Original Article
http://mjiri.iums.ac.ir
Medical Journal of the Islamic Republic of Iran (MJIRI)

Med J Islam Repub Iran. 2025 (24 Sep);39.125. https://doi.org/10.47176/mjiri.39.125

Exploring Hedging Devices in Scientific Research Papers: A Content Analysis Study of the 'Medical Journal of the Islamic Republic of Iran'

Hadi Hamidi[1]*, Saeid Najafi Sarem[2], Amir Hossein Lotfi[3]

Received: 14 Jul 2025 Published: 24 Sep 2025

Abstract

Background: Hedging generally serves several important rhetorical and epistemic purposes in academic writing, allowing authors to qualify their claims, delay potential challenges, and preserve their credibility. