of English, which shows the growing importance of the language in the Algerian context. This chapter gives the main ideas for the studyoflanguageinterferenceinMedicalEnglishamongAlgerianstudents.Itstudies themix of languagesinAlgeriaandhowEnglishisintegratedintothemedicalfield,itreviews keytheoreticalperspectivesincludingInterlanguagetheoryandThirdLanguage(L3)Acquisition. In addition, it presents the framework of Error Analysis and explores the important types of interference, specifically phonological, lexical, and syntactic interference.

Finally, the chapter reviews similar studies in order to identify the research gap that the present study aims to deal with.

1.1AlgerianMultilingualContextandEMITransition

1.1.1 Languagesituation:Arabic,French,English

The linguistic landscape in Algeria today is the result of a long and layered history that has produced a distinctive form of multilingualism. In both public and educational settings, Arabic occupies a central position in shaping national identity. However, Arabic in Algeria functions in a dual capacity. Modern Standard Arabic remains the formal language of administration, official documentation, and media discourse, while Algerian Arabic (Darja) serves as the primary language of everyday communication and the native language for most of the population. At the same time, the influential status of French cannot be overlooked. Although it does not possess official language status, its historical legacy from the colonial period continues to exert a strong influence, particularly in business sectors and, more significantly, in higher education, especially within scientific and medical disciplines. As a result, many Algerians demonstrate bilingual or multilingual linguistic practices, shifting between languages according to social and institutional contexts.

More recently, English has gained increasing prominence, particularly among younger generations. It is progressively recognized as the global language of science and technology, leading to a growing demand for its acquisition. Consequently, students are increasingly required to navigate a complex multilingual environment involving Arabic, French, and English. This transition presents both opportunities for

academic and professional development and significant pedagogical challenges for the contemporary Algerian educational system.

1.1.2 EMI policy in medical faculties

In recent years, Algeria has taken steps to integrate English more deeply into its higher education system. A major part of this is the move toward English as a Medium of Instruction (EMI),particularly inscientificandmedicalfieldswhereFrenchhastraditionallybeenthemain language. The Ministry of Higher Education and Scientific Research has promoted this shift to help Algerian universities connect with global research and academic networks.

For medical faculties, this means moving from a system where lectures and materials were primarily in French to one where English is used. This is a big change for both teachers and students. Medical students must now learn complex medical concepts and terms in English,a language they may not be as familiar with as French or Arabic.This transition aims to prepare students for a globalized professional world but also brings challenges in understanding and communication that need to be studied.

1.1.3 Challenges for first-year students

Switching to a medical degree is already a difficult step for students, and doing it in a new language makes it even harder. First-year medical students face several challenges during this transition. First, they need to learn a massive amount of new and specialized vocabulary. Medical terms are often complex, and learning them in English adds an extra layer of difficulty,especially when students are more used to French scientific terms.Second,The way sentences are built and ideas are expressed in English can be different from Arabic or French. This can lead to confusion and errors when students try to write or speak about medical topics. Finally, there is the challenge of listening to lectures and reading textbooksinEnglish.Studentsmaystruggletokeepupwiththepaceofinformation,leadingto gaps in their understanding of important medical concepts.Understanding these challenges is key to helping students succeed in the new (EMI) environment.

1.2 Language Transfer and interference Theory

1.2.1 Language Transfer theory (Odlin,1989)

Languagetransfer,orcross-linguisticinfluence,isacoreconceptinstudyinghowpeoplelearna new language. According to (Odlin,1989,p.113), language transfer refers to the influence that a person’s knowledge of other languages has on the acquisition of a new one. This influence can be positive, helping learning when languages share similar features, or negative, leading to errors when languages are different.

For Algerian medical students, language transfer is a major factor. Their strong background in Arabic and French inevitably influences how they learn and use English. For example, similar vocabulary

between French and English can help them understand some medical terms quickly (positive transfer). However, differences in sentence structure or word meanings can lead to mistakes(negativetransfer).Odlin'sworkhelpsusunderstandthat theerrorsstudentsmakeare not just random mistakes but are often connected to the languages they already know.

1.2.2 Interlanguage (Selinker,1972)

Interlanguage theory, introduced by Selinker (1972), suggests that language learners create a unique linguistic system that is separate from both their native language and the target language they are learning. This system,called an interlanguage, is dynamic and changes as the learner gains more knowledge and experience.It is a half way house between the starting point and the goal.

In the case of Algerian medical students, their English can be seen as an interlanguage. It combines features of English with influences from Arabic and French, creating a unique way of communicating. Selinker identified several processes that shape interlanguage, including language transfer, overgeneralization of rules, and strategies of communication. Viewing students' language use through the lens of interlanguage theory allows us to see their errors as evidence of a developing system rather than just failures to learn.

1.2.3 L3 acquisition:Relevance to Arabic-French-English

A third language (L3) is different from learning a second language (L2). In L2 acquisition, the main influence comes from the native language.However,in L3 acquisition,the learner already has two language systems (L1 and L2) that can influence the new language (L3). This creates a more complex web of cross-linguistic influence.

For Algerian students learning medical English,they are typically in an L3 acquisition context. They have their native Arabic (L1) and their educational French (L2), and both of these can transfer into their English (L3). Research in L3 acquisition shows that the previously learned non-native language (French,in this case) often plays a strong role,sometimes even stronger than the native language,a phenomenon supported by the Cumulative Enhancement Model (Flynn et al.,2004) and the Typological Primacy Model (Rothman,2011) especially in formal or scientific contexts. This makes the study of language interference in this setting particularly interesting and complex.

1.3 Error Analysis Framework

1.3.1 Definition:Error vs Mistake (Corder ,1967)

In the field of Error Analysis,it is important to distinguish betweenan"error"anda"mistake,"Following Chomsky’s (1965) distinction between competence and performance, Corder (1967) introduced a foundational differentiation in the field of Error Analysis between an "error" and a "mistake." A mistake is a performance error, a random slip of the tongue or pen caused by tiredness, lack of attention, or strong emotion. The learner knows the rule but fails to apply it correctly in that moment. They can usually correct

a mistake themselves if it is pointed out.

An error, on the other hand, is a systematic deviation from the rules of the target language. It revealsgapsinthelearner'sknowledge;thelearnerdoesnotknowthecorrectruleandcannot correct it themselves. Errors provide valuable information about the learner's current stage of interlanguage development. For our study of medical students, focusing on systematic errors ratherthanoccasionalmistakeshelpsusunderstandtherealdifficultiestheyfaceinmastering medical English.

1.3.2 Error taxonomies

Dulay et al . (1982):Omission,Addition,Misformation,Misordering

To describe and classify errors systematically, researchers often use taxonomies.One widely used classification is the Surface Strategy Taxonomy proposed by Dulay, Burt, and Krashen (1982). This taxonomy focuses on the ways surface structures are altered by learners. It identifies four main types of errors:

- **Omissions:**Leaving out an item that must appear in a well-formed sentence (e.g., leaving out an article or a verb).
- **Additions:**Adding an item that should not appear in a well-formed sentence(e.g., putting a double marking for tense).
- **Misformations:**Using the wrong form of amorphemeorstructure (e.g.,usinga French spelling for an English word).
- **Misorderings:**Putting items in the wrong order in a sentence (e.g.,word order errors)

Using this taxonomy helps us break down the errors made by medical students into clear categories, making it easier to analyze the patterns and understand the types of difficulties they are encountering in their medical English.

1.3.3 Error Sources: Interlingual vs. Intralingual

A. Interlingual Errors (Cross-linguistic Interference)

These errors occur when the learner's previous linguistic knowledge (L1 or L2) interferes with the production of the target language (L3 English).

Source: Transfer from Arabic (L1) or French (L2).

B. Intralingual Errors (Developmental Errors)

These errors happen regardless of the student's background. They occur because the student is still learning the complex rules of English and tries to simplify them or apply them incorrectly.

Source: The English language itself.

1.4 Interference Types in Medical English

1.4.1 Phonological Interference (Swan&Smith, 2001, pp. 195–199)

Phonological interference remains an enduring challenge in the realm of oral medical communication.
As delineated by Odlin (1989), learners typically draw upon established articulatory patterns from their native language when attempting to articulate sounds in the target language.

Consonant Substitution (Misformation):A prominent issue arises from the absence of several English phonemes in Arabic, leading students to replace these sounds with acoustically similar counterparts available in their phonetic inventory. The most consequential of such substitutions involves replacing the voiceless bilabial plosive /p/ with its voiced counterpart /b/. In a clinical context, this manifests as mispronunciations such as "patient" becoming "batient," "pills" rendered as "bills," and "pulmonary" pronounced as "bulmonary." Similarly, the voiced labiodental fricative /v/ is often substituted with the voiceless /f/, yielding interpretations of "valve" as "falfe" and "liver" as "lifer." Furthermore, the dental fricatives /θ/ and /ð/ are commonly altered, resulting in "therapy" being articulated as either "s-er-apy" or "t-er-apy," whereas "the" assumes variants such as "ze" or "de" (Swan&Smith, 2001, p. 197).

Consonant Clusters (Addition): The constraints of Arabic syllable structures, typically of the CVC pattern, restrict the use of initial consonant clusters comprising three sounds. To navigate this limitation, learners introduce "prothetic vowels" to disassemble these clusters. Consequently, English terms such as "stress," "screen," or "stethoscope" are pronounced as "istress," "iscreen," and "is-tethoscope," respectively. This phenomenon also extends to terminal consonant clusters, where vowels are inserted to facilitate pronunciation, producing forms like "monthis" for "months" or "firsit" for "first" (Swan&Smith, 2001, p. 199).

Influence of Orthography: The phonetic nature of Arabic orthographywhich aligns closely with its spoken formfurther complicates learners' acquisition of English pronunciation. Students frequently resort to applying analogous phonological principles to English, leading to errors involving silent letters. For example, they may pronounce the /g/ in "foreign," the /gh/ in "light," the /k/ in "know," the /s/ in "island," and the /b/ in "doubt," contrary to standard English norms (Swan&Smith, 2001, p. 199).

This combination of substitution, addition, and orthographic influence underscores the multifaceted challenges faced by Arabic-speaking students in mastering English phonology, particularly in medical contexts where precision is paramount.

1.4.2 Lexical Interference

Lexical interference emerges as the most prevalent form of transfer in English for Medical Purposes (EMP), influenced significantly by both L1 (Arabic) and L2 (French).

Prepositional Over-extension: As highlighted by Swan&Smith (2001), Arabic prepositions exhibit broader semantic ranges compared to their English counterparts. This often leads to misuse, such as "he is married from her" or "I am afraid from the surgery," stemming from the over-extension of the Arabic preposition من *min* ("from"). Similarly, learners might say "I am thinking in the problem" due to the Arabic preposition في*fī*, which can mean both "in" and "about" (p. 212).

Verb-Noun Collocations: Another common issue arises with direct translations of the Arabic verb فعل *fa'ala* (to do/make), which frequently results in errors in medical contexts. For example, students may incorrectly say "make a surgery" instead of "perform a surgery," or "make a test" instead of "conduct a test" (p. 213).

Negative Lexical Transfer (False Cognates): The dominance of the French-based scientific tradition in Algeria often leads learners to rely on French as a primary linguistic reference. This reliance results in negative transfer, where terms like *génétique* are used in place of "genetic," or *cardiologie* is substituted for "cardiology." More critically, it leads to the misuse of False Friendswords that appear similar but differ in meaningsuch as using "sensible" (which means sensitive in French) when intending to express "sensitive" in English.

1.4.3 Syntactic Interference

Omission of the Copula: In Arabic nominal sentences, the present-tense verb "to be" is typically absent. This often leads students to omit "is" or "are" when constructing sentences in English. For instance, in medical reports, this might appear as "The patient stable" or "The symptoms clear" as noted by (Dulay et al.,1982).

Misordering of Noun and Adjective: Arabic and French place adjectives after nouns, a grammatical structure that can result in errors for learners of English. As a consequence, students may incorrectly write phrases like "anemia sickle" instead of "sickle anemia" or "pressure blood" instead of "blood pressure."

Double Marking by Addition: Dulay et al. (1982,p.156)classify "double marking" as a form of additive error wherein a grammatical feature is expressed in two separate instances, even though the rules of the target language necessitate its presence at only one point . This phenomenon is notably prevalent among Algerian medical students as an interlingual error, stemming from the syntactic properties of Arabic relative clauses. In Arabic grammar, the use of a "resumptive pronoun" (referred to as 'ā'id) is a linguistic necessity, functioning to reference the antecedent noun within a sentence. However, when this construction is transferred to English, it often introduces an extraneous pronoun, thereby rendering the sentence grammatically incorrect. Examples of Double Marking in Medical

Communication: Example 1: *The medicine that I took it was effective.*In this sentence, the insertion of "it" is redundant because the relative pronoun "that" already serves the grammatical purpose of identifying the object. Example 2: *The patient whom the doctor treated him has recovered.* Here, the addition of "him" reflects an attempt to fulfill the Arabic requirement for a resumptive pronoun, which results in an ungrammatical double marking of the object. Example 3: *This is the X-ray which I showed it to the specialist.* Similar to the previous cases, the inclusion of "it" represents an unnecessary duplication, disrupting English syntactic conventions.

1.5 Contrastive Analysis: Arabic-French-English

A detailed Contrastive Analysis (CA) , a framework established by Lado (1957) highlights the underlying reasons for these particular errors by examining and comparing the structural mechanisms of the three languages.

1.5.1 Key Phonological Differences

Vowel Length Confusion: English has a complex system of short and long vowels (e.g., /ɪ/ in ship vs. /iː/ in sheep). Arabic has only three pairs of long/short vowels, leading students to pronounce "fit" and "feet" identically, which can cause confusion when discussing a "fit" patient vs. "feet" swelling.

Suprasegmental Rhythms: English is stress-timed, while French is syllable-timed. Algerian students often apply a French "staccato" rhythm to English, giving equal duration to every syllable. This results in the misplacement of stress in long medical terms like "an-es-the-SIA" (stressing the end like French) rather than "an-es-THE-sia."

1.5.2 Key Syntactic Differences

Time, Tense, and Aspect: The Arabic language does not distinguish between the simple and continuous aspects, which frequently leads to transfer errors when speakers learn English. For instance, a learner might state "I write the report now" (Simple Present) in place of the correct "I am writing the report" (Present Continuous). Furthermore, Arabic-speaking learners tend to overgeneralize the usage of the Simple Past tense for all past actions, often neglecting the Present Perfect. This results in sentences like "I finished the surgery" being used where "I have finished the surgery" would be more appropriate in English (Swan&Smith, 2001, pp. 205–206).

Articles and Definiteness: In Arabic, definiteness is marked by a prefix equivalent to "the," but there is no corresponding indefinite article. This structural difference can lead learners to omit "a/an" in instances where they are required in English (e.g., "He is surgeon"). Conversely, there might be instances of overgeneralization, such as the unnecessary addition of "the" before abstract nouns in contexts where it is not grammatically appropriate in English (e.g., "The health is important") (Swan&Smith, 2001, p. 208).

Gender and Number Interference: Arabic assigns gender to all nouns, which can influence learners' use of pronouns in English. For example, a learner may refer to a noun like "kidney" or "liver" as "he"

or "she," reflecting its grammatical gender in Arabic. Additionally, the use of the "dual" number in Arabic, which specifically denotes pairs (such as eyes or lungs), may interfere with English pluralization rules. This discrepancy often results in confusion when English learners attempt to describe bilateral anatomical structures.

Modal Verbs: Errors involving modal verbs are common among Arabic-speaking learners of English. Specifically, learners may include the particle "to" following modal verbs, resulting in constructions such as "I must to go" or "He can to help." This issue stems from literal translation, as both Arabic and French modals typically precede the infinitive form with a corresponding particle, as seen in French (e.g., *Je dois y aller*) or Arabic structures (Swan&Smith, 2001, p. 207).

1.5.3 Lexical relationships (French-English cognates)

The lexical relationship between French and English is the most significant double-edgeds word in Algerian medical education. According to linguistic estimates (e.g.,Williams,1986) approximately 40% to 50% English vocabulary particularly in specialized fields like medicine shares recognizablecounterparts with French due to their common Latinate origins**.** This mutual reliance on Latin and Greek for scientific nomenclature facilitates rapid comprehension for students familiar with French.

- **PositiveTransfer(TrueCognates):**Formanyterms,therelationshipisoneofnear-identity, facilitatingrapidcomprehension.Wordslike*hypertension*,*virus*,*infection*, and *ambulance* are virtually identical in spelling and meaning across both languages.
  This lexical bridge allows Algerian students to navigate complex medical texts more easily than learner from non-European linguistic backgrounds.

- **Negative Transfer (False Cognates and Orthographic Interference):** The danger lies in "false friends" (*faux amis*), where the formal similarity masks a semantic difference. As discussed by Odlin (1989), learners are highly susceptible to lexical transfer when they perceiveaclosetypologicalsimilaritybetweenlanguages.ForAlgerianmedicalstudents, terms like *sensible/sensitive* and *actuel/actual* are frequent sources of error. Furthermore,evenwhenthemeaningistheexactsame,subtleorthographicdifferences lead to interference. A student conditioned by French might write *génétique*instead of *genetic*,or*cardiologie*insteadof*cardiology*.Thisorthographicinterferenceisahallmark of the L3 learner's interlanguage (Selinker, 1972), where the graphological habits of the L2 (French) are superimposed onto the L3 (English).

1.6 Previous studies and Reasearch Gap

The investigation of language interference and error analysis is a well-established tradition in Second Language Acquisition (SLA). However, the specific intersection of English for Medical

Purposes(EMP) and there cent transition toEnglish as aMediumof Instruction(EMI) inAlgeria provides a unique landscape for contemporary research.

1.6.1 Arabic-English interference studies

Research into the interference of Arabic in English acquisition has historically focused on the stark typological differences between the two language families. Early investigations in contrastive analysis laid the groundwork for predicting learning difficulties based on the distance between the native and target languages (Odlin, 1989). In terms of phonology, research has consistently documented the difficulty Arab learners face with English phonemes that do not exist in the Arabic in ventory. As (Swan & Smith, 2001)detailed,the absence of the voiceless bilabial plosive /p/ and the dental fricatives/θ/and/ð/typically results inpredictable substitutions. Syntactically, the absence of the verb "to be" in the present tense in Arabic frequently leads learners to omit the copula in English (Swan & Smith, 2001). These developmental and interference-driven deviations become part of the learner's evolving interlanguage, reflecting the cognitive strategies described by Selinker (1972) and the surface modifications categorized by Dulay et al. (1982).

1.6.2 Medical English error studies (Ehsanzadeh&Dehnad,2024)

In the specialized domain of English for Medical Purposes, recent corpus-based studies have provided granularin sights into the linguistic patterns of medical students .Asignificant study by Ehsanzadeh and Dehnad (2024) analyzed a learner corpus of 1,040 essays (comprising over 330,000 words) written by medical students in an English as a Foreign Language (EFL) context.The findings of Ehsanzadeh and Dehnad (2024) revealed that a small number of high-frequency errors account for the majority of linguistic deviations. Specifically, only five out of eleven identified high-frequency errors accounted for approximately 61% of the total number of errors. The most prevalent errors related to preposition choice article usage, and noun-adjective agreement. Their research suggests that while medical students may successfully acquire complex scientific terminology, they often struggle with the "functional" grammar required to link those terms accurately.

1.6.3 Algerian EMI context (Tihal,2025)

Within the Algerian landscape, the research focus has shifted dramatically following the Ministry of Higher Education and Scientific Research's mandate to adopt English across scientific disciplines. Recent work, such as that by Tihal(2025),explores the institutional and pedagogical readiness of Algerian universities for this transition. Tihal's research indicates that while both students and faculty exhibit positive attitudes toward English, the practical implementation faces significant hurdles due to limited English language proficiency and a lack of specific training in EMI pedagogy. This aligns with other recent studies in the Algerian higher education system (e.g., Guenaoui, 2024; Bouriche, 2022) highlighting a clear gap between students' existing general English proficiency and the demands of

clinical discourse.

