

Syntactic and Rhetorical Features of Medical Research Article Titles in Indonesian National and International Journals

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Abstract

Writing medical Research Articles (RA) titles in English is a challenging endeavor, particularly for those who come from an English as a Foreign Language (EFL) background. This study thus sought to provide insights into the titling practices of medical RAs in Indonesian national and international journals. It aimed to uncover syntactic structures and rhetorical combinations of medical RA titles. A comparative mixed-methods design was employed to examine 120 RA titles published between 2021 and 2024 from 4 different international medical journals and 4 different national medical journals. The results suggested that RAs published in international medical journals have longer titles than those in national medical journals. Compound phrase titles are the most dominant syntactic feature in international medical journals, while nominal phrase titles are the most common syntactic feature in national medical journals. The most frequent rhetorical combination is the topic–method category. Finally, the indicative-form titles are far more dominant than the interrogative-form titles. In essence, there are meaningful similarities and differences between RA titles published in international and national journals, which potentially could have implications for English for Medical Purposes. Finally, the findings contribute to informing the titling practices of medical RAs in two distinct groups of journals.

Keywords: medical research article; research article titles; rhetorical combinations; syntactic structures; title styles

INTRODUCTION

Academic genres have earned much attention from various researchers over the last few decades (Jasrial et al., 2024; Morales et al., 2020; Shahidipour & Alibabae, 2017; Wang et al., 2024). Various scholarly texts have been scrutinized, including theses, dissertations, research articles (RAs), review papers, books, conference papers, etc. (Morales et al., 2020; Shahidipour & Alibabae, 2017; Wang et al., 2024). Nonetheless, RAs have garnered substantial

interest from researchers. This may be attributed to the fact that RAs hold a significant role in scholarly knowledge dissemination (Milojević, 2017; Shahidipour & Alibabae, 2017; Wang et al., 2024).

The scrutiny of different sections in RAs has been carried out in the literature, including titles (e.g., Jiang & Hyland, 2023; Pearson, 2021), abstracts (e.g., Arsyad et al., 2023; Darabad, 2016; Jin et al., 2021), introductions (e.g., Arsyad & Zainil, 2023; Geng et al., 2023), and discussions (e.g.,

Arsyad, 2013; Basturkmen, 2012). Titles in RAs have prolifically attracted widespread attention due to their instrumental role in RAs (Jiang & Hyland, 2023; Milojević, 2017; Morales et al., 2020). RA titles have become more substantial as readers now tend to use online search engines (e.g., Google Scholar) to search RAs instead of glancing over the tables of contents in numerous journals (Hyland & Zou, 2022).

Studies suggest that well-crafted RA titles are concise and informative. However, these attributes are too broad and general. Researchers found that the advice for creating well-crafted RA titles in the literature seems to be ambiguous and conflicting (Hyland & Zou, 2022). However, top-tier international research journals (e.g., journals indexed in the Q1 and Q2 quartiles of Scopus and Web of Science) are considered more prestigious and have served as reference standards for academic genre analysis (Jasrial et al., 2024; Kerans et al., 2020; Shahidipour & Alibabae, 2017). Thus, RA titles in high-impact scholarly journals are often used as a benchmark or criterion for researchers to create their RA titles. Despite this, it is important to note the variability across journals.

On the other hand, crafting a good title that meets the expectations of high-ranked journals is a demanding endeavour, especially for those novice researchers who come from EFL backgrounds (Soler, 2007; Wang et al., 2024). The hurdles encountered by EFL novice researchers mostly derive from insufficiency of English language proficiency and inadequacy of support to learn the conventions of English academic writing in each discipline, thus hampering their understanding of the nuanced intricacies involved in crafting RA titles (Wang et al., 2024).

In addition, RA titles are critical linguistic elements in research. They are like advertisements for products (Haggan, 2004;

Hyland & Zou, 2022). They serve as a first contact between readers and RAs (Orbay et al., 2025). It is therefore they may influence visibility, readers' decisions to read and cite, comprehension, and impact. RA titles also reflect disciplinary conventions as well as current publication practices. For example, Z. Wang et al. (2024) reported that RA titles in the field of linguistics tend to have more lexical density, whereas RA titles in literature tend to show greater syntactic diversity. In the field of biomedical Martín and León-Pérez (2024) found that RA titles get longer than ever. Researchers in biomedical research now tend to use more complex syntactic structures and include more persuasive information elements. These variations across disciplines indicate disciplinary convention and current publication practices.

Not only do they reflect convention and publication practices, but RA titles also reflect contextual and cultural expectations. Xie (2020), for instance, compared RA titles between Chinese and international authors. The findings show that there are substantial differences in titling practices between the two groups, which could be influenced by cultural and contextual norms and expectations.

