

# Genres of Lexical and Syntactical Devices in the Steps within Moves of Research Abstracts of Undergraduate University Students in Ghana

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## Abstract

The research employs corpus linguistics to examine lexico-grammatical characteristics in research abstracts authored by undergraduate nursing, medicine, and allied health students at the University of Health and Allied Sciences in Ho, Ghana. A corpus of 150 research abstracts was extracted, of which 96 excerpts were examined for the occurrence of lexico-grammatical features — tense patterns, hedges, boosters, nominalization, technical nouns, and passive voice. The analysis focused on qualitatively determining the frequency of lexico-grammatical features in the research abstracts and quantitatively presenting them as a percentage in a table. The study found the dominant use of the present tense (68%), hedges (75%), and boosters (65%) in the introduction steps, the simple past tense (55%) and the passive voice (100%) in the method steps, the present perfect tense in the statement step (60%), nominalization in the conclusion (42%), method (33%) and introduction (25%) steps, while technical nouns were replete in the conclusion (47%), introduction (30%), and method (23%) steps. The study concludes that steps in the rhetorical moves of research abstracts written by UHAS students were replete with three tense patterns — the simple present, simple past, and present perfect tenses, and other lexico-grammatical devices—hedges, boosters, nominalization, technical nouns, and the passive voice. This paper recommends that English for Academic Purposes course teachers in Ghanaian and global universities teach students the necessary skills to effectively write tense patterns and other lexico-grammar devices in research abstracts.

**Keywords:** boosters, hedges, lexico-grammatical feature, nominalization, passive voice, technical nouns

## 1. Introduction

As the gateway to scholarly work, an abstract plays a pivotal role in capturing the essence of research publications. This condensed preview acts as both a roadmap and filter, allowing readers to quickly grasp the study's core elements of the research report before delving deeper into the full manuscript. As Jiang and Hyland (2017) demonstrate through their comprehensive analysis of research abstracts, this section functions as more than just a summary - it represents the authors' first opportunity to engage their audience and establish the works' significance. Building on this foundation, Omidian, Shahriari, and Siyanova-Chanturia (2018) emphasise how an abstract's succinct yet informative nature helps scholars efficiently navigate the ever-expanding landscape of academic literature.

Writing a research abstract is a crucial skill for university students worldwide, requiring exposure to its rhetorical organization, disciplinary conventions, and linguistic choice, which often present challenges for students in university and post-secondary education programs worldwide (Abdollahpour & Gholami, 2018; Kwary, Kirana, & Artha, 2017). Students often face difficulties due to the rhetorical organization, disciplinary conventions, and language choices required, as reported by various studies (Abdollahpour & Gholami, 2018; Kwary et al., 2017). This discourse (current study) examines lexico-grammatical features in undergraduate nursing, medicine, and allied health research abstracts at UHAS, Ghana, highlighting the importance of adhering to academic research/writing/discourse standards. This study looks at the process of writing research abstracts. It then goes on to discuss the literature review, methodology, results, discussions, and conclusions.

### *1.1 Steps in the Rhetorical Moves of Research Abstracts*

In academic writing, rhetorical moves, also known as moves, represent distinct discursive units that fulfil specific communicative purposes within a particular genre, such as the abstract. This study aligns with Hyland's (2000) framework, which outlines five fundamental moves for abstracts: introduction, purpose, method, findings (referred to as "product" in this context), and conclusion.

The first move, the introduction, serves to establish and situate the context of a study, as well as to motivate the research being conducted. The introduction move has three steps: background, statement of the problem, and research focus, or focus. The background is an obligatory step. This is because the background introduces readers to the topic, which is important (Swales, 1990, 2004). It provides general contextual information or context for the study's topic and briefly presents relevant information to help readers understand it. Other studies confirmed the importance of the background step, which is a mandatory step that provides background information of the study in research abstracts and other academic discourse (Hai-lin & Huan, 2010; Marefat & Mohammadzadeh, 2013; Pho, 2008; Setyorini, 2017; Tankó, 2017). The problem step in the introduction move refers to the specific issue that was investigated. It could be a gap, a phenomenon, or a specific problem that necessitates investigation or resolution. It is, for the most part, the foundation of all research. The problem and focus steps are not obligatory. In particular, because writers want to state their focus as the purpose move, they may be hesitant to state the study's focus in the background, which could result in repetition.

The method move is realised by nine steps. This comprises one (1) obligatory step, three (3) core steps, two (2) ambiguous steps, and three (3) optional steps. These steps include one obligatory step—the study design. The study design step is obligatory because it is the one that defines the methods move. Thus, a method move without a study design may be regarded as incomplete. Setyorini (2017) and Tankó (2017) reported that the obligatory step, that is, the study design, of the method move provides information on a study's methodology. The three core steps that are typical of the method move are: sampling technique, data collection technique or procedure, and data analysis techniques or procedures. These three steps are considered core steps because, without them, the research abstract may be considered unacceptable. The acceptability of steps with ambiguous occurrences is contingent on expert advice, while the optional steps are not typical of this move (Hüttner, 2010, 2015). This is an indication that without these steps, the method move may be considered unacceptable (Hüttner, 2010). Sample size and research site are ambiguous steps. Population, presentation of findings, and ethical issues constitute the optional steps. Finally, the conclusion encapsulates a brief overview of what a study finds, discusses the implications of these findings, and provides recommendations for informing policy and practice. Within the conclusion move, two key steps are recognised: summarising the findings and presenting recommendations. Both of these steps play a crucial role in shaping the conclusion of the study.