1.6.4 Research gap identification

Despite the growing body of literature on EMI in Algeria and error analysis in medical English, a distinct research gap remains. Most existing Algerian studies primarily emphasize needs analysis, attitudes towards EMI, perceptions of the shift to English, and institutional hurdles (e.g.,Bouriche,2022;Guenaoui,2024) However, there remains a noticeable dearth of empirical research specifically documenting and analyzing the actual linguistic interference errors made by first-year medical students within the unique L3 (Arabic –French-English)context of Algeria while contributions like Ehsanzadeh and Dehnad's(2024) research provide valuable insights into medical English within standard EFL settings,there is a lack of scholarship exploring how the specific overlap between French and English terminology drives errors among Algerian medical students, particularly at the University of KasdiMerbah in Ouargla**.**. This dissertation seeks to address this research gap by delivering a focused analysis of errors stemming from interlingual and intralingual interference. Through the examination of written assignments and oral recordings, itaims to construct a localized error profile that sheds light on the linguistic challenges faced by first-year medical students amid Algeria's transition to EMI.

1.7 Conclusion

In summary, this chapter has established the comprehensive theoretical and contextual frame work required to investigate language interference among first-year medical students. .By examining the complex sociolinguistic landscape of Algeria, it is evident that the transition to English as a Medium of Instruction (EMI) places unique cognitive and linguistic demands on learners who are already operating within an established Arabic and French-dominantscientific paradigm.

The core theories of Language Transfer and Interlanguage provide the lens through which student errors can be understood not as random failures, but as evidence of a systematic, transitional linguistic system. Furthermore, applying the Error Analysis framework allows for a precise categorization of these deviations across phonological, lexical, and syntactic levels. As revealed by the contrastive analysis and previous literature, the students' prior knowledge of Arabic and French acts as a a source of both facilitation and interferenceoffering a bridge to English medical terminology while simultaneously triggering negative transfer and falsefriends.Ultimately,this framework provides the analytical tools required to proceed to the practical phase of this dissertation. The following chapter will detail the research methodology, participants, and instruments used to empirically capture and analyze these interference patterns.

CHAPTERTWO

ChapterTwo

Introduction

This chapter presents both the methodological framework and the analytical findings of the study, offering a comprehensive account of how language interference shapes English production among first-year medical students at KasdiMerbah University, Ouargla. Building on the theoretical foundations of Error Analysis (EA) and language interference discussed in Chapter One, and moving from theory to practice, it first outlines the research design and methodological procedures employed to investigate the impact of Arabic (L1) and French (L2) on the acquisition and use of English (L3) within a Medical English context under the English as a Medium of Instruction (EMI) shift in Algeria.

The methodology section details the academic setting, participant profile, and data collection instruments used to construct the study corpus, comprising both oral and written production tasks. It further explains the criteria adopted for error identification, notably consistency and communicative impact tests, as well as the application of established taxonomies such as those proposed by Dulay et al. (1982) and Swan and Smith (2001) for error classification. These procedures ensure the rigorous and replicable analysis

Following this, the chapter presents the findings derived from the analysis of oral and written English production of 22 first-year medical students at KasdiMerbah University Ouargla. A total of 270 interference errors were identified across five elicitation tasks, revealing systematic patterns of Arabic and French influence on students' emerging "medical interlanguage." The analysis is structured to provide both a macro and micro linguistic perspective: Section 2.7 introduces the participant demographics and corpus overview, while Sections 2.8, 2.9 , and 2.10 examine phonological, lexical, and syntactic interference patterns in detail. Each section includes error frequency distribution, illustrative examples drawn from student output, and attribution of error sources. Finally, Section 2.11 synthesizes the results in relation to the research questions formulated in Chapter One .

2.1 Research Design

This study adopts a mixed methods design integrating both quantitative and qualitative data analysis. According to Creswell (2014), a mixed methods design yields a more complete understanding of a research problem than either approach alone. In the context of Applied Linguistics and Error Analysis, this dual approach is well suited to a comprehensive investigation of language interference, as it allows statistical patterns to be interpreted alongside their linguistic explanations.

2.1.1 The Quantitative Aspect

The quantitative dimension of this research is reflected in the frequency and distribution of identified errors. By calculating the number of instances in which students omit a morpheme, misform a medical term, or produce an incorrect syntactic structure, the data were tabulated to provide statistical evidence

of which linguistic areas are most problematic. This involved the following procedures:

- Tabulating the total number of errors across all participants and tasks.
- Calculating percentages for each category of the Surface Strategy Taxonomy (Omission, Addition, Misformation, and Misordering).
- Comparing the frequency of interlingual versus intralingual errors using the source categories defined by Swan and Smith (2001).

2.1.2 The Qualitative Aspect

The qualitative dimension focuses on the description and explanation of identified errors. Rather than quantifying them alone, this dimension interrogates the mechanisms underlying each error through three analytical stages:

- **Identification:** Detecting the specific points at which a student's interlanguage deviates from the target language norm.
- **Description:** Characterizing the form of the error ;for example, the application of a French orthographic suffix to an English root drawing on the Linguistic Category Taxonomy (Swan & Smith, 2001).
- **Explanation:** Attributing the source of the error, such as negative transfer from the student's French (L2) background or intralingual developmental processes.

By combining these two dimensions, the study achieves methodological triangulation, in which statistical frequency data are corroborated by detailed linguistic analysis, thereby strengthening the validity and reliability of the conclusions.

2.2 Participants and Setting

2.2.1 Research Setting

The study was conducted at the Faculty of Medicine, KasdiMerbah University, Ouargla. This setting was selected because the faculty is currently undergoing a significant institutional transition toward EMI, providing a naturalistic environment in which linguistic interference in a specialized academic context can be directly observed and documented.

2.2.2 Population and Sampling

The participant group comprised 22 first-year medical students, including both male and female students aged between 17 and 20 years. These students share a broadly comparable linguistic profile: they are native speakers of Algerian Arabic (L1), have attained a high level of proficiency in French (L2) through primary and secondary education conducted predominantly in that language, and are currently encountering English (L3) as the primary medium of instruction for their medical studies.

2.3 Data Collection Instruments

To investigate language interference among medical students, a multi-Task elicitation instrument was

designed. The elicitation instrument aims to elicit various types of linguistic production (oral, translation, and written) to provide a rich corpus for error analysis. It is divided into five main tasks, each targeting a specific linguistic level.

2.3.1 Task 1: Oral Production (Oral Description of a Cell)

In this task, participants were presented with a labeled diagram of an animal cell.

Procedure: Students were asked to prepare a brief oral description of the cell, its parts, their locations, and their functions.

Rationale: This task is designed to collect oral data to analyze phonological interference. By speaking freely about a medical topic, students' natural pronunciation patterns potentially influenced by Arabic or French can be identified.

2.3.2 Task 2: Medical Vocabulary Labeling and Usage

This task focuses on the lexical level. Students were asked to label a plant cell diagram and then use the words in complete English sentences.

Rationale: This helps in detecting orthographic and lexical interference, such as when students use French spelling for English medical terms (e.g., writing "Cellule" instead of "Cell").

2.3.3 Task 3: Translation Task (Arabic & French to English)

This is a crucial part of the study as it directly triggers interference by asking students to translate sentences from their L1 (Arabic) and L2 (French) into English.

Arabic to English: Sentences like "يجب على الطالب أن يدرس الخلية" were used to see if Arabic syntax affects the English output.

French to English: Sentences like "Le médecinassiste à uneconférence" were used to observe lexical false friends (e.g., confusing "assister" with "assist" instead of "attend").

2.3.4 Task 4: Vocabulary and False Friends Recognition

This task uses multiple-choice questions to test the students' ability to recognize correct English spelling and meanings, specifically targeting "false friends" between French and English.

Examples: Distinguishing between the meanings of words like "sensible," "constipated," and "lecture," which have different meanings in French.

2.3.5 Task 5: Controlled Sentence Writing

The final task provides students with sets of medical keywords (e.g., pump / muscle / heart / blood / body) and asks them to reorder and conjugate them to form correct sentences.

Rationale: This task is designed to analyze syntactic and morphological errors, such as subject-verb agreement and word order, which are frequent areas of interference.

2.4 Data Collection Procedures

The data collection process was systematically organized and executed over a period of three consecutive days at the Faculty of Medicine. This timeline was chosen to ensure a consistent environment for all participants and to maintain the flow of data collection of the research. The procedure followed several logistical and academic stages:

2.4.1 Initial Coordination and Briefing

First, the researchers visited the faculty to coordinate with the administration and the target students. A brief orientation was provided to the 22 participants to explain the nature of the tasks and to ensure they understood the ethical protections regarding their anonymity.

2.4.2 Administration of Tasks

The written and oral tasks were administered in a controlled, quiet environment within the faculty. This was crucial to ensure that students relied solely on their own internal linguistic knowledge without the influence of external aids or peer consultation.

Duration and Focus: Each of the 22 students was allocated approximately 45 minutes to complete the entire suite of tasks. This generous time frame was intentionally designed to reduce "test anxiety" and allow students enough flexibility to produce natural, spontaneous language samples, especially during the oral description phase.

Recording Process: Following the completion of the written sections, individual oral recordings were conducted. This allows capturing clear audio data for the phonological analysis of medical terminology.

2.4.3 Data Gathering and Organization

By the end of the third day, a total of 22 completed surveys and their corresponding audio files were gathered. Each student’s responses were coded (e.g., Student 1, Student 2) to maintain confidentiality. This organized corpus of data then served as the basis for the subsequent error analysis phase.

2.5 Data Analysis Framework

This section details the criteria applied to the data, as guided by the principles of Error Analysis (EA).