A growing corpus of studies in the existing literature has examined RA titles in numerous scholarly disciplines, such as linguistics (Apriani & Arsyad, 2022; Cheng et al., 2012; Jasrial et al., 2024), education (Orbay et al., 2025), computer science (Anthony, 2001), engineering (Jiang & Hyland, 2023; Shahidipour & Alibabae, 2017), economics (Jiang & Hyland, 2023; Milojević, 2017), and business and law (Appiah et al., 2019). Notably, medical RA titles receive considerable attention in the existing literature because numerous studies have explored syntactic features and rhetorical combinations of medical RA titles (see, for example, Demir, 2023; Heßler & Ziegler, 2023; Kerans et al., 2020; Moslehi &

Kafipour, 2022; Pan & Luo, 2025; Y. Wang & Bai, 2007). However, to the best of the authors' knowledge, few, if any, comparative studies on title length, syntactic features, rhetorical combinations, and syntactic forms of RA titles between international and Indonesian national journals within the medical field have been conducted.

Research on medical RA titles has been mainly focused on internationally indexed journals, leaving national journals underexplored. This gap is important to address considering the significant role of national journals in reflecting local academic practices and cultural and contextual norms. Local academic traditions may influence discourse practices (Xie, 2020). Particularly, research on syntactical features and rhetorical combinations of medical RA titles in Indonesian national journals remains under-researched.

Motivated by this gap, this study thus aimed to compare syntactic structures and rhetorical combinations of medical RA titles in national Indonesian journals and international journals. Investigating medical RA titles in national journals can provide insights into localized rhetorical preferences of Indonesian researchers and local publication practices in Indonesian medical research. Next, this study compared the local academic practices of Indonesian medical journals with those of international medical journals.

By addressing this gap, this study advances our understanding on local publication practices of medical research in Indonesian contexts and on how they differ with those of international publication practices. Therefore, the findings of this study have implications for English medical purposes lecturers, curriculum designers, medical students who are learning to write medical RAs, and novice researchers who intend to publish their RAs in high-profile

international journals. In response to the gap, four research questions are formulated:

1. What is the typical length of medical RA titles published in national and international journals?
2. Which syntactic features are commonly found in medical RA titles published in national and international journals?
3. Is there any difference in the rhetorical combinations in multi-unit titles between medical RA titles published in national journals and international journals?
4. Which syntactic forms (i.e., indicative and interrogative) are commonly found in medical RA titles published in national and international journals?

METHODOLOGY

This present study employed a comparative design to contrast the length of titles, syntactic features, rhetorical combinations, and syntactic forms of medical RA titles in international Scopus-indexed and accredited Indonesian national journals to examine their differences and commonalities. A comparative study refers to a research design that entails contrasting multiple cases (e.g., different nations or institutions) to analyze comprehensive differences and commonalities (Woodside, 2010). An exploratory sequential mixed-method design was adopted, which involved qualitative data collection first, followed by quantitative data collection for interpretation (Creswell, 2015).

The total number of 120 medical RA titles collected across 4 different accredited Indonesian national journals and 4 different international journals was analyzed for title length, syntactic features, forms, and rhetorical combinations. The total sample, 120 titles, has met the minimum standard for content analysis, which is 30, following the theory of Corder & Foreman (2009). To attain the comparability of the corpora, purposive sampling was used as a technique to select the

sample in this study, following *tertium comparationis* by Connor and Moreno (2005).

The journals and RAs were selected based on the following factors: First, the chosen journals must have scope related to the medical field. The national journals must be Indonesian national journals accredited in Indonesia (i.e., indexed in Sinta 2 and 3). Meanwhile, the international journals must be indexed in Scopus database.

Second, the chosen RAs must be published between 2021 and 2024 since this study attempts to investigate the current RA title writing trends in medical RAs for the past few years. Third, the chosen RAs must include the research topics within the medical field, which are to be aligned with this study's research purposes. Fourth, the chosen RA titles must be written in the English language. The following table is the configuration of the corpora in this study:

Table 1. The Spread of the Corpora in the Study

International Medical Journal		National Medical Journal	
Name of Journals (Q1)	Number of Titles	Name of Journals (Sinta 2 dan 3)	Number of Titles
BNC Medicine	15	Jurnal Kedokteran dan Kesehatan Indonesia	15
PLOS Medicine	15	Journal of the Medical Sciences	15
The Lancet Global Health	15	Majalah Kedokteran Andalas	15
Journal of Preventive Medicine and Public Health	15	Jurnal Kedokteran Syiah Kuala	15
Total	60	Total	60

As demonstrated in Table 1, the number of samples taken from each journal is identical, i.e., fifteen. Moreover, both

international and national journals include four representatives. The rationale behind this is to achieve equality in sample sizes for each group of corpora, thereby fulfilling the requirement for a comparative study (Connor & Moreno, 2005; Xie, 2020). Additionally, the selected journals were treated as representative sample of their respective publication contexts.

A checklist table was utilized to record each type of syntactic feature, form, and rhetorical combination that appeared in the medical RA titles. The column for title length was also provided to count the number of words in each title. After analyzing the title length, the total occurrences of each type of syntactic feature, syntactic form, and rhetorical combination were determined by counting the number of tick marks in each type. The COUNTIF function in Microsoft Excel was used to compute these totals.

In addition to counting the title length, specific guidelines were adhered to in this study. Firstly, title length was defined as the total number of words in a title. Secondly, words were characterized as sequences of letters that occur between spaces (Demir, 2023), which suggests both content and function words were considered in this study. Thirdly, words were counted individually and assisted by the LEN and SUBSTITUTE functions in Microsoft Excel. Fourthly, words with hyphens, abbreviations, numbers, and acronyms were considered a single word (Demir, 2023; Jasrial et al., 2024).

In analyzing the syntactic features of medical RA titles, the classification of syntactic features from Xie (2020) was employed as the framework for analysis. The classification of syntactic features consists of five types, i.e., nominal phrase titles, compound phrase titles, full sentence titles, verbal phrase titles, and prepositional phrase titles. Below is the table of syntactic features highlighting the types, descriptions, and title examples.

Table 2. The Types of Syntactic Features

Types	Descriptions	Examples
NP	It consists of one or more nouns, known as heads, which may be preceded by pre-modifiers or followed by post-modifiers.	Relationship between age, education, and blood zinc levels, with cognitive function in menopausal women
CP	It is divided into two parts, separated by a colon, dash, question mark, or period.	Successful combination therapy of low-dose aspirin and unfractionated heparin in recurrent pregnancy loss: A case report
FS	It includes a complete sentence or clause, typically incorporating declarative structures.	Growth hormone administration and exercise combination increase serum IGF-1 levels in perimenopausal Wistar rats
VP	It begins with either a present participle verb or a to-infinitive verb	Exploring the Effects of Bone Marrow Mesenchymal Stem Cells on Amyloid Plaque Reduction in a Rat Model of Alzheimer's Disease
PP	It begins with a preposition, followed by the object of that preposition.	From treatment resistance to sequential treatments of depression

Note: NP = nominal phrase; CP = compound phrase; FS= full sentence; VP = Verbal Phrase; PP = prepositional phrase

As shown in Table 2, there are five types of syntactic features based on the framework of Xie (2020). These types were used as the reference point to examine the syntactic features found in each medical RA title and answer Research Question 2. The occurrences of each type that appeared in

medical RA titles were counted and indicated with a tick mark. Thereafter, the total occurrences for each type were calculated and presented in percentages for data interpretation and presentation.

Using the frequency occurrences of CP titles obtained in the syntactic feature data analysis, the CP titles were further examined for their rhetorical combinations. A classification of rhetorical combinations by Cheng et al. (2012) was used to analyze CP titles in national and international journals. The categories are as follows:

Topic-Scope: The primary research issue is introduced, followed by details specifying the study's focus.

Topic-Method: The first part presents the main research issue, while the second part details the research design or method.

Topic-Description: The first component states the primary research issue, followed by further explanation of the primary research issue mentioned in the first part.

Topic-Source: The first part presents the primary research issue, with the second part stating the data source.

Metaphor-Topic: The initial part states a metaphorical expression, while the second part presents the topic or primary research issue.

Topic-Question: The primary research issue is presented in the first part, followed by an interrogative statement.

Question-Method: The first segment states an interrogative statement, while the second part mentions the method.

Topic-Method and Source: The first part indicates the primary research issue, while the second part states the research method and source of research data.

Metaphor-Question: The first part presents a metaphorical expression, then followed by an interrogative statement.

Question-Method and Source: The first part is posed as an integrative statement, while the

second part specifies the method and source of data.

Name-Method: The first part is given in an acronym, then the method is given in the second part.

Based on this classification, the number of occurrences of each category found in the data was counted and indicated with a tick mark. Subsequently, the total occurrences for each category found in the corpus were calculated and compared between journals.

Finally, to analyze the syntactic forms of medical RA titles, the classification of syntactic forms from Hyland and Zou (2022) was employed as the foundation for analysis. RA titles can be either indicative or interrogative (Hyland & Zou, 2022; Jiang & Hyland, 2023). The following table presents the syntactic forms, descriptions, and title examples following the classification from Hyland and Zou (2022).

Table 3. The Types of Syntactic Forms

Types	Descriptions	Examples
Indicative	It is presented and phrased as a statement.	The Effect of Prenatal Cadmium Exposure on Attention-deficit/Hyperactivity Disorder in 6-Year-old Children in Korea
Interrogative	It is expressed and phrased as a question followed by the use of a question mark.	Is Job Insecurity Worse for Mental Health Than Having a Part-time Job in Canada?

As presented in Table 3, there are two types of syntactic forms following the theoretical framework of Hyland and Zou (2022). The analysis process for research question four in this study was done by counting the number of occurrences of each type that appeared in the medical RA titles. The occurrences were indicated with tick

marks. The total number of each type was then calculated and expressed as percentages to draw inferences and present the result.

Cohen's Kappa coefficient was utilized to evaluate the inter-coder reliability. The independent co-coder was a postgraduate student of English Education. She had experience in Applied Linguistics studies. She was then contacted and trained to support the assessment of the analysis's reliability. Around 21% or 26 RA titles were randomly selected from the corpus to be analyzed by the co-coder. Subsequently, a Cohen's Kappa analysis was administered to assess the agreement between the researcher and the co-coder analysis. Cohen's Kappa was obtained at 0.89. It was deemed excellent following Kanoksilapatham's (2005) criteria for the score.

RESULT AND DISCUSSION

The Average Length of Medical RA Titles

The analysis of research question one was the title length in medical journals. RA title length was counted individually. The total number of words in a title was counted as title length, and words were considered a group of letters separated by spaces. The following table illustrates the average title length between international medical journals and national medical journals.

Table 4. The Average Length of Medical RA Titles

International Medical Journal		National Medical Journal	
Name of Journals	Average Title Length	Name of Journals	Average Title Length
Journal of Preventive Medicine and Public Health	19.47	Jurnal Kedokteran dan Kesehatan Indonesia	14.20
PLOS Medicine	24.20	Journal of the Medical Sciences	19.20

The Lancet Global Health	22.33	Majalah Kedokteran Andalas	16.40
BNC Medicine	22.87	Jurnal Kedokteran Syiah Kuala	16.27
Average	22.22	Average	16.62

As outlined in Table 4, the average length of medical RA titles in all groups of International medical journals is around 22 words. PLOS MEDICINE received the highest average in terms of its RA title length, around 24 words. Journal of Preventive Medicine and Public Health obtained the lowest average of around 19 words. Finally, the average title length of Lancet Global Health and BMC Medicine is around 22 and 23 words, respectively.

Table 4 also shows the average length of medical RA titles in all groups of Indonesian national medical journals, which is about 17 words. The Journal of the Medical Sciences had the highest average of about 19 words in terms of its RA title length. Conversely, Jurnal Kedokteran dan Kesehatan Indonesia receives the lowest average of around 14 words. In addition, Majalah Kedokteran Andalan and Jurnal Kedokteran Syiah Kuala obtained an average title length of around 16 words. Below are some examples of RA medical articles.

Excerpt 1:

“Behavioral Predictors Associated With COVID-19 Vaccination and Infection Among Men Who Have Sex With Men in Korea” (17 words – Journal of Preventive Medicine and Public Health)

As in Excerpt 1, the title obtained from one of the international medical journals has 17 words. The word “COVID-19” was counted as a word as it was considered a compound word with a hyphen.

Excerpt 2:

“Effects of a mobile health intervention based on a multitheoretical model of health behavior change on anxiety and depression, fear of cancer progression, and quality of life in patients with differentiated thyroid cancer: A randomized controlled trial” (37 words – BMC Medicine)

As in Excerpt 2, the number of words in the title is 37, which is considered a fairly long title. The title was collected from an international medical journal, i.e., BMC Medicine.

Excerpt 3

“Non-communicable disease risk factors and Covid-19 antibody levels after vaccination” (10 words – Jurnal Kedokteran dan Kesehatan Indonesia)

As indicated in Excerpt 3, the title was collected from an Indonesian national medical journal. The title contains 10 words, with the words “Covid-19” and “non-communicable” counted as a single word.

Excerpt 4

“Effects of acetylcholinesterase inhibitor Donepezil on cognitive function and vital sign in patients with dementia” (15 words – Jurnal Kedokteran Syiah Kuala)

As shown in Excerpt 4, the title was taken from one of the Indonesian national journals. The title consists of 15 words.

The result of the average length of medical RA titles reveals that the international medical journals have longer titles than the Indonesian national medical journals. The title length difference is relatively noticeable, with five words distinguishing them. This finding implies that both journals have relatively long RA titles. This finding is consistent with Kerans et al. (2020), who found that most medical journals tended to favor longer RA titles and have discarded the word limit

regulation, probably due to promoting more comprehensive titles. However, the average title length of the international medical journals is 22.22, which is considered quite lengthy. This finding is congruent with Kerans et al. (2020), who stated that notably long RA titles were observed in some medical journals. For instance, The Lancet Journal was observed to have lengthy RA titles.