This article discusses the importance of understanding and proficiency in lexico-grammatical features, including vocabulary, grammar, and syntax, in academic and research writing. It covers tense structure, boosters, nominalization, technical nouns, and passive voice.

### *1.2 Tense Patterns in the Steps of Moves in Research Abstracts*

The intricate interplay of verb tenses in academic abstracts reveals fascinating patterns across scholarly disciplines. While researchers employ various temporal markers, three primary tense patterns emerge as dominant forces: present, past, and perfect (Hanidar, 2016; Khany & Malmir, 2019). Among these, the simple past tense claims prominence, particularly to state research methods and results. As Tankó (2017) observes, this preference for the past tense in applied linguistics serves a dual purpose - it distances the researcher from the material while maintaining scholarly objectivity. The landscape of medical abstracts mirrors this trend, with Hanidar's (2016) investigation uncovering a strong predilection for past tense constructions paired with active voice. This grammatical architecture aligns with Biber's (1988) seminal work identifying the past tense as a cornerstone of expository writing. Meanwhile, the perfect tense emerges as the preferred choice for describing research processes, while the present tense naturally lends itself to theoretical frameworks and enduring truths (Gerbert, 1970). This delicate balance of tenses creates a temporal framework that guides readers through the research narrative.

### *1.3 Hedging Devices in Research Abstracts*

Hedges are linguistic strategies used by authors to avoid categorizing or assessing propositional content in a purely categorical manner, often used to withhold commitment to a proposition (Gillaerts & Van de Velde, 2010). Examples include adjectives, introductory verbs, lexical verbs, and nouns. Hedging devices are linguistic devices used by authors to mitigate the negative impact of research gaps, allowing for opposing viewpoints and requiring additional discussion between the writer and the reader to avoid fully committing to their positions (Gillaerts &

Van de Velde, 2010; Hyland, 2005). Put another way, authors employ hedging devices to mitigate the unfavorable impact of the gap statement they provide in a research study.

#### *1.4 Boosters in Research Abstracts*

Authors utilise boosters, which are metadiscursive tools, to show their audience interest and writing conviction (Gillaerts & Van de Velde, 2010; Hyland, 2005; Serholt, 2012). They are frequently utilised in abstracts to describe, review, and summarise the findings of studies. In research abstracts, boosters are more frequently included in the introduction and discussion sections. Examples of boosters include verbs like support, improve, benefit, reinforce, tend, and nouns like tendency, as well as adverbs like strongly, positively, primarily, substantially, definitely, completely, certainly, and firmly.

#### *1.5 Nominalization in Research Abstracts*

The process of nominalization entails treating verbs and adjectives like nouns. Nominalization often results in words and suffixes ending in -ment, -ion, sion, -ness, -ence, -ance, -ity, -ent, -ant, and -ancy. For instance, the verb "interfere" is nominalized to become "interference." The words "argument," "assumption," and "decision" are nominalizations of the verbs "argue," "assume," and "decide." Nominalization tends to be a feature of abstracts rather than the research document in question. It is a feature in abstracts and expository texts, allowing for the metaphorical reconstruction of verbs and adjectives as nouns, enabling information-dense discourse and constructing logical argument chains or sequences. It is essential for the text's informational density (Halliday, 2008).

#### *1.6 Technical Nouns in Research Abstracts*

Science is often represented as a technical register, or specialized lexis, using nominalizations or grammatical metaphors to create taxonomies, evaluate entities, and achieve cohesion (Martin, 2009; Martin & Veel, 2005). This distinguishes science from commonsense knowledge (Lemke, 1990).

#### *1.7 Passive Voice in Research Abstracts*

Passivization is a key technique in research abstracts, where steps and moves are stated using the simple past tense and passive voice. This is to depersonalize information and make the tone more academic (Hanidar, 2016; Khany & Malmir, 2019; Tankó, 2017). In scientific writing, both passive and active voices are used to create clear, coherent research articles. The passive voice, often used in expository texts, can be used to emphasize research and maintain topic continuity (Biber, 1988). However, prescriptivists argue that it can lead to bloated, indirect, and evasive writing.

## **2. Method**

This article utilizes corpus research, a data-driven method that examines language structure and use through naturally occurring texts, as opposed to native speaker intuition, which depends on reliable perceptions of language. This explains why corpus linguistics, as the methodology, underpins this article. A corpus-based approach is pertinent to this study because it validates the difficulty that beginning students often face in writing accurate abstracts (Abdollahpour & Gholami, 2018; Kwary et al., 2017). The research focused on analysing a corpus comprising 150 research abstracts authored by undergraduate nursing, medical, and allied health students from the University of Health and Allied Sciences (UHAS) in Ho, Ghana. Of the 150 abstracts, ninety-six (96) excerpts were extracted and analyzed to demonstrate tenses, hedges, boosters, nominalization, technical nouns, and passive voice as lexico-grammatical features. The analysis of the data entailed qualitatively determining the frequency of occurrence of the previously identified lexico-grammatical features. These features were displayed in Table 1 as frequency counts and percentages for better understanding.

## **3. Results**

Table 1 depicts the tense structure, hedges, boosters, nominalization, technical nouns, and passive voice in rhetorical moves and steps used in research abstracts written by UHAS undergraduate students.

Table 1. Lexico-grammatical Features in the steps of Rhetorical Moves of Research Abstracts of Undergraduate Students of UHAS

Move and Steps	Simple Present	Simple Past	Present Perfect	Hedges	Boosters	Nominalization	Technical nouns	Passive voice
Introduction	(n=17)	(n=3)	(n=5)	(n=3)	(n=11)	(n=14)	(n=9)	(n=0)
Step 1: Background	9(36.0)	2(7.0)	2(75.0)	1(25.0)	7(41.0)	9(16.0)	4(13.0)	0(0.0)
Step 2: Statement	2(8.0)	0(0.0)	3(75.0)	0(0.0)	4(24.0)	2(4.0)	2(7.0)	0(0.0)
Step 3: Focus	6(24.0)	1(3.0)	0(75.0)	2(50.0)	0(0.0)	3(5.0)	3(10.0)	0(0.0)
Method	(n=3)	(n=16)	(n=0)	(n=0)	(n=4)	(n=18)	(n=14)	(n=19)
Step 1: RD	0(0.0)	0(0.0)	0(0.0)	0(0.0)	1(6.0)	0(0.0)	0(0.0)	3(16.0)
Step 2: ST	0(0.0)	3(10.0)	0(0.0)	0(0.0)	2(12.0)	2(4.0)	0(0.0)	3(16.0)
Step 3: SS	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	1(2.0)	4(13.0)	2(11.0)
Step 4: RS	0(0.0)	3(10.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	2(7.0)	1(5.0)
Step 5: DCT	0(0.0)	2(7.0)	0(0.0)	0(0.0)	0(0.0)	4(7.0)	0(0.0)	3(16.0)
Step 6: DAT	0(0.0)	2(7.0)	0(0.0)	0(0.0)	1(6.0)	2(4.0)	3(10.0)	4(21.0)
Step 7: Population	2(8.0)	4(14.0)	0(0.0)	0(0.0)	0(0.0)	1(2.0)	0(0.0)	1(5.0)
Step 8: RE	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	6(11.0)	0(0.0)	2(11.0)
Step 9: Variables	1(4.0)	2(7.0)	0(0.0)	0(0.0)	0(0.0)	2(4.0)	5(17.0)	0(0.0)
Conclusion	(n=5)	(n=10)	(n=0)	(n=1)	(n=2)	(n=23)	(n=7)	(n=0)
Summary of finding	2(8.0)	6(21.0)	0(0.0)	1(25.0)	2(12.0)	6(11.0)	3(10.0)	0(0.0)
Recommendation	3(12.0)	4(14.0)	0(0.0)	0(0.0)	0(0.0)	17(31.0)	4(13.0)	0(0.0)
<b>Total</b>	25(100)	29(100)	5(100)	4(100)	17(100)	55(100)	30(100)	19(100)

Source: Field Survey, 2023

Note: the figures in parentheses are in percentages.

**Key:** RD –Research Design, ST – Sampling Technique, SS – Sample Size, RS – Research Site, DCT –Data Collection Technique, DAT –Data Analysis Technique, RE – Research Ethics, n – sample

Table 1 demonstrates the usage of the simple present tense in the introduction, method, and conclusion moves. The majority of the steps in the introduction (68%) were in the present tense. It is also evident that in the research abstracts sampled for the study, the present tense was mostly employed in the background (36%), and focus (24%), steps of the introduction move. Excerpts 5, 9, 33, 42, 48, 50, 53, 82, 89, 91, 95, 113, and 119 demonstrate the usage of the simple present tense in the steps of the rhetorical moves.

### 3.1 Introduction Move

#### Step 1: Background

##### Extract 5

“Exclusive breastfeeding (EBF) **is** very important to both the baby and the mother. Exclusive breastfeeding greatly **reduces** mortality and morbidity in babies. In Ghana **it is** reported that the national prevalence of over 70% was recorded for the practice of exclusive breastfeeding. Even though this prevalence **is** quite good, it may not be the same in some specific places in Ghana.” [Nursing].

##### Extract 48

“Fufu **is** a dough-like West African food made by boiling and pounding starchy root tubers such as yam, plantain and/or cassava. Traditionally, pieces of boiled cassava or other tubers **are** pounded together in a mortar using pestle. The mixture **is** turned by hand with water until it **becomes** soft and sticky. The quality of fufu has been known to vary from one location to another. The processing technique maybe responsible for this variation in quality. Fufu prepared in this form **is** time consuming and labour intensive, this **leads** to the manufacturing of the fufu pounding machine.” [Allied Health].

## Extract 89

“In the developing countries, most patients **present** with advanced glaucoma blindness. This has been attributed to lack of awareness and poor knowledge as major contributing factors. The outcome of glaucoma management, however, **depends** largely on the understanding and attitude of the illness by the patients.” [Medicine].

## Step 2: Problem

## Extract 50

“Foodborne associated illnesses negatively **affect** the health and economic wellbeing of many developing nations.” [Allied Health].

## Extract 91

“Poor quality of medical records on hypertension **remains** a problem of much concern in most developing countries which **needs** to be addressed.” [Medicine].

## Step 3: The Research Focus/ Focus

## Extract 9

“It **is** therefore based on this premise that the researcher **seeks** to determine the prevalence and factors **responsible** for tramadol abuse among the youth of the Kassena Nankana Municipality in Upper East Region of Ghana.” [Nursing].

## Extract 53

“This review **presents** a general overview of microbial quality of pepper sauce served by food vendors.” [Allied Health].

## Extract 95

“This study was being carried out to ascertain the knowledge of sickle cell disease among university students and how it **informs** their decisions for the future. It was to find out how much knowledge students of the University of Health and Allied Sciences **have** about sickle cell disease, their health beliefs about sickle cell disease and their attitude towards the sickle cell disease as well as persons affected with the disease.” [Medicine].

*3.2 Method Move*

## Step 7: Population

## Extract 33

“The study **will** seek ethical clearance from the ethical review committee of the University of Health and Allied Sciences.” [Nursing].

## Extract 113

“The study population **comprises** all pregnant women with hypertensive disorders, who visited the Volta Regional Hospital during the study period.” [Medicine].

## Step 9: Variables

## Extract 119

“Variables collected **include** demographics, awareness and knowledge of breast cancer, hormonal, behavioural, reproductive, and genetic risk factors and intention of Breast Self-Examination.” [Medicine].

*3.3 Conclusion Move*

## Step 1: Summary of Findings

## Extract 42

“The poor attitude towards prevention **is** due to the poor knowledge the respondents had on the signs and symptoms, medium and route of transmission. This **connotes** that large number of students are at risk of contracting infections as they are not vaccinated against HBV.” [Nursing].

## Extract 82

“Generally, adolescents **do not have** adequate nutritional knowledge due to less easy access to health and nutrition information through schools, recreational activities and so this may have influenced the low

level of nutrition knowledge. More so, the perception about targeted nutrition supplementation **is** very poor.” [Allied Health].

Table 1 shows that the simple past tense dominated steps in the method move (55%). The words highlighted in bold in extracts 6, 41, 43, 48, 53, 68, 70, 72, 81, 103, 107, 114, 120, 126, and 128 exemplify the dominance of the simple past tense in the steps.

#### Step 1: Background

##### Extract 6

“Medications are the principal tools **employed** to avoid and efficiently control persistent diseases; nevertheless, appropriate medication use has been a major challenge for healthy patients and caregivers regardless of their significance in disease management. Provision of education to patients about their medication increases medication adherence.” [Nursing].

##### Extract 48

“Fufu is a dough-like West African food **made** by boiling and pounding starchy root tubers such as yam, plantain and/or cassava. Traditionally, pieces of boiled cassava or other tubers are pounded together in a mortar using pestle. The mixture is turned by hand with water until it becomes soft and sticky. The quality of fufu has been known to vary from one location to another. The processing technique maybe responsible for this variation in quality. Fufu **prepared** in this form is time consuming and labour intensive, this leads to the manufacturing of the fufu pounding machine.” [Allied Health].

#### Step 3: Focus

##### Extract 53

“This review presents a general overview of microbial quality of pepper sauce **served** by food vendors.” [Allied Health].

#### Step 2: Sampling Technique

##### Extract 103

“A sample size of 113 patients **diagnosed** to have glaucoma that **attended** the eye clinic **was selected** using purposive sampling technique.” [Medicine].

#### Step 4: Research Site

##### Extract 107

“This **was** a retrospective study, and **involved** the retrieval and review of medical records of all patients **diagnosed** with stroke from January, 2007 to December, 2017 in Ho Teaching Hospital.” [Medicine].

#### Step 5: Data Collection Technique

##### Extract 68

“Search engines (PubMed, Google Scholar and FreeFullPDF) **were used** to obtain articles that **focused** on the nutritional composition of beetroot.” [Allied Health].

#### Step 6: Data Analysis Technique

##### Extract 70

“Statistical analysis **involved** descriptive and inferential statistics at 95% level of confidence and  $p \leq 0.05$  **was considered** significant.” [Allied Health].

#### Step 7: Population

##### Extract 72

“... adolescents **aged** 10-19 years, from 3 **selected** communities in the Adaklu District in the Volta Region of Ghana.” [Allied Health].

##### Extract 114

“A hospital based cross sectional study **was employed** in this study involving a population of adults living with type 2 diabetes who **were** attending the diabetic’s clinic of the Ho Teaching Hospital.” [Medicine].

#### Step 9: Variables

##### Extract 120

“Key variables **gathered** included demographic characteristics, number and types of deliveries, involuntary loss of urine or faecal matter or flatus after weeks of delivery, and types of measures **adopted** to address the problem.” [Medicine].

#### Step 1: Summary of Findings

Extract 41

“Findings of the study **revealed** that majority of women in their reproductive age **had** adequate knowledge about PCC. However, there is less effort by healthcare practitioners to educate the general public about PCC components and its relevance.” [Nursing].

Extract 81

“In conclusion, fathers who **took** part in this study, **reported** being engaged in child’s feeding practices.” [Allied Health].

Extract 126

“This study clearly **showed** the outline of roles of diet, medication and exercise **played** in glycemic and blood pressure control among diabetics.” [Medicine].

#### Step 2: Recommendations

Extract 43

“Healthcare professionals in the Dzodze Ketu North Municipality **should** organise awareness campaign for the women of the Dzodze community to educate them on the cause and risk factors of cervical cancer. Furthermore, women of the Dzodze community **should** be educated on the availability of cervical cancer screening services.” [Nursing].

Extract 128

“The prevalence of NCDs **would** significantly reduce if more public education about NCDs and their prevention were intensified, to make the public aware of them. In addition, more screening programs **should** be organised by the government, hospitals and NGOs for early detection and management of NCDs. Existing facilities for NCDs detection and management at local levels must also be improved.” [Medicine].

The results in Table 1 show that the present perfect tense was used in the statement (60%), and background (40%) steps within the introduction move of the abstracts sampled for the study. Excerpts 6, 8, 48, and 51 support this claim.

#### Step 1: Background

Extract 6

“Medications are the principal tools employed to avoid and efficiently control persistent diseases; nevertheless, appropriate medication use **has been** a major challenge for healthy patients and caregivers regardless of their significance in disease management. Provision of education to patients about their medication increases medication adherence.” [Nursing].

Extract 48

“Fufu is a dough-like West African food made by boiling and pounding starchy root tubers such as yam, plantain and/or cassava. Traditionally, pieces of boiled cassava or other tubers are pounded together in a mortar using pestle. The mixture is turned by hand with water until it becomes soft and sticky. The quality of fufu **has been known** to vary from one location to another. The processing technique maybe responsible for this variation in quality. Fufu prepared in this form is time consuming and labour intensive, this leads to the manufacturing of the fufu pounding machine.” [Allied Health].

#### Step 2: The Problem

Extract 8

“The inaccessibility of licensed medical attention and the unrestricted availability of drugs on the market **have prevented** people from attending hospitals, leading Ghanaian citizens to purchase Western and indigenous medicine that are available and capable of curing their ailments.” [Nursing].

Extract 51

“The risk of contamination from trolleys to shoppers and vice versa **has been overlooked**, making it a

great public health concern worldwide and **has remained** a gap for research particularly in Ghana.” [Allied Health].

Hedging devices were primarily employed in the introduction (75%) and conclusion (25%) steps of the research abstracts that were examined, as shown in Table 1. Hedging devices, however, were absent from every step of the method move. This implies that the method move of research abstracts either uses hedges less or does not use them at all. Excerpts 5, 52, and 82 provide evidence of the use of hedging devices (may, will) in the steps.

Step 1: Background

Extract 5

“Exclusive breastfeeding (EBF) is very important to both the baby and the mother. Exclusive breastfeeding greatly reduces mortality and morbidity in babies. In Ghana it is reported that the national prevalence of over 70% was recorded for the practice of exclusive breastfeeding. Even though this prevalence is quite good, it **may** not be the same in some specific places in Ghana.” [Nursing].

Step 3: Focus

Extract 52

“This study **will** therefore review the hygienic status of the aforementioned shopping tools so that findings will serve as a platform for public health awareness to help curb the spread and infections that **may** originate from shopping trolleys and baskets.” [Allied Health].

Step 1: Summary

Extract 82

“Generally, adolescents do not have adequate nutritional knowledge due to less easy access to health and nutrition information through schools, recreational activities and so this **may** have influenced the low level of nutrition knowledge. More so, the perception about targeted nutrition supplementation is very poor.” [Allied Health].

Table 1 shows that boosters characterized steps in the introduction move (65%), especially in the background (41%) and statement (24%) steps. The study discovered low utilization rates of 24% and 12% in the method and conclusion steps, respectively. Excerpts 5, 7, 18, 41, 50, 70, 89 of, and 104 exemplify the use of booster words (developing, descriptive, exclusive, greatly, largely, major, majority, negatively, prospective, quantitative, reproductive, mostly) in the research abstracts.

Step 1: Background

Extract 5

“**Exclusive** breastfeeding (EBF) is very important to both the baby and the mother. **Exclusive** breastfeeding **greatly** reduces mortality and morbidity in babies. In Ghana it is reported that the national prevalence of over 70% was recorded for the practice of **exclusive** breastfeeding. Even though this prevalence is quite good, it may not be the same in some specific places in Ghana.” [Nursing].

Extract 89

“In the **developing** countries, most patients present with advanced glaucoma blindness. This has been attributed to lack of awareness and poor knowledge as **major** contributing factors. The outcome of glaucoma management, however, depends **largely** on the understanding and attitude of the illness by the patients.” [Medicine].

Step 2: Statement

Extract 7

“The prevalence of **exclusive** breastfeeding (EBF) for the first six months of life has remained low in most **developing** countries and in Ghana, despite strong evidence in support of its practice.” [Nursing].

Extract 50

“Foodborne associated illnesses **negatively** affect the health and economic wellbeing of many **developing** nations.” [Allied Health].

Step 1: Research Design

Extract 18

“A **quantitative** design using cross-sectional survey was employed in this study.” [Nursing].

Step 2: Sampling Technique

Extract 104

“A **prospective descriptive** cross-sectional study was used, a random sampling technique.” [Medicine].

Step 6: Data Analysis Technique

Extract 70

“Statistical analysis involved **descriptive** and inferential statistics at 95% level of confidence and  $p \leq 0.05$  was considered significant.” [Allied Health].

Step 1: Summary of Findings

Extract 41

“Findings of the study revealed that **majority** of women in their **reproductive** age had adequate knowledge about PCC. However, there is less effort by healthcare practitioners to educate the general public about PCC components and its relevance.” [Nursing].

Table 1 shows that nominalization prominently featured in the conclusion (42%), method (33%), and introduction (25%) steps in the rhetorical moves of the research abstracts sampled for this study. The study discovered that nominalization dominated both the recommendation (31%) and background (16%) steps in the moves. Extracts 8, 26, 42, 44, 48, 51, 52, 63, 70, 83, 89, 90, 95, 110, 113, 117, 119, 125, and 128 of the sampled abstracts provide evidence for the use of nominalization devices (analysis, blindness, morbidity, mortality, availability, inaccessibility, infection, medications, disturbance, transmission, adherence, confidence, management, awareness) in the rhetorical moves of research abstracts sampled for the study.

Step 1: Background

Extract 8

“The **inaccessibility** of licensed medical **attention** and the unrestricted **availability** of drugs on the market have prevented people from attending hospitals, leading Ghanaian citizens to purchase Western and indigenous medicine that are available and capable of curing their **ailments**.” [Nursing].

Extract 48

“Fufu is a dough-like West African food made by boiling and pounding starchy root tubers such as yam, plantain and/or cassava. Traditionally, pieces of boiled cassava or other tubers are pounded together in a mortar using pestle. The mixture is turned by hand with water until it becomes soft and sticky. The quality of fufu has been known to vary from one **location** to another. The processing technique maybe responsible for this **variation** in quality. Fufu prepared in this form is time consuming and labour intensive, this leads to the manufacturing of the fufu pounding machine.” [Allied Health].