2.5.1 Error Identification Criteria

To ensure scientific accuracy, two essential rules were followed to identify errors:

2.5.1.1 Consistency Test: Following Brown (2000), a distinction is made between a "mistake" (a random slip) and an "error" (a lack of knowledge). A deviation was only recorded as an error if it was found to be consistent and repeated, indicating a systematic gap in the student's linguistic competence.

2.5.1.2 Communication Impact: Based on Burt and Kiparsky (1972), errors were categorized as Global (hindering the overall message) or Local (minor deviations that do not obstruct the meaning). This allows for an assessment of how interference affects

clinical communication.

2.5.2 Error Classification Taxonomies

The study adopts a dual-taxonomic approach for classification:

Surface Strategy Taxonomy (Dulay et al., 1982): Used to describe how the surface structure is altered (Omission, Addition, Misformation, and Misordering).

Linguistic Category Taxonomy (Swan & Smith, 2001): Used to categorize errors by their linguistic level (Phonological, Orthographic, Lexical, and Syntactic), specifically looking for patterns characteristic of Arabic and French interference.

2.5.3 Error Attribution

The final analytical stage involved attributing each identified error to its probable source. Errors were classified as arising from one of two mechanisms: interlingual transfer(interference from Arabic or French) or Intralingual Errors (developmental errors common to all English learners).

2.6 Reliability and Validity

To ensure the reliability and validity of the findings, several methodological procedures were adopted throughout the study. Reliability was strengthened through the systematic application of established error analysis taxonomies, namely Dulay et al.'s (1982) Surface Strategy Taxonomy and Swan and Smith's (2001) Linguistic Category Taxonomy. In addition, consistent error identification criteria, including the consistency test and communication impact test, were applied to all participants' productions to reduce subjectivity in classification.

Validity was reinforced through methodological triangulation by combining oral and written data collection tasks, allowing interference patterns to be observed across multiple linguistic contexts. Furthermore, the study employed both quantitative and qualitative analysis, ensuring that statistical patterns were supported by detailed linguistic explanations. These procedures collectively enhanced the trustworthiness, consistency, and accuracy of the findings.

2.7 Ethical Considerations

This study strictly adheres to established ethical research principles. Prior to participation, all students were provided with comprehensive information regarding the study's purpose, procedures,andtheir unconditional right to withdraw at any time without penalty. Informed consent was obtained from all Participant. Participant data, including oral recordings, was collected anonymously, with names omitted and replaced by generic numerical and letter codes for identification. All research materials are securely stored, ensuring strict confidentiality, and access is restricted to authorized research personnel.

2.8 Overviewof Data and Participants Profile

2.8.1ParticipantDemographics

The study involved 22 first-year medical students enrolled at the University of KasdiMerbah-Ouargla during the 2025-2026 academic year. The sample consists of 3 males (13.6%) and 19 females (86.4%). The participants' ages range from 17 to 20 years (M = 18.5, SD = 0.9)

Participant Demographic Characteristics (N = 22)

Characteristic	n	%
Gender		
Male	3	13.6
Female	19	86.4
Total	**22**	**100**

Table 2. 1 Participant Demographic Characteristics (N=22)

2.8.2 Data Corpus Description

Data were collected through five tasks: one oral description task and four written tasks comprising cell labeling, translation, vocabulary matching, and controlled writing. The total corpus comprised the following: written production totaling 2,121 words across all participants (*M* = 96.0 words per student, *SD* = 22.08); oral production totaling 15.44 minutes of recorded speech (*M* = 0.70 minutes per student, *SD* = 0.15); and a total of 270 errors identified across all students, yielding a mean of 12.27 errors per student (*SD* = 4.06; range: 6–22).

2.8.3 Overall Error Description

The distribution of these errors, categorized according to the Surface Strategy Taxonomy (Dulay et al., 1982).

Error Distribution by Type and Linguistic Level (N=270)

Error Type	n	(%)
Misformation	173	64.1
Omission	50	18.5
Addition	32	11.9
Misordering	15	5.6
Total	**270**	**100**

By Linguistic Level

Syntactic	149	52.5

Lexical	121	40.6
Phonological	14	4.9
Total	**284**	**100**

By Source Language

Developmental	123	45.6
French L2	109	40.4
Arabic L1	38	14.1

Table 2. 2 Error distribution by type / Linguistic level / Source language(N=270)

As Table 3.2 shows ,Miformation errors were most frequent (64.1%),followed by Omission errors (18.5%).At the linguistic , Syntactic errors accounted for the largest proportion (52.5%).Source attribution analysis revealed that Developmental processes contributed more to total errors(45.6%) than French L2 transfer (40.1%) ,with a smaller proportion (14.1%) attributed to Arabic L1 transfer.

Cross-Tabulation: Error Type by Source Language

	Arabic	**French**	**Developmental**	**Total**
Misformation	29	97	47	**173**
Omission	0	2	48	**50**
Addition	5	5	22	**32**
Misordering	4	5	6	**15**
Total	**38**	**109**	**123**	**270**

Table 2. 3cross-tabulation : Error Type by Source Language (N=123)

Cross-tabulation analysis reveals that 88.2% of Arabic L1-induced errors were syntactic in nature, whereas 80.2% of French L2-induced errors were lexical. Among developmental errors, syntactic issues remained the most prevalent category (73.2%). These distributions provide a quantitative basis for the domain-specific analyses that follow

2.9 LEXICAL INTERFERENCE ANALYSIS

Lexical errors constitute a significant linguistic category within the participants' performance, accounting for 42.6% (n=121) of the total error instances. This distribution indicates that the acquisition of specialized medical vocabulary and the nuances of English word usage remain substantial areas of difficulty. These lexical errors are further analyzed based on their specific sources, including L2 French transfer, L1 Arabic transfer, and intralingual processes, with French interference showing a particularly high concentration of this error type at 80.2% within its category.

2.9.1 French-Based Lexical Errors

French-based lexical errors represent a significant hurdle for students, accounting for a high volume of

mistakes in their written production. These errors primarily stem from the structural and historical similarities between French and English, leading students to make incorrect assumptions about meaning, spelling, and word order. The following table provides a detailed breakdown of these errors, categorized by their linguistic pattern and frequency of occurrence.

Frequency of French-Based Lexical Errors (N=89)

Pattern	French source	Student error	frequency (n)	%
False Cognate	Assister à	“Assist to" / "Assist at” (for attends)	16	18.0
False Cognate	Sensible	“Sensible" (for reasonable/sensitive)	15	16.8
False Cognate	Actuellement	“Actually” (for currently / Actually)	13	14.6
False Cognate	Passer un examen	"Take an exam"(for sit / take an exam)	10	11.2
False Cognate	constipé	“constipated“(for having a cold)	5	5.6
False Cognate	Lecture	“Lecture “(for reading)	4	4.5
Other false cognates	Various	Various	5	5.6
Orthographic Proximity	French spelling	"Cellule" tissue”, ” Informations”	9	10.1
Acronym interference	French term	"ARNm"; “ADN” (for RNA and DNA)	3	3.4
Word order transfer	reticulum endoplasmique	“reticulum endoplasmic” (for endoplasmic reticulum)	1	1.1
Other	Orthographic errors	Various Orthographic errors	8	9.0
TOTAL			89	100

Table 2. 4 Frequency of French-Based Lexical Errors (N= 89)

False cognates (or "false friends") are the most significant hurdle, accounting for over two-thirds of all errors. This suggests that students rely heavily on assuming that if a word looks the same in both

languages, it must mean the same thing.

"Assist to/at" (18.6%): This is the most frequent error. It stems from the French *assister à* (to attend). In English, "assist" means to help, leading to significant clarity issues in academic or professional reporting.

"Sensitive" (16.8%) was frequently misused for "reasonable" (French: *sensé/sensible*).

"Actually" (14.6%) was used when students intended to say "currently" (French: *actuellement*).

"Take an exam" (11.2%) was used incorrectly in contexts where "succeeding in an exam" was intended (French: *passer* vs. *réussir*).

Errors related to Orthographic Proximity and other orthographic issues account for a combined10.1% of the total.

Students often default to French spelling conventions for words that exist in both languages. Common examples include writing "Cellule" instead of "cell" or adding a plural 's' to "Informations," which is an uncountable noun in English but pluralized in French.

Scientific Acronym Interference (3.1%) : In specialized fields students fail to flip acronyms to the English standard.

Structural and General orthographic errors (19.75%) : Word Order and spelling errors influenced by French are largely common among first year medical students.

While less frequent, technical and structural transfers still persist:

Acronym Interference (3.4%): Students often use French acronyms for scientific terms, such as "ADN" instead of "DNA" or "ARNm" instead of "mRNA."

Word Order Transfer (1.16%): A minor number of errors occurred due to literal translations of adjective-noun placement, such as "reticulum endoplasmic" (following the French réticulumendoplasmique) instead of the English "endoplasmic reticulum."

The analysis reveals that the primary challenge for these learners is not necessarily a lack of vocabulary, but rather negative transfer from the L2. The large frequency of False Cognates suggests that students rely heavily on "look-alike" words, which leads to significant semantic inaccuracies. Addressing these "False Friends" should be a priority in the curriculum to improve the lexical accuracy of student writing.