On the other hand, the average title length in the Indonesian national journals is 16.62. This finding is in support of prior studies (i.e., Kerans et al., 2020; Moslehi & Kafipour, 2022; Soler, 2007). These studies found that the average title length of medical RAs ranges from 15 words to 17 words. Medical RA titles are repeatedly reported in some cross-disciplinary studies to have longer titles compared to other disciplines, particularly social sciences (Moslehi & Kafipour, 2022; Soler, 2007). More specifically, Soler (2007) discovered RA titles in the medicine discipline are relatively longer than RA titles from other social sciences. Similarly, Moslehi and Kafipour (2022) found that medicine RA titles have longer titles than applied linguistics RA titles. The tendency to have longer RA titles in the medical field is acknowledged in Kerans et al. (2020).

The Syntactic Features of Medical RA Titles in International and National Journals

The analysis of research question two focused on the syntactic features of medical RA titles. The following table outlines the frequency distribution of syntactic features found in medical RA titles.

Table 5. The Syntactic Features of Medical RA Titles

Syntactic Features	International Medical Journal		National Medical Journal	
	F	P%	F	P%
NP	3	5	44	73.3
CP	51	85	8	13.3

FS	4	6.7	5	8.3
VP	2	3.3	3	5
PP	0	0	0	0
Total	60	100	60	100

As outlined in Table 5, a notable difference was found between international and national journals in the use of CP titles and NP titles. International medical journals favored the use of CP titles with two parts separated by colons or question marks. On the other hand, national medical journals preferred using a single part title, such as NP, FS, and VP.

More specifically, the most frequent type of syntactic features found in international medical journals was CP titles, accounting for 85 percent of the total sample. Meanwhile, the most commonly used syntactic feature in Indonesian national medical journals was NP titles, comprising 73 percent. In addition to the syntactic features in International medical journals, FS, NP, and VP were observed in relatively small numbers, making up 7 percent, 5 percent, and 3 percent, respectively. In contrast, Indonesian national medical journals used CP, FS, and VP in relatively few quantities, making up 13 percent, 8 percent, and 5 percent. PP titles were not observed in both international and national medical journals. The examples of each syntactic feature are as follows:

Excerpt 5:

Nominal Phrase (NP) Titles

“Cholesterol-modified prognostic nutritional index (CPNI) as an effective tool for assessing the nutrition status and predicting survival in patients with breast cancer” (Nominal Phrase Title – BMC Medicine)

“The Relationship of Genetic Diversity of Human Immunodeficiency Virus-1 with Acquired Drug Resistance Mutation in HIV Patients on First-Lines Antiretroviral

Therapy” (Nominal Phrase Title – *Majalah Kedokteran Andalas*)

As presented in Excerpt 5, the first title was derived from an international medical journal, BMC Medicine. The title was classified as a nominal phrase as it started with a noun phrase, i.e., “Cholesterol-modified prognostic nutritional index (CPNI)”. The second title in Excerpt 5 was also considered an NP title since it started with a noun phrase, i.e., “the relationship”. The title was gathered from a national medical journal, *Majalah Kedokteran Andalas*.

Excerpt 6:

Compound Phrase (CP) Titles

“A peer-facilitated psychological group intervention for perinatal women living with HIV and depression in Tanzania-Healthy Options: A cluster-randomized controlled trial” (Compound Phrase Title – PLOS Medicine)

“Prognostic factor for prolonged ventilator usage and ICU occupancy time after mitral valve replacement surgery: a retrospective cohort study” (Compound Phrase Title – Journal of the Medical Sciences)

As illustrated in Excerpt 6, the first title was collected from an international medical journal, PLOS Medicine. The title was considered a CP title as it consists of two parts and is separated by a colon. The second part states the method used in the study, i.e., “a cluster-randomized controlled trial”. Similarly, the second title provided in Excerpt 6 was classified as a CP title as it has two parts that are divided by a colon. The second part of the title mentions the method used in the study, i.e., “a retrospective cohort study”. The title was collected from a national medical journal, Journal of the Medical Sciences.

Excerpt 7:

Full Sentence (FS) Titles

“Presence of Thrombectomy-capable Stroke Centers Within Hospital Service Areas

Explains Regional Variation in the Case Fatality Rate of Acute Ischemic Stroke in Korea” (Full Sentence Title – Journal of Preventive Medicine and Public Health)

“Family history of PCOS, obesity, low fiber diet, and low physical activity increase the risk of PCOS” (Full Sentence Title – Jurnal Kedokteran dan Kesehatan Indonesia)

As shown in Excerpt 7, the first title was taken from an international medical journal, the Journal of Preventive Medicine and Public Health. The title was categorized as an FS title as it consists of a subject and a verb. The subject is “presence of thrombectomy-capable stroke within hospital service areas” and the verb is “explains”. Likewise, the second title in Excerpt 7 is classified as an FS title. It was considered an FS title as it consisted of a subject and a verb. The subject is “family history of PCOS, obesity, low fiber diet, and low physical activity” and the verb “increase”. The second title in Excerpt 7 was taken from a national medical journal, Jurnal Kedokteran dan Kesehatan Indonesia.