Extract 89

“In the developing countries, most patients present with advanced glaucoma **blindness**. This has been attributed to lack of **awareness** and poor knowledge as major contributing factors. The outcome of glaucoma **management**, however, depends largely on the understanding and attitude of the illness by the patients.” [Medicine].

Step 2: Statement

Extract 51

“The risk of **contamination** from trolleys to shoppers and vice versa has been overlooked, making it a great public health concern worldwide and has remained a gap for research particularly in Ghana.” [Allied Health].

Extract 90

“However, high quality stroke research is limited, especially in developing countries where stroke accounts for up to 10% of all deaths. In Ghana, research into the nature of stroke and its relationship with post-disease health sequelae, forms of **rehabilitation** services as well as the pharmacological choices of survivors has been poorly explored.” [Medicine].

Step 3: Research Focus

Extract 52

“This study will therefore review the hygienic status of the aforementioned shopping tools so that findings will serve as a platform for public health **awareness** to help curb the spread and **infections** that may originate from shopping trolleys and baskets.” [Allied Health].

Extract 95

“This study was being carried out to ascertain the knowledge of sickle cell disease among university students and how it informs their **decisions** for the future. It was to find out how much knowledge students of the University of Health and Allied Sciences have about sickle cell disease, their health beliefs about sickle cell disease and their attitude towards the sickle cell disease as well as persons affected with the disease.” [Medicine].

Step 2: Sampling Technique

Extract 63

“**Respondents** were sampled using **convenience** sampling method.” [Allied Health].

Step 3: Sample Size

Extract 105

“A descriptive and cross-sectional study was employed to determine the effect of proper sugar control on sleep **disturbance** and insomnia in diabetic patients in the diabetic\_unit at the Ho Teaching Hospital using a sample size of 8.” [Medicine].

Step 5: Data Collection Procedure /Technique

Extract 26

“A close-ended questionnaire including the Morisky **Medication Adherence** Rating Scale questionnaire was used to collect data.” [Nursing].

Extract 110

“A well-structured questionnaire was administered to sample a total of 200 **correspondents** consisting of 100 hypertensive patients and 100 non-hypertensive general **population** volunteers in Ho Municipality.” [Medicine].

Step 6: Data Analysis Procedure /Technique

Extract 70

“Statistical **analysis** involved descriptive and inferential statistics at 95% level of **confidence** and  $p \leq 0.05$  was considered significant.” [Allied Health].

Step 7: Population

Extract 113

“The study **population** comprises all pregnant women with hypertensive disorders, who visited the Volta Regional Hospital during the study period.” [Medicine].

Step 8: Research Ethics

Extract 117

“Ethical **clearance** was sort from UHAS Research Ethics Committee. **Permission** letter from the School of Medicine was submitted to the Ho Teaching Hospital for **permission** to conduct the study. Informed consent was obtained from the **respondents** before **commencement** of data **collection**.” [Medicine].

Step 9: Variables

Extract 119

“Variables collected include demographics, **awareness** and knowledge of breast cancer, hormonal, behavioural, reproductive, and genetic risk factors and **intention** of Breast Self-Examination.” [Medicine].

Step 1: Summary of Findings

Extract 42

“The poor attitude towards **prevention** is due to the poor knowledge the **respondents** had on the signs

and symptoms, medium and route of **transmission**. This connotes that large number of students are at risk of contracting **infections** as they are not vaccinated against HBV.” [Nursing].

Extract 125

“The findings from the study suggest that anal and urinary incontinence exist, although no **morbidity** data on both **conditions** was found in the Ho Teaching Hospital records.” [Medicine].

Step 2: Recommendations

Extract 44

“**Management** at the Ada East District Hospital should ensure patients are educated on the **importance** of routine check-up and the **importance** of completing prescribed **medications**. Measures must be put in place to reduce waiting time at the Ada East.” District Hospital [Nursing].

Extract 83

“Therefore, there is a need to develop pharmaceutical grade of potential antibacterial\_and antifungal agents from the spice **combinations** identified to curb **persistent** human **infections** and antimicrobial **resistance**.” [Allied Health].

Extract 128

“The **prevalence** of NCDs would significantly reduce if more public **education** about NCDs and their **prevention** were intensified, to make the public aware of them. In **addition**, more screening programs should be organised by the **government**, hospitals and NGOs for early **detection** and **management** of NCDs. Existing facilities for NCDs **detection** and **management** at local levels must also be improved.” [Medicine].

Table 1 displays the percentage of specialized lexis, vocabulary, or technical terms as nouns in the steps of moves in the research abstracts under study. The study found that these technical registers dominated the conclusion (47%), introduction (30%), and method (23%) steps. The following excerpts provide evidence of the use of these technical nouns: antenatal, antibacterial, antifungal, antimicrobial, confectionaries, diabetic, flatus, glaucoma, glycemc, gynecology, insomnia, microbial, obstetrics, pharmaceutical, pharmacological, sickle cell, and tramadol.

Step 1: Background

Extract 49

“Milk is a nutrient-rich, liquid food produced by the **mammary glands** of mammals. It is the primary source of nutrition for infant mammals before they are able to digest other foods. Powdered milk, also known as dried milk is produced by evaporating liquid milk to dryness. Powdered milk available in Ghana includes, dry whole milk, dry skimmed milk and dry semi-skimmed milk. They are frequently used in the manufacture of **infant formula** and **confectionaries** such as candies and also in baked goods.” [Allied Health].

Extract 89

“In the developing countries, most patients present with advanced **glaucoma** blindness. This has been attributed to lack of awareness and poor knowledge as major contributing factors. The outcome of **glaucoma** management, however, depends largely on the understanding and attitude of the illness by the patients.” [Medicine].

Step 2: Problem

Extract 90

“However, high quality **stroke** research is limited, especially in developing countries where **stroke** accounts for up to 10% of all deaths. In Ghana, research into the nature of **stroke** and its relationship with post-disease health sequelae, forms of rehabilitation services as well as the **pharmacological** choices of survivors has been poorly explored.” [Medicine].

Step 3: Research Focus

Extract 9

“It is therefore based on this premise that the researcher seeks to determine the prevalence and factors responsible for **tramadol** abuse among the youth of the Kassena Nankana Municipality in Upper East Region of Ghana.” [Nursing].

Extract 53

“This review presents a general overview of **microbial** quality of pepper sauce served by food vendors.” [Allied Health].

Extract 95

“This study was being carried out to ascertain the knowledge of **sickle cell** disease among university students and how it informs their decisions for the future. It was to find out how much knowledge students of the University of Health and Allied Sciences have about **sickle cell** disease, their health beliefs about **sickle cell** disease and their attitude towards the **sickle cell** disease as well as persons affected with the disease.” [Medicine].

Step 3: Sample Size

Extract 105

“A descriptive and cross-sectional study was employed to determine the effect of proper sugar control on sleep disturbance and **insomnia** in **diabetic** patients in the **diabetic** unit at the Ho Teaching Hospital using a sample size of 8.” [Medicine].

Extract 106

“The study was conducted at the Ho Teaching Hospital, **Obstetrics** and **Gynecology** Department, Volta Region, Ho with a sample size of about 100.” [Medicine].

Step 4: Research Site

Extract 108

“The study was a prospective cross sectional hospital based study which was conducted at the **antenatal** clinic and the **obstetrics** unit as a whole of the Ho Teaching Hospital.” [Medicine].

Step 6: Data Analysis Technique

Extract 71

“A **Bioimpedance Analyzer** was used to assess body composition, a **stadiometer** to measure height, a food diary to assess energy intake and an activity diary to assess energy expenditure.” [Allied Health].

Step 9: Variables

Extract 119

“Variables collected include demographics, awareness and knowledge of breast **cancer**, **hormonal**, behavioural, reproductive, and **genetic** risk factors and intention of Breast Self-Examination.” [Medicine].

Extract 120

“Key variables gathered included demographic characteristics, number and types of deliveries, involuntary loss of urine or **faecal** matter or **flatus** after weeks of delivery, and types of measures adopted to address the problem.” [Medicine].

Step 1: Summary of Findings

Extract 126

“This study clearly showed the outline of roles of diet, medication and exercise played in **glycemic** and **blood pressure** control among **diabetics**.” [Medicine].

Step 2: Recommendations

Extract 83

“Therefore, there is a need to develop **pharmaceutical** grade of potential **antibacterial** and **antifungal** agents from the spice combinations identified to curb persistent human infections and **antimicrobial** resistance.” [Allied Health].

The data in Table 1 revealed that the passive voice was most commonly used in the steps of the method move of research abstracts written by UHAS undergraduates. The passive voice was used alongside the simple past tense. The passive voice was not used in the introduction or conclusion steps of the sampled research abstracts. These can be found in excerpts 17, 18, 20, 25, 28, 62, 64, 68, 70, 102, 103, 104, 106, 108, 110, 111, 112, 114, and 117.

Step 1: Research Design

Extract 17

“A longitudinal retrospective research design **was adopted** for this study.” [Nursing].

Extract 18

“A quantitative design using cross-sectional survey **was employed** in this study.” [Nursing].

Extract 102

“A quantitative method using a cross sectional descriptive survey design **was used** for this study.” [Medicine].

#### Step 2: Sampling Technique

Extract 20

“A quantitative design using cross-sectional survey **was employed** in this study.” [Nursing].

Extract 62

“5 different brands each of sachet water, bottled water and tap water samples from each of 5 different locations within the municipality **were selected** through random sampling.” [Allied Health].

Extract 103

“A sample size of 113 patients diagnosed to have glaucoma that attended the eye clinic **was selected** using purposive sampling technique.” [Medicine].

Extract 104

#### Step 3: Sample Size

Extract 64

“A sample size of 1989 with a ratio of 1 case to 2 controls **was used** for the analysis.” [Allied Health].

Extract 106

“The study **was conducted** at the Ho Teaching Hospital, Obstetrics and Gynecology Department, Volta Region, Ho with a sample size of about 100.” [Medicine].

#### Step 4: Research Site

Extract 108

“The study was a prospective cross sectional hospital based study which **was conducted** at the antenatal clinic and the obstetrics unit as a whole of the Ho Teaching Hospital.” [Nursing].

#### Step 5: Data Collection Procedure /Technique

Extract 25

“A pretested questionnaire on knowledge, attitudes, and practice on infertility **was administered** to consented participants.” [Nursing].

Extract 68

“Search engines (PubMed, Google Scholar and FreeFullPDF) **were used** to obtain articles that focused on the nutritional composition of beetroot.” [Allied Health].

Extract 110

“A well-structured questionnaire **was administered** to sample a total of 200 correspondents consisting of 100 hypertensive patients and 100 non-hypertensive general population volunteers in Ho Municipality.” [Medicine].