2.9.2 Arabic-Based Lexical Errors

Arabic L1 lexical Transfer Patterns (N=2)

Pattern	Arabic source	Student error	n	%
Literal Translation	القلب مضخة الدم	Heart the pump of the blood	1	50
Wrong	يتميز ب	Characterizedof	1	50

preposition choice				
Total			2	100

Table 2. 5 Arabic L1 Lexical Transfer Patterns (N=2)

the analysis of Arabic-based lexical errors (N=2) reveals a clear reliance on interlingual transfer. One student utilized a literal translation of "القلب مضخة الدم" by writing "Heart the pump of the blood," which demonstrates an attempt to map Arabic noun-noun structures directly onto English. Similarly, the error "Charactrized of" (n=1) indicates a wrong preposition choice, where the student misapplied the English prepositional system while attempting to translate the Arabic phrase "يتميز بـ". Together, these errors illustrate how L1 interference persists in medical students' academic writing through both direct structural mapping and incorrect collocation selection

2.9.3 Developmental (Intralingual) Errors(N=30)

The analysis revealed a set of developmental errors, also known as intralingual errors. This happens regardless of the learners' native language and is often a result of the inherent difficulty of the English language or the students' incomplete mastery of its orthographic and grammatical rules. The most frequent developmental pattern observed was related to the incorrect spelling (orthography) of technical medical terms. These errors were particularly evident in labeling tasks and multiple-choice questions, suggesting that students rely on phonetic representation when they are unsure of the correct spelling:

Enzime**Correct:** Enzyme

Tishue**Correct:** Tissue

Mitkhondria / Mitchondrias**Correct:** Mitochondria

Structur**Correct:** Structure

Note: These errors are classified as orthographic developmental errors. In the cell labeling task, the misspelling of "Mitochondria" as MitKhondria and Mitchondrias indicates a phonetic spelling strategy, where the student writes the word based on its sound rather than its correct English form. Similarly, the use of "s" instead of "ss" in tishue reflects a lack of precision in mastering specialized medical vocabulary. Also, other developmental patterns included subject-verb agreement errors and word fusion/splitting, which are common at this stage of language acquisition:

The nucleus contain the genetic material" **Correct:** "The nucleus contains"

"Blood vessels carries oxygen" **Correct:** "Blood vessels carry"

"Cyto plasm" **Correct:** "Cytoplasm" (Incorrect word splitting)

"The nucleus is apart of the cell" Correct: "a part of" (Incorrect word fusion)

Lexical Simplification and Substitution: When students could not recall the specific medical term, they substituted it with a simpler, non-technical English word:

The food [Instead of 'nutrients']

Form of cell [Instead of 'cell structure' or 'morphology']

Note: The presence of 24 lexical developmental errors indicates that students have a conceptual understanding of the medical topics, but their "active" medical vocabulary in English is still developing. The reliance on phonetic spelling (like enzime) and word simplification suggests that these learners are in a transitional stage of acquiring English for Medical Purposes (EMP).

Table 2.9.4 Source Attribution and Discussion

Source Attribution for Lexical Errors (N=121)

Source	Confidence	n	%
French L2	Clear	89	73.6
Arabic L1	Clear	2	1.6
Developmental	Clear	30	24.8
Total		121	100

Table 2. 6 Source Attribution for Lexical Errors(N=121)

The data Conducted in Table 3.6 provides a comprehensive overview of the sources of lexical errors identified in the students productions. With a total of 121 lexical errors, the findings highlight a clear existence of linguistic interference.

The most prominent source of error is French (L2) transfer, which accounts for 73.6% (n=89) of the total lexical errors. This high percentage suggests that medical students heavily rely on their French linguistic background when struggling to find the correct English medical term. This is often due to the formal similarity between English and French medical terminology, leading to patterns such as borrowing and the use of false cognates.

developmental errors represents the second most frequent source, contributing 24.8% (n=30) of the errors. characterized by a "clear" confidence level, reflect the students internal challenges with the English language itself, such as phonetic spelling and simplification strategies. The proximity between the percentages of Arabic transfer and developmental errors indicates that students difficulties are almost equally divided between interlingual interference and the natural complexity of English for Medical Purposes (EMP).

Finally, Arabic L1 errors constitute 1.6% (n=2) of the total. These errors,

SECTION 2.10: Phonological Intrefrence

2.10Phonological IntrefrenceAnalysis

Phonological errors identified in the oral production tasks accounted for 14 specific instances of interference. These errors, occurring during the description of biological structures of a human cell , were categorized into segmental deviations (consonant and vowel substitutions) and fossilized lexical-phonetic transfers.

2.10.1 Cnsonant Substitution Errors

Consonant substitution errors comprised a significant portion of the phonological data. The most frequent patterns involved the substitution of /b/ for /p/ and /f/ for /v/, alongside specific deviations in fricatives and liquids**.**

Substitution	Examples	n	%
/p/ → /b/(Voicing)	"Blasmic" [ˈblæzmɪk]	1	7.1
/v/ → /f/(Devoicing)	"of" [ɒf]	1	7.1
/ð/ → /z/(Dental)	"the" [zə]	1	7.1
/tʃ/ → /ʃ/(Fricative)	which" [wɪʃ]	1	7.1
/dʒ/ → /ɡ/(Hard G)	"Golgi" [gɒlgiː]	1	7.1
/ɹ/ → [r] (Trill)	Structural → [ˈstrʌktʃərəl]	1	7.1
/ɹ/ → [ʁ] (Uvular)	Structural → [stʁykˈtyʁal]	1	7.1
Total		7	49.7

Table 2. 7 Frequency of Consonants Substitution Errors (N=7)

Arabic L1 Influence

The /ɹ/ → [r] and /p/ → [b] substitution patterns remain the most pervasive L1-based errors. As Arabic lacks the English approximant /ɹ/ and the voiceless bilabial plosive /p/, students substitute them with the closest native equivalents: (1) "The [ˈbæzmık] membrane..." (Target: Plasmic /ˈplæzmık/) (2) "The [r]eticulum..." (Target: Reticulum /rɪˈtıkjələm/) using a trilled alveolar /r/.

French L2 Influence

Evidence of the L2 Status Factor is found in the substitution of **/ʃ/** for **/tʃ/**; Because the French phonemic inventory lacks the affricate /tʃ/, students default to the French orthographic rule where "ch" is pronounced as /ʃ/. Furthermore, the shift of **/ð/** to **/z/** in *"The"* reflects a classic French-based alveolar substitution for the English dental fricative.

2.10.2 Vowel and Fossilized Lexical-Phonetic Errors

Vowel errors and lexical-phonetic transfers accounted for 29.0% (n=9) of the identified instances. These errors often involve "fossilized" terms where students produce a medical cognate using French phonetics.

Error Category	Target Word	Production (IPA)	n
Fossilized French	Apparatus	[apaˈʁɛ] (*Apparé*)	1
Fossilized French	Endoplasmic	[ɑ̃doplasˈmik]	1
Fossilized French	Packaged	[paˈkeʒ]	1
Fossilized French	Vacuole	[vakɥɔl]	1
Developmental	Least	[læst]	1
Developmental	Reticulum	[rɛtɒnıkləm]	1

Table 2. 8 Analysis of Interlingual L2 &Intralingual Influence on Phonological Production (N=6)

The use of [apaˈʁɛ] for *apparatus* and the nasalization in [ɑ̃doplasˈmik] suggest that for technical medical vocabulary, students frequently "flip" to their French L2 phonetic framework rather than attempting the English pronunciation This observation is consistent with the L2 Status Factor model (Hammarberg, 2001), which emphasizes the role of the previously learned foreign language in L3 production

2.10.3 Source Attribution for Phonological Errors

The source attribution analysis for these 31 instances shows an equal distribution of interference from the students' background languages.

Source Attribution for Phonological Errors (N=14)

Source	Confidence Level	N	%
Arabic L1	Clear (>90%)	4	28.6
French L2	Probable (70-89%)	7	50.0
Developmental	Uncertain (<70%)	3	21.4
Total		14	100

Table 2. 9 Source Attribution for Phonological Errors(N=14)

The dominance of French L2 influence (50%) in this dataset is evidenced by "French-based" pronunciations of terms like **"Vacule"** and **"Apparé"** (appareil). High confidence is attributed to Arabic L1 transfer (28.6%) for systematic substitutions such as **/p/ → /b/** in "Blasmic" and the use of the **Arabic /r/**. Developmental errors, such as **"etoniclum"** for reticulum, are classified with lower confidence as they may stem from incomplete acquisition of the target medical term rather than direct language transfer.

These findings align with the L2 Status Factor model, suggesting that for multilingual learners, the second language (French) can exert a significant phonological influence on the third language (English) in specialized academic contexts.

2.11 Syntactic Interference Analysis

Syntactic errors constituted the most frequent error category, accounting for 52.5 % (n=149) of all domain-classified erroes. These errors spanned multiple grammatical domains, with article errors and verb-related representing the two largest subcategory.

2.11.1 Article Errors

Article errors comprised 37.6 % (n=56) of all syntactic errors, making this the most frequent error type in the syntactic category. The majority (67.8%, n=38) involved article omission, while the remainder involved unnecessary article addition (21.5%, n=12) or article misuse (10.7%, n=6).

Distribution of Article Errors (N=56)

Error subtype	Examples	n	%
Omission (singular	"Ø Heart is..."	38	67.8

countable, superlatives, unique reference)	"Ø Form of cell" "Cell is Ø smallest" "Filtered by Ø Kidneys"		
Unnecessary addition (uncountable, generic plurals)	"The diabetes patients" "The heart is the pump of the blood" "The all many various"	12	21.5
Article misuse (wrong choice A)	"A organ" " A heart is important"	6	10.7
Total		**56**	**100**

Table 2. 10 Distribution of Article Errors(N=56)

Article omission with medical terms and singular countable nouns was pervasive across the students' performance. Representative examples from the corpus include:

"Ø Form of cell" (S18) **Correct:** "A form of a cell"

"Ø Heart is the pump" **Correct:** "The heart is the pump"

"Filtered by Ø Kidneys" **Correct:** "Filtered by the kidneys"

Article omission with superlatives was another identified pattern within the syntactic category:

"Cell is Ø smallest unit" **Correct:** "The cell is the smallest unit"

Conversely, unnecessary article addition occurred primarily with uncountable nouns and generic plural references, often reflecting L2 French or L1 Arabic interference:

"The diabetes patients" **Correct**: "Diabetes patients" (No article - Generic plural)

"The pump of the blood" **Correct:** "The pump of blood" (No article - Uncountable)

"The all many various" **Correct:** "All the various..." (Incorrect word order with article)

These error patterns are largely consistent with L1 Arabic and L2 French transfer. Arabic employs a different article system; it lacks an indefinite article equivalent to "a/an," leading to its frequent omission in phrases like "Ø Form of cell." Furthermore, Arabic uses the definite article "الـ (al-)" for substances and abstract nouns, which explains the unnecessary addition of "the" in English phrases such as "the blood" , directly reflecting the Arabic "الدم". Similarly, French influence (L2) is evident in the use of definite articles with generic plurals, where student wrote "The diabetes patients," likely

influenced by the French structure "Les patients."