Excerpt 8:

Verbal Phrase (VP) Titles

“Estimating pneumococcal carriage dynamics in adults living with HIV in a mature infant pneumococcal conjugate vaccine programme in Malawi, a modelling study” (Verbal Phrase Title – BMC Medicine)

“Exploring the Effects of Bone Marrow Mesenchymal Stem Cells on Amyloid Plaque Reduction in a Rat Model of Alzheimer's Disease” (Verbal Phrase Title – *Majalah Kedokteran Andalas*)

As in Excerpt 8, the first title was collected from an international medical journal, BMC Medicine. The title was considered a VP title because it started with a present participle, i.e., “estimating”. Similarly, the second title in Excerpt 8 was categorized as a VP title since it started with a present participle of “exploring”. The title was

derived from a national medical journal, *Majalah Kedokteran Andalas*.

Based on the analysis of the syntactic features, it was found that international medical journals use CP titles most often, while national medical journals use NP titles most often. This finding suggests that international medical journals prefer using dual-part titles separated by colons while national medical journals prefer using single-part titles. This finding corroborates Jasrial et al. (2024), who compared RA titles in the field of applied linguistics between international journals and Indonesian journals. They found that international journals utilized multi-unit titles. This may stem from the fact that high-ranked international journals tend to favor more complex titles involving multiple variables (Jasrial et al., 2024); thus, using a compound structure allows researchers to accommodate more information in RA titles (Morales et al., 2020). This finding also validates Xie (2020), who carried out a comparative study on titling practices between the Chinese context and the international context and found that RAs published in international contexts both in social and natural science use CP titles more frequently compared to RAs published in the Chinese context.

In addition, FS and VP titles were hardly used in both international medical journals and national medical journals. Meanwhile, PP titles were not found to be used in medical RA titles in either international medical journals or national medical journals. This finding reinforces prior studies' findings (e.g., Morales et al., 2020; Moslehi & Kafipour, 2022; Shahidipour & Alibabae, 2017; Wang & Bai, 2007). These previous studies revealed that FS, VP, and PP titles account for a small percentage in their corpus, suggesting that these title structures are less common and are more likely to be used as RA titles. This finding might be ascribed to the fact that these syntactic features are considered less

informative and possibly confusing to readers. PP titles, for example, are deemed incomplete sentence titles (Morales et al., 2020), thus possibly becoming less informative (Shahidipour & Alibabae, 2017).

In contrast, FS titles are regarded as conclusive titles, usually including research results or conclusions in the titles in the form of a single statement (Morales et al., 2020). This may be because researchers avoid making claims decisively and are less willing to present their results in titles rather than in texts (Shahidipour & Alibabae, 2017). Finally, there is a trend of using VP titles, particularly in the linguistics discipline (Cheng et al., 2012). However, the use of verbal titles was observed to be relatively scarce in this study. It is likely due to disciplinary differences because this study examined medical RA titles. VP titles suggest an impression of continuity and indicate ongoing activity (Morales et al., 2020).

The Rhetorical Combinations in Compound Phrase Titles in International and National Journals

The analysis of research question three involved counting the frequency of rhetorical combination categories that were found in multi-unit titles (i.e., compound titles). This analysis was in connection with the second analysis of syntactic features. Based on the number of CP titles in the previous syntactic feature analysis, further analysis was conducted to find out the categories of rhetorical combinations used in multi-unit titles published in national and international journals. Presented below is the table of rhetorical combinations in medical RAs published in national and international journals.

Table 6. Rhetorical Combinations of RA Titles in National and International Medical Journals

Rhetorical Combinations	International Medical Journals	Indonesian National Medical Journals
	Frequency	Frequency
Topic – Method	46	7
Topic – Question	3	1
Topic – Source	2	0
Total CP	51	8

As shown in Table 6, there are three categories of rhetorical combinations found in this study, including topic–method, topic–question, and topic–source. The rhetorical combination of the topic–method is most frequently used in both national and international journals. Additionally, a small number of occurrences were found in the category of topic–question, comprising only three titles in international journals and 1 title in national journals. Meanwhile, the category of the topic–source was only found in international journals with two occurrences. In other words, international medical journals used various rhetorical combinations.

In line with that, a significant difference between international and national journals was observed in the number of CP titles. The international journals used CP titles more often (i.e., 51 CP titles) compared to the Indonesian national medical journals (i.e., 8 CP titles). Furthermore, the majority of CP titles include methods mentioned in both national and international medical journals. The following are examples of rhetorical combinations found in this study.

Excerpt 9

“Dynamic needs and challenges of people with drug-resistant tuberculosis and HIV in South Africa: a qualitative study” (The Lancet Global Health)

As indicated in Excerpt 9, the title was obtained from an international medical

journal, The Lancet Global Health. The title was classified as a topic–method as the first part states the topic, and the second part of the title mentions the method used, i.e., “a qualitative study”.