#### Step 6: Data Analysis Procedure /Technique

Extract 28

“The data **was processed** using Microsoft Excel 2013 and Statistical Package for the Social Sciences (SPSS) software.” [Nursing].

Extract 70

“Statistical analysis involved descriptive and inferential statistics at 95% level of confidence and  $p \leq 0.05$  **was considered** significant.” [Allied Health].

Extract 111

“Statistical analysis **was done** to estimate sampled data using the Statistical Package for Social Sciences (SPSS version 22.0) and Microsoft excel 2016.” [Medicine].

Extract 112

“Data collected **was entered** and analyzed with Statistical Package of Social Sciences.” (SPSS)

Step 7: Population

Extract 114

“A hospital based cross sectional study **was employed** in this study involving a population of adults living with type 2 diabetes who were attending the diabetic’s clinic of the Ho Teaching Hospital.” [Medicine].

Step 9: Research Ethics

Extract 117

“Ethical clearance was sought from UHAS Research Ethics Committee. Permission letter from the School of Medicine **was submitted** to the Ho Teaching Hospital for permission to conduct the study. Informed consent **was obtained** from the respondents before commencement of data collection.” [Medicine].

#### 4. Discussion

The research revealed the usage of a tripartite pattern of verb tense—simple past, and present perfect tenses throughout the steps of rhetorical moves—from introduction to method and conclusion in the research abstracts written by undergraduate students in three disciplines—medicine, nursing, and allied health sciences at UHAS. The present tense, which dominated the introduction steps (68%), was particularly found in the background (36%) and focus (24%) steps. The present tense dominates the introduction steps in research abstracts due to its use in academic discourse to explain general truths, scientific facts, and the author's interpretations, rather than specific observations and methods. Other studies cited the dominant use of the simple present tense in the introduction steps and move of research abstracts (Nurhayati, 2017; Tseng, 2011).

Also, this study found that the simple past tense dominated steps in the method move (55%), while the present perfect tense was replete in the statement (60%), and background (40%) steps of the introduction move. The findings signify that the steps in rhetorical moves of research abstracts across the three disciplines generally favour the use of the simple present, simple past, and present perfect tenses. Academic discourse uses the past tense to explain studies, summarize results, and depersonalize information. The dominant use of the past tense and perfect tenses as linguistic features in research abstracts is supported by previous research (Hanidar, 2016; Khany & Malmir, 2019; Nurhayati, 2017; Tankó, 2017).

Hedging devices are primarily used in the introduction (75%) and conclusion (25%) steps of research abstracts to express caution or uncertainty, soften the author's propositions, and contribute to an appropriate rhetorical tone. It is for these reasons that scholars use these devices to soften justifications for research gaps and draw study conclusions. The findings support those of other researchers who suggested that authors employ hedges when describing research gaps and summarising findings (Gillaerts & Van de Velde, 2010; Hyland, 2005).

The findings of this study revealed that boosters characterized steps in the introduction move (65%), especially the background (41%) and statement (24%) steps. The study discovered low utilization rates of 24% and 12% in the method and conclusion steps, respectively. Academic discourse writers frequently use boosters in research abstracts to express certainty and topic involvement, confirming their frequent appearance in the introduction move. This finding affirms the claim that boosters appear more frequently in the introduction move of research abstracts (Gillaerts & Van de Velde, 2010; Hyland, 2005; Serholt, 2012).

This study found that nominalization prominently featured in the conclusion (42%), method (33%), and introduction (25%) steps in the rhetorical moves of the research abstracts sampled for the study. Nominalization in academic discourse helps condense information, achieve technicality through specialized lexis, vocabulary, terms, scientific registers, and maintain a formal tone, variety, and objectivity. This finding supports the opinions of previous researchers who claimed that nominalization offers information density, specialised lexis, or technical nouns (Halliday, 2004a, b, c; Halliday, 2008; Martin, 2007; Martin & Veel, 2005).

The study found that technical registers, specialized terminologies, or vocabularies dominated the conclusion (47%), introduction (30%), and method (23%) steps in the research abstracts. Science discipline writers use words, lexis, or vocabulary as technical registers, a form of nominalisation or grammatical metaphor, to present scientific knowledge in research abstracts. This finding buttresses the views of other researchers who reported the use of

specialized lexis in the sciences to achieve technical representation (Lemke, 1990), create taxonomies, evaluate entities, and achieve cohesion (Martin, 2009; Martin & Veel, 2005).

Finally, this study found that the passive voice was most commonly used in the method steps of research abstracts written by UHAS undergraduates. Writers prefer to use the passive voice in order to: a) depersonalize the information and make their tone more academic and professional when summarising the research methods; and b) write intelligibly and coherently while maintaining topic continuity. This finding corroborates previous literature that reported the use of passive voice alongside the simple past tense in steps in the method move of research abstracts, articles, dissertations, or theses (Hanidar, 2016; Khany & Malmir, 2019; Tankó, 2017). According to these authors, the simple past tense and passive voice are the primary verbs used in entries about research methods.

## 5. Conclusions

This study examines lexico-grammatical features in the steps of rhetorical moves in abstracts written by undergraduate nursing, medicine, and allied health students at UHAS, Ho. The study reveals that students' research abstracts use three tense patterns: simple present, simple past, and present perfect tenses in introduction, method, and conclusion steps, with the present perfect tense dominating statements and background steps. The discourse highlighted the use of hedging devices, boosters, nominalization, technical nouns, and passive voice in various steps, with the latter being most common in method steps. This paper recommends that English for Academic Purposes (EAP) course teachers in Ghanaian and global universities teach students the necessary skills to effectively write tense patterns and other lexico-grammatical devices in research abstracts.

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