The high frequency of article errors (64.7% of syntactic errors, representing 22.5% of all identified errors) suggests this is a persistent interference pattern. This high percentage indicates that the article system remains one of the most challenging areas for Algerian ESP medical students, requiring targeted pedagogical intervention to bridge the gap between L1/L2 structures and English requirements.

2.11.2 Verb-Related Errors

Verb errors constituted 55.7% (n=83) of syntactic errors, primarily involving subject-verb agreement failures and incorrect verb forms. The following table provides a breakdown of these errors:

Distribution of Verb-Related Errors (N=83)

Error subtype	Examples	n	%
3rd person -s omission	"The nucleus contain..." "The heart pump..."	12	14.5
Incorrect Tense / Form	"It is consist of..." "They was infected..."	5	6.0
Subject-Verb Agreement	"Cells is small..." Mitochondria is "is essential parts" "to release it to the other tissues" (referring to plural proteins)	52	62.7
Prepositional verb Transfer	"works on pumping"	14	16.8
Total		83	100

Table 2. 11 Distribution of Verb-Related Errors

This category constituted a major area of syntactic interference, accounting for 55.7% (n=83) of all syntactic errors.

As illustrated in Table 3.10, the most frequent issue within this subcategory was Subject-Verb Agreement, representing 62.7% (n=52) of the errors in this group. This includes discrepancies such as "Cells is small" or " is essential parts" where students failed to match the verb form with plural or singular subjects. Additionally, Prepositional Verb Transfer, specifically the literal translation "works on pumping" (n=14), highlighted a significant L1-to-L2 interference. Other errors involved the omission of the third-person singular -s (14.5%, n=12) and incorrect tense forms (6.0%, n=5).

3rd person -s omission appeared in 12 instances:

"The nucleus contain many organelles" **Correct:** "The nucleus contains many organelles"

"The heart pump the blood" **Correct:** "The heart pumps the blood"

This pattern reflects Arabic verb conjugation, where third-person singular marking differs from English. In Arabic, the verb "يحتوي" (yaḥtawī) or "يضخ" (yaḍuḫḫu) doesn't use a suffix like the English "-s"; the marking is initial or internal to the verb structure. Consequently, students tend to simplify the English verb to its base form, omitting the necessary inflection.

Incorrect verb forms and tense usage appeared in 5 instances:

"They was infected" **Correct:** "They were infected"

"It is consist of..." **Correct:** "It consists of..."

These errors are classified as developmental, involving the overgeneralization of singular verb forms or confusion with the verb "to be." While some of these errors stem from a lack of mastery over English concord rules, others indicate a process of "simplification" common in the early stages of L2 acquisition.

2.11.3 Other Syntactic Errors

Remaining syntactic errors (11.8%, n=10) included prepositional mistakes and word order issues. These errors, though less frequent than article or verb errors, highlight specific areas of linguistic interference and developmental challenges.

Preposition Errors (n=7, 8.2%)

"The nucleus is in the back of the cytoplasm" **Correct:** "The nucleus is behind the cytoplasm" [Direct translation from Arabic "في خلف" or French "dans le dos"]

"Filtered with kidneys" **Correct:** "Filtered by the kidneys" [Confusion between the preposition of 'agent' and 'instrument']

"Protection to the body" **Correct:** "Protection for the body" [Incorrect prepositional choice reflecting L1/L2 interference]

Word Order Errors (n=3, 3.5%)

"Contains organelles many" **Correct:** "Contains many organelles" [Adjective-noun order influenced by the Arabic/French structure where the adjective often follows the noun]

"It is structure small" **Correct:** "It is a small structure" [Syntactic transfer from Arabic: "بنية صغيرة"]

Source Attribution for Syntactic Errors (N=149)

Source	Subtype	n	%
Developmental	Verb agreement & Tense	50	33.6
	Article Omission (Simplification)	40	26.8
	Subtotal	**90**	**60.4**
Arabic L1	Word order	24	16.1
	Prepositions	20	13.4
	Subtotal	**44**	**29.5**
French L2	Articles / Prepositions	15	10.1
	Subtotal	**15**	**10.1**
Total		149	**100**

Table 2. 12 Source Attribution for Syntactic Errors(N=149)

Source attribution analysis revealed that 60.4% (n=90) of syntactic errors were attributable to Developmental factors (intralingual), while Arabic L1 transfer accounted for 29.5% (n=44) and French L2 for 10.1% (n=15). This finding, derived from a detailed statistical processing of the corpus using Microsoft Excel, significantly shifts the focus toward the "Simplification" hypothesis. It suggests that students' syntactic struggles stem primarily from the inherent difficulty of English grammar rules rather than direct language interference.

The quantitative distribution calculated through Excel functions confirms that developmental errors are the primary source of syntactic difficulty. These findings align with Interlanguage theory (Selinker, 1972), which suggests that as learners progress, they develop a unique linguistic system that relies on simplifying complex structures, such as the systematic omission of the third-person singular "-s" in verbs like "contain" or "pump"

The systematicity of these errors where 70 out of 86 errors were identified as developmental suggests a shared "Simplified Grammar" strategy among the participants. Unlike the lexical domain, the syntactic domain in this corpus is dominated by internal English processing challenges, supporting the notion

that structural features are highly prone to Overgeneralization..

2.12 Integrated Analysis andInterpritation

2.12.1 Comparison of L1 Arabic, French L2, and Developmental / Intralingual Sources

At the participant-summary level, developmental / intralingual sources account for 123 of 270 errors (45.6%), making them the largest source category. French L2 follows closely with 109 errors (40.4%), whereas Arabic L1 accounts for 38 errors (14.1%). This pattern indicates that the corpus cannot be interpreted as being primarily dominated by Arabic L1 transfer. Instead, the findings point to a combined pattern in which internal developmental processes and French L2 influence are more prominent than Arabic L1 influence in the overall participant-level summary.

Participant-Level Distribution of Error Sources (N = 270)

Error source	Frequency	Percentage
Arabic L1	38	14.1%
French L2	109	40.4%
Developmental / Intralingual	123	45.6%

Table 2. 13 Participant-Level Distribution of Error Sources(N = 270)

The separate domain/source table gives a more differentiated picture. Within the lexical domain, French L2 is the dominant recorded source; it accounts for 89 of 121 lexical-domain cases (73.6%). In the syntactic domain, developmental / intralingual sources are highest, with 90 of 149 cases (60.4%). The phonological domain contains only 14 cases in this table, so its percentages should be interpreted cautiously; French L2 is recorded at 7 cases (50.0%), Arabic L1 at 4 cases (28.6%), and developmental / intralingual at 3 cases (21.4%).

Domain-Level Source Distribution Used for Figure 3.1 (N = 284)

Linguistic source / source language	Arabic L1	French L2	Develop. / Intralingual	Total
Lexical	2 (1.7%)	89 (73.6%)	30 (24.8%)	121
Syntactic	44 (29.5%)	15 (10.1%)	90 (60.4%)	149

Phonological	4 (28.6%)	7 (50.0%)	3 (21.4%)	14
TOTAL	50 (17.6%)	111 (39.1%)	123 (43.3%)	284

Table 2. 14 Domain-Level Source Distribution Used for Figure 3.1(N = 284)

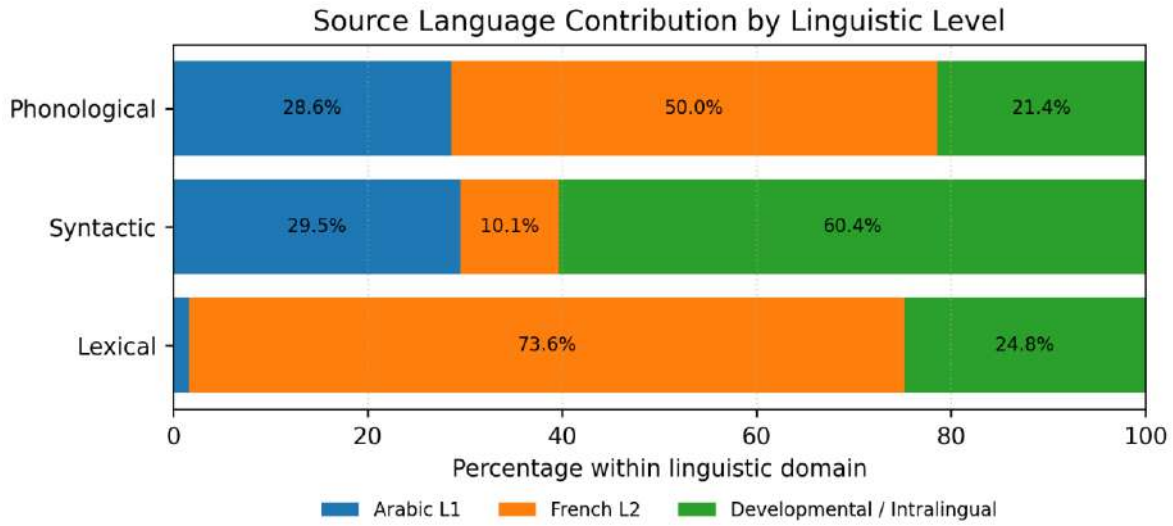

Figure 2. 1 Source Language Contribution by Linguistic Level

It is important to note that the total frequency of errors (284) exceeds the number of actual error tokens (270). This discrepancy is a result of double-classification applied to 14 specific instances. For example, medical compound nouns such as 'endoplasmic reticulum' were classified as both syntactic (adjective-noun order) and lexical (as they function as single lexical units in English for Medical Purposes). This analytical decision was made to ensure a comprehensive account of the errors' nature, reflecting both structural and semantic deviations.