Excerpt 10

“Exploring the effects of ursodeoxycholic acid-probiotic combination on Lactobacillus and liver enzyme levels for cholestasis management: An experimental study” (Jurnal Kedokteran dan Kesehatan Indonesia)

As displayed in Excerpt 10, the title was obtained from a national medical journal, Jurnal Kedokteran dan Kesehatan Indonesia. The title was categorized as a topic – method, as it consists of two parts that are separated with a colon, and the second part of the title mentions the method used in the RA, that is, “an experimental study”.

Excerpt 11

“Household Overcrowding in Iran, a Low-middle-income Country: How Major of a Public Health Concern Is It?” (Journal of Preventive Medicine and Public Health)

As shown in Excerpt 11, the title was collected from an international medical journal, the Journal of Preventive and Public Health. The title was classified as a topic – question category. The first segment of the title is the topic, and the second element after the colon is the question.

Excerpt 12

“High resolution ultrasonography of thyroid nodules: can ultrasonographic assessment obviate the need for invasive aspiration cytology in ultrasonographically benign lesions?” (Journal of Medical Sciences)

As shown in Excerpt 12, the title was gathered from a national medical journal, the Journal of Medical Sciences. The title was classified as a topic–question category. It was because the

first segment of the title is the topic, and the second element after the colon is the question.

Excerpt 13

“Prevalence of syphilis among adults and adolescents in five sub-Saharan African countries: findings from Population-based HIV Impact Assessment surveys” (The Lancet Global Health)

As shown in Excerpt 13, the title was from an international medical journal, The Lancet Global Health. The title was classified as a topic–source category. It was because the first segment of the title is the topic, and the second element after the colon is the source.

The result of rhetorical combinations revealed that there are three categories found in national medical journals and international medical journals, i.e., topic–method, topic–question, and topic–source. The topic–method category is the most dominant rhetorical combination category used in medical RA titles. Topic – question and topic – source account for a small number of multi-unit titles in this study. This finding is in agreement with some prior studies (e.g., Demir, 2023; Kerans et al., 2020; Moslehi & Kafipour, 2022; Shahidipour & Alibabaei, 2017). Demir (2023) found that multi-unit titles were more commonly found in medical RAs. In line with that, multi-unit titles in medical journals commonly employ a combination of topic – method, respectively (Kerans et al., 2020; Moslehi & Kafipour, 2022). In medical RA titles, method mentions normally appear in the second position, particularly in general medicine journals (Kerans et al., 2020).

The rhetorical combination of the topic–method category is most often used in medical RA titles is likely because this category allows researchers to present a clearer description of medical issues, followed by the approaches or techniques to address them. This could be the physicians’ desire to first introduce a general topic, which is the medical issue, and then the

study’s methodology (Moslehi & Kafipour, 2022).

However, the Indonesian national journals use multi-unit titles infrequently. They are more inclined to use single-unit titles. This finding may have implications for national medical journals to consider using multi-unit titles more frequently. The multi-unit titles separated with colons allow researchers to provide more information in RA titles. Multi-unit titles followed by a rhetorical combination of topic–method could be a great recommendation for national medical journals.

In addition, this finding could be linked to the genre conventions in international academic publishing that emphasize on information density, visibility, and searchability. With greater competition to get noticed (Hyland & Zou, 2022; Jiang & Hyland, 2023), authors use compound titles probably because they might want to communicate multiple aspects of their studies in their RA titles as they become the first contact between readers and their RAs (Orbay et al., 2025). Indonesian national journals, on the other hand, prefer single-unit titles probably because of differing readers expectations and localized discourse practices in Indonesian national medical journals.

The Syntactic Forms of Medical RA Titles in International and National Journals

The analysis of research question four aimed to find out the syntactic forms of medical RA titles in International and national journals. The classification was based on Hyland and Zou (2022). The following table summarizes the frequency distribution of syntactic forms in international and national journals.

Table 7. The Syntactic Forms of Medical RA Titles

Syntactic Forms	International Medical Journal		National Medical Journal	
	F	P%	F	P%
Indicative	55	91.7	59	98.3
Interrogative	5	8.3	1	1.7
Total	60	100	60	100

As displayed in Table 7, the majority of the syntactic forms used in medical RA titles in international and national journals were indicative forms. There were 55 indicative titles used in the international medical journals, making up 92 percent of the total sample. Conversely, there were 59 indicative titles used in Indonesian national medical journals, accounting for 98 percent of the total sample.

The interrogative form titles account for a relatively small number in both international and national medical journals. In international medical journals, there were only five interrogative forms found. On the other hand, only one interrogative form was observed in Indonesian national medical journals.