2.12.2 Error-Type Distribution and Interpretation

The participant/error-type table records 270 total errors. Misformation is the dominant error type, with 173 cases (64.1%). Omission follows with 50 cases (18.5%), then addition with 32 cases (11.9%), and misordering with 15 cases (5.6%). The dominance of misformation suggests that the main difficulty in the dataset lies not merely in leaving elements out or placing them in the wrong order, but in producing inaccurate forms or choices within the target language system.

Distribution of Error Types (N = 270)

Error type	Frequency	Percentage
Omission	50	18.5%
Addition	32	11.9%

Misformation	173	64.1%
Misordering	15	5.6%

Table 2. 15 Distribution of Error Types(N = 270)

Error Type by Source Category (N = 270)

Error type	Arabic L1	French L2	Develop. / Intralingual	Total
Misformation	29 (16.8%)	97 (56.1%)	47 (27.17%)	173
Omission	0 (0.0%)	2 (4.0%)	48 (96.0%)	50
Addition	5 (15.6%)	5 (15.6%)	22 (68.8%)	32
Misordering	4 (26.7%)	5 (33.3%)	6 (40.0%)	15

Table 2. 16 Error Type by Source Category(N = 270)

Table 3.15 further clarifies the distribution. French L2 is the largest recorded source within misformation errors (97 of 173, 56.1%), while developmental / intralingual sources dominate omission (48 of 50, 96.0%) and addition (22 of 32, 68.8%). Misordering is comparatively rare, and its small total makes strong interpretation inappropriate.

Measure	Value
Participants	22
Total participant-level errors	270
Errors per participant	M = 12.27; SD = 4.06; min = 6; max = 22
Written words	Total = 2112; M = 96; SD = 22.08
Oral production decimal value	Total = 15.44; M = 0.7; SD = 0.492

Table 2. 17 Production and Error-Count Profile

2.12.3 Answers to Research Questions

RQ1: What are the most frequent lexical, syntactic, and phonological interference patterns in the oral and written medical English of Algerian first-year medical students?

In the lexical domain, the dominant pattern is French-induced misformation through false cognates and orthographic transfer. The most frequent errors included misusing "assist to/at" (*assister à*) with the meaning of *attend*, and writing "actually" when *currently* was intended (*actuellement*).

In the syntactic domain, the primary pattern is developmental omission, particularly article omission ("Ø Heart is the pump") and third-person singular *-s* omission ("The nucleus contain").

Arabic L1 interference additionally manifests in copula omission in nominal sentences ("The heart Ø pump"). In the phonological domain, the most consistent pattern is consonant substitution, specifically /p/ → /b/ ("blasmic" for *plasmic*), alongside fossilized French phonetic realizations of cognate medical terms.

- **RQ2: To what extent does prior French-medium medical instruction influence students' acquisition of English medical terminology, particularly regarding false cognates and lexical transfer?**

The influence is substantial and domain-specific. French L2 transfer accounts for 73.6% of all lexical errors, making it the dominant source in that domain. Students demonstrate a marked reliance on their French linguistic background when encountering lexical gaps in English, producing high-frequency misformation errors (French L2 accounts for 56.1% of all misformations). False cognates alone accounted for over two-thirds of French-based lexical errors. Orthographic transfer was also persistent, with students applying French spelling habits to English terms. The French-English lexical relationship functions as a double-edged sword: while true cognates facilitate comprehension of medical terminology, false cognates introduce systematic semantic inaccuracies.

- **RQ3: Which Arabic syntactic features most frequently contribute to grammatical errors in students' written medical English?**

Three primary features were identified. First, copula omission: Arabic present-tense nominal sentences lack an overt verb, leading to transfers such as "The heart Ø pump." Second, prepositional transfer: students select English prepositions by literal translation of Arabic prepositional phrases, yielding errors such as "characterized of" (from يتميز بـ). Third, noun-adjective word order: Arabic places adjectives post-nominally, producing forms such as "reticulum endoplasmic" instead of *endoplasmic reticulum*.

.

- **RQ4: Which Arabic phonological features most frequently affect the pronunciation of English medical terms among first-year students?**

The most consistent Arabic phonological feature is the absence of /p/ from the Arabic inventory, leading to systematic /p/ → /b/ substitution in medical terms containing this phoneme (e.g., "blasmic" for *plasmic*). The use of the alveolar trill [r] in place of the English approximant /ɹ/ was also identified as a clear L1-based pattern.

2.12.4 Comparison with Previous Studies

Ehsanzadeh and Dehnad (2024): The present findings support those of Ehsanzadeh and Dehnad (2024), who found that approximately 61% of errors in English for Medical Purposes concentrate in a small number of high-frequency grammatical categories specifically prepositions, articles, and noun-adjective

agreement. In the current corpus, developmental/intralingual factors account for 60.4% of syntactic errors, with article omission (26.8%) and subject-verb agreement (33.6%) as the leading subcategories. This convergence reinforces the finding that medical students typically struggle more with the functional grammar of English than with the acquisition of specialized scientific terminology.

Swan and Smith (2001): The Arabic L1 interference patterns identified in this study closely mirror those documented by Swan and Smith (2001). Phonologically, the /p/ → /b/ substitution (e.g., "Blasmic") replicates their predicted substitution patterns. Syntactically, copula omission in nominal sentences and the literal transfer of Arabic prepositions align directly with their cross-linguistic analysis of Arabic-English structural divergence.

Tihal (2025) and Hammoudi and Zerouati (2025): This study provides empirical weight to the institutional concerns raised by Tihal (2025) regarding the EMI transition in Algeria. While Tihal's work focuses on proficiency gaps and institutional readiness, the present corpus identifies the specific linguistic mechanism underlying that gap: the lexical dominance of French L2 transfer. The finding that 73.6% of lexical errors are French-based substantiates Hammoudi and Zerouati's (2025) concept of a "lexical pull" exerted by prior French-medium instruction, which generates systematic orthographic and semantic interference during the transition to English-medium medical training.

2.13Conclusion

Chapter Two has presented an integrated analysis of 270 errors produced across 22 participants. Misformation is the dominant error type (173 cases, 64.1%), followed by omission (18.5%), addition (11.9%), and misordering (5.6%), indicating that the central challenge in this corpus lies in inaccurate form production rather than structural absence or displacement.

Regarding error sources, developmental/intralingual factors constitute the largest overall category (45.6%), followed closely by French L2 interference (40.4%), with Arabic L1 transfer representing a smaller but consistent proportion (14.1%). These results indicate that students' interlanguage is shaped more by internal acquisition processes and prior French-medium education than by direct transfer from Arabic.

Domain-level analysis adds important nuance. French L2 emerged as the primary source in the lexical domain (73.6%), confirming a powerful lexical pull from French medical terminology that produces orthographic distortions and false cognate misuse. Developmental factors dominate the syntactic domain (60.4%), reflecting common acquisition hurdles including article omission and subject-verb agreement difficulties. The phonological sample, while small, demonstrates a clear intersection of Arabic-based phonetic substitutions and French-based pronunciation patterns.

Pedagogically, these findings suggest that ESP instruction for medical students should prioritize explicit contrastive work between French and English to mitigate lexical transfer. The prominence of developmental errors further indicates that foundational grammar particularly the English article system and verb inflection requires systematic attention alongside specialized vocabulary instruction. While Arabic L1 influence is the least frequent source overall, its systematic presence in phonology and specific syntactic constructions, notably copula omission, warrants targeted corrective feedback.

These findings provide a data-driven foundation for the pedagogical recommendations presented in the General Conclusion.

GENERAL CONCLUSION

GeneralConclusion

This dissertation examined the impact of language interference on the English production of first-year medical students at KasdiMerbah University, Ouargla. By analyzing the interplay among Arabic (L1), French (L2), and English (L3), the study identified the specific pathways through which linguistic transfer operates during the acquisition of specialized medical vocabulary and syntax in an EMI context.

Major Findings

The findings confirm that language interference is a systematic, domain-differentiated factor in participants' academic production. French L2 transfer is the predominant source of lexical errors, accounting for 73.6% of all lexical instances, and is concentrated in false cognate substitution and orthographic interference. Developmental/intralingual processes constitute the largest single source category overall (45.6%), concentrated in the syntactic domain and reflecting common early-stage L3 acquisition strategies such as article omission and verb simplification. Arabic L1 influence, while the least frequent source overall (14.1%), is systematic in its manifestations copula omission, prepositional transfer, and phonological substitutions such as /p/ → /b/ and thus warrants targeted pedagogical attention despite its lower frequency.

These findings carry direct implications for curriculum design. ESP and EMP programs for Algerian medical students should incorporate explicit contrastive analysis between French and English, with particular focus on false cognate pairs, orthographic divergence, and French abbreviation-to-English conversion. Grammatical instruction should address the English article system and subject-verb agreement as foundational professional competencies, not merely as language exercises, framing their correct use as requirements of clinical documentation and academic reporting. Additionally, phonological instruction should target the Arabic-English segmental gaps identified in this study, particularly /p/ and /ɹ/, through structured oral production practice.

Limitations of the Study

It should be noted that this study is subject to certain limitations. The sample comprises 22 participants from a single institution, and the oral production corpus, at approximately 15 minutes of total recorded speech, is small. The phonological findings in particular should be interpreted with caution given the limited data. Future research should seek to replicate and extend this study with larger samples and longitudinal designs, tracking how interference patterns evolve as students progress from first-year coursework through clinical training.

Recommendations for Future Research

Future studies should expand the scope of investigation by including larger and more diverse participant groups from multiple Algerian universities. Longitudinal research would also be valuable in tracing how interference patterns evolve as medical students progress from first-year academic study to clinical practice. Additional research could further explore the relationship between EMI exposure, professional identity formation, and multilingual competence in medical education contexts.

Final Reflection

Ultimately, this research demonstrates that the transition to EMI in the Algerian medical context is not a single-variable challenge but a multilayered acquisition process shaped by the interaction of three distinct linguistic systems. Recognizing the specific interference patterns documented here and designing instruction that addresses them explicitly is a necessary step toward developing the language accuracy that medical practice demands.

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Appendix

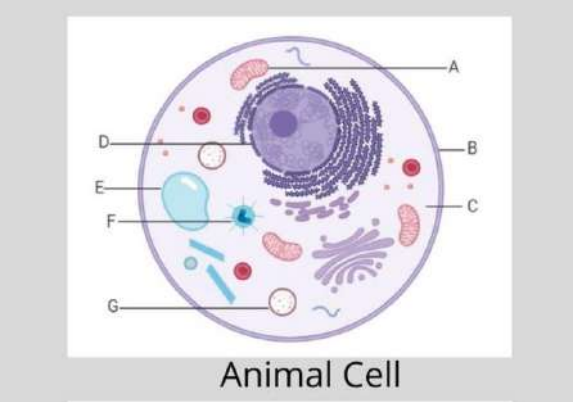
TASK 1: ORALDESCRIPTION OF A CELL

INSTRUCTIONS: You will see a diagram of a human cell with labeled parts.

Part A: Look at the diagram and prepare what you will say. You may Take brief notes

You will be recorded. Describe the cell in your own words. Include:

• What is a cell?



Note. From Plant and animal cells to label, by Ahmad Coaching (2020),

• Name at least 4 parts of the cell

• Explain where each part is located

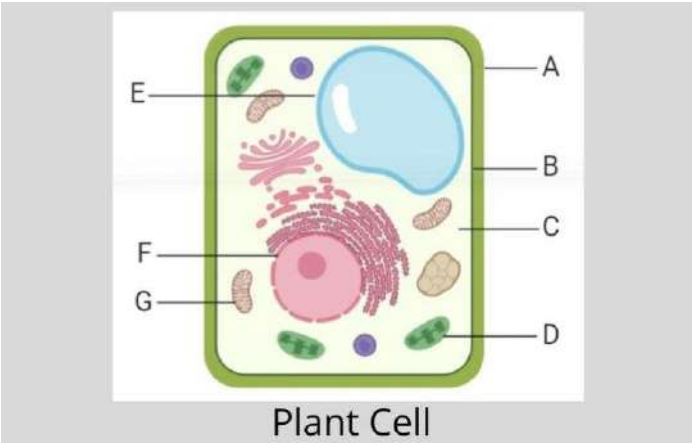
• Explain what each part does

Speak clearly as if explaining to a classmate.

TASK 2: MEDICAL VOCABULARY LABELING AND USAGE

PART A: LABEL THE CELL DIAGRAM

Look at the cell diagram. Write the English name for each numbered part (A-G).



Note. From Plant and animal cells to label,by Ahmad Coaching (2020),

A. _____

B. _____

C. _____

D. _____

E. _____

F. _____

G. _____

PART B: USE IN SENTENCES

Choose 4 words from Part A .Write one complete sentence for each word.

1. _____

2. _____

3. _____

4. _____

TASK 3: TRANSLATION TASK

INSTRUCTIONS: Choose the most appropriate English translation for each of the following sentences.

PART A: ARABIC TO ENGLISH

1.يدرس الطالب الخلية

a) The student must studies the cell.

b) Must the student study the cell.

c) The student must study the cell.

2.فقر الدم هو مشكلة صحية شائعة

a) Anemia is a common health problem.

b) Anemia common health problem.

c) The anemia is problem health common.

3. يعاني المريض من الصداع.

a) The patient suffers from a headache

b) Patient suffers from headache.

c) The patient suffers of headache.

4.تحتوي الخلية على نواة.

a) The cell contains a nucleus

b) The cell contain a nucleus.

c) Cell contains nucleus.

5. يعمل القلب على ضخ الدم

a) The heart works on pumping blood.

b) The heart pumps the blood

c) Heart work on pump blood.

PART B: FRENCH TO ENGLISH

1. Le médecinassiste à uneconférence.

a) The doctor assists to a conference.

b) The doctor attends a conference.

c) The doctor assists at a conference.

2. Actuellement, le patient se sent mieux.

a) Actually, the patient feels better.

b) At the moment, the patient feels more well.

c) Currently, the patient feels better.

3. Le cœurest un organe vital.

a) The heart is a vital organ.

b) The heart is an organ vital.

c) The heart are a vital organ.

4. Je vais à la bibliothèque pour réviser.

a) I am going to the bookshop to revise.

b) I am going to the library to revise.

c) I go to the bookstore for revising.

TASK 4: VOCABULARY AND FALSE FRIENDS RECOGNITION

PART A: Circle the correct English spelling.

1. The basic unit of life:

a) Cellule b) Celle c) Cell

2. A protein that helps chemical reactions:

a) Enzime b) Enzym c) Enzyme

3. Multiple energy-producing organelles:

a) Mitochondrie b) Mitochondria c) Mitochondrias

4. The outer boundary of a cell:

a) Membrane b) Membran c) Menbrane

5. Body material made of cells:

a) Tissue b) Tissu c) Tishue

PART B: FALSE FRIENDS - MEANING

Choose the correct meaning of the ENGLISH word.

6. In English, sensible means:

a) Reasonable/having good judgment b) Sensitive/easily hurt

7. In English, to pass an exam means:

a) To take an exam. b) To succeed in an exam.

8. In English, constipated means:

a) Having difficulty with bowel movements. b) Having a cold/congestion.

9. In English, lecture usually means:

a) Reading (the activity). b) A talk or presentation given to students.

TASK 5: CONTROLLED SENTENCE WRITING

INSTRUCTIONS: Reorder to write complete sentences using the words provided. You MUST use all the given words, but you can add other words.

Change verb forms if needed (e.g., control→ controls).

Example:

Given words: (brain / control / body)

Your sentence: The brain controls all body functions.

Now write your sentences:

1. (pump / muscle / heart / blood / body)

_____

2. (liver / digestion / produce / bile / organ)

_____

3. (food / digest / stomach / nutrients)

_____

4. (cells / oxygen / need / survive)

_____

5. (blood / waste/ kidneys /filter)

_____

6. (blood vessels / carry / cells / oxygen)

_____

7. (patients / diabetes / must / control / blood sugar)

_____

8. (Monday / examine / hospital / patient / doctor)

_____

Résumé :

Dans le paysage contemporain de l'enseignement supérieur, l'anglais s'est imposé comme lingua franca des sciences médicales. En Algérie, le récent passage à l'anglais comme langue d'enseignement (EMI : English as a Medium of Instruction) présente des défis linguistiques particuliers pour les étudiants évoluant dans un environnement multilingue, où l'arabe (L1) et le français (L2) influencent considérablement l'acquisition de l'anglais (L3). Cette étude examine l'impact de l'interférence linguistique sur la production syntaxique et lexicale des étudiants de première année de médecine à l'Université KasdiMerbah d'Ouargla. S'appuyant sur une méthodologie quantitative, la recherche analyse les erreurs identifiées dans le cadre d'un questionnaire composé d'enregistrements oraux et de tâches écrites, en appliquant les taxonomies de Dulay et al. (1982) ainsi que de Swan et Smith (2001). Les résultats révèlent une forte prévalence à la fois d'interférences interlinguales, notamment des omissions syntaxiques telles que la suppression de la copule, et d'erreurs développementales intralinguales. Par ailleurs, l'analyse met en évidence une interférence orthographique et terminologique significative, en particulier sous forme de faux cognats et de calques graphiques issus de l'exposition préalable des étudiants à la terminologie médicale française. Ces résultats suggèrent que, si l'interférence constitue une étape naturelle de l'acquisition linguistique, elle appelle néanmoins une intervention pédagogique ciblée. L'étude se conclut par des recommandations en faveur d'ajustements curriculaires en ESP (English for SpecificPurposes), afin de prendre en compte ces schémas spécifiques de transfert linguistique et de faciliter une transition plus efficace vers le discours académique médical en anglais.

مستخلص

في عالم التعليم العالي المعاصر، أصبحت اللغة الإنجليزية اللغة المهيمنة في مجال العلوم الطبية. وفي الجزائر، أدى التوجه الحديث نحو اعتماد الإنجليزية كلغة للتدريس إلى ظهور تحديات لغوية خاصة لدى الطلبة الذين يدرسون في بيئة متعددة اللغات، حيث تؤثر اللغة العربية كلغة أم، واللغة الفرنسية كلغة ثانية، بشكل كبير على تعلم اللغة الإنجليزية كلغة ثالثة.تهدف هذه الدراسة إلى بحث تأثير التداخل اللغوي على الإنتاج النحوي والمعجمي لدى طلبة السنة الأولى طب بجامعة University of KasdiMerbah, Ouargla. واعتمدت الدراسة على منهج كمي من خلال تحليل الأخطاء اللغوية التي ظهرت في تسجيلات شفوية وكتابات الطلبة، بالاعتماد على تصنيفات كلٍّ من Dulay et al. (1982) وSwan and Smith (2001).وأظهرت النتائج انتشارًا كبيرًا للأخطاء الناتجة عن تأثير اللغات السابقة، خاصة الأخطاء النحوية مثل حذف أفعال الربط، إضافة إلى أخطاء أخرى مرتبطة بمراحل تعلم اللغة نفسها. كما كشفت الدراسة عن نوع من التداخل اللغوي يتعلق بالاختصارات والمصطلحات الطبية الفرنسية التي اعتاد عليها الطلبة قبل انتقالهم إلى دراسة الطب باللغة الإنجليزية.وتشير هذه النتائج إلى أن التداخل اللغوي يُعتبر مرحلة طبيعية في تعلم اللغات، لكنه يحتاج إلى تدخل بيداغوجي موجه وفعّال. وفي ختام الدراسة، تم اقتراح بعض التعديلات على برامج تعليم الإنجليزية لأغراض خاصة (ESP)، بحيث تركز على هذه الصعوبات اللغوية، لمساعدة الطلبة على الاندماج بشكل أفضل في الدراسة الأكاديمية الطبية باللغة الإنجليزية.