Excerpt 14: Indicative

“Longitudinal multi-omics study reveals common etiology underlying association between plasma proteome and BMI trajectories in adolescent and young adult twins” (Indicative – BMC Medicine)

“Increased blood-brain barrier permeability correlate with microglial activation at hippocampal CA1 region in acute and chronic bilateral common carotid artery ligation in rats” (Indicative – Journal of the Medical Sciences)

As illustrated in Excerpt 14, the first title was classified as an indicative title as the form of the title was written in a statement form. The title was collected from an international medical journal, that is, BMC Medicine. Similarly, the second title in Excerpt 14 was

also categorized as an indicative title as it was presented in a statement form. The title was from a national medical journal, i.e., Journal of the Medical Sciences.

Excerpt 15: Interrogative

“Is Job Insecurity Worse for Mental Health Than Having a Part-time Job in Canada?” (Interrogative – Journal of Preventive Medicine and Public Health)

“High resolution ultrasonography of thyroid nodules: can ultrasonographic assessment obviate the need for invasive aspiration cytology in ultrasonographically benign lesions?” (Interrogative – Journal of the Medical Sciences)

As in Excerpt 15, the first title was considered an interrogative title as the form of the title was written in a question form, followed by the use of a question mark. The title was from an international medical journal, i.e., Journal of Preventive Medicine and Public Health. Similarly, the second title in Excerpt 15 was classified as an interrogative title since it was followed by the use of a question mark. The title was also considered a CP title from the syntactic features since it consists of two parts separated by a colon. The title was obtained from a national medical journal, Journal of the Medical Sciences.

The final result of this study is the syntactic forms of medical RA titles following Hyland and Zou's (2022) classification. There are two types of syntactic forms based on Hyland and Zou's (2022) classification, that is, indicative and interrogative. The result revealed that both international medical journals and national medical journals are more inclined to use indicative forms presented in statement form. In contrast, the interrogative form represents a small percentage, with only five titles in international journals and 1 title in national journals found to use this form. The interrogative form is a title that is phrased and

expressed as a question form, followed by the use of a question mark. This finding substantiates the findings of prior studies (e.g., Hyland & Zou, 2022; Jiang & Hyland, 2023; Kerans et al., 2020; Milojević, 2017). Interrogative forms are scarcely used in RAs, and some journals restrict their inclusion in their journals (Kerans et al., 2020).

However, there is a recent trend of using interrogative titles in some disciplines (Milojević, 2017). Question-form titles are the authors' ways of capturing readers' curiosity and engaging more readers to read (Hyland & Zou, 2022). Yet, framing RA titles as questions does not necessarily translate into higher citations, as it is not a factor leading to more citations (Milojević, 2017). In summary, the small number of question-form titles in medical RAs may stem from several factors, such as the inclination to more direct and informative titles, readers' expectations, and journal policies.

Overall, the differences identified between medical national and international journals in titling practices may reflect different communicative priorities (such as localized academic conventions and global visibility) shaped by different scholarly communities.

CONCLUSION

The findings of this comparative study revealed that RA titles in international journals are longer than in national journals. Compound phrase titles with dual-unit titles separated with colons are the most dominant syntactic feature used in international medical journals. Meanwhile, nominal phrase titles consisting of single-unit titles are the most frequently used syntactic features in national medical journals. In light of the rhetorical combinations, the rhetorical combination of topic–method is more commonly used in both international medical journals and national medical journals. The rhetorical combinations of topic–question and topic–source are hardly used in medical RA titles in this study.

Finally, the indicative form is mostly used in both international medical journals and national medical journals. The interrogative form is scarcely found in medical RA titles in this study.

Following the findings, several pedagogical implications are proposed. Theoretically, this study concludes that titling practices is shaped not only by discourse conventions but also contextual norms within a scholarly community. Beside that, this study also has practical implications. Curriculum designers of English for medical purpose and academic writing pedagogy need to consider the findings of this study. The findings of this study provide insights into the syntactical and rhetorical features of medical RA titles in international and national journals. Academic writing instructors need to teach medical students and novice researchers in the EFL contexts about disciplinary conventions, current publication practices, and local and international rhetorical preferences in the medical field. Specifically, students need to be informed about the disciplinary conventions of RA titles, typical length of medical RA titles, syntactic structures of medical RA titles, and rhetorical patterns of medical RA titles across different publication contexts (i.e., national and international) so that they can learn the expectations of titling writing within the medical field, choose effective titling construction strategies based on target journals, and finally write more acceptable medical RA titles.

This study is not without limitations. The first limitation is that it only examined a relatively small number of RA titles and a limited number of journals. Consequently, the findings of this study need to be interpreted cautiously. It may not represent the general population of RA titles published in Indonesian national medical journals and international medical journals. Secondly, this study only focused on examining one particular discipline. Lastly, this study did not

observe the titling practices within the specialties of the medical field. Future studies with a larger sample size are still needed for generalizability and comparison of the findings. Future researchers are also encouraged to observe the titling practices within the subfields of medical science.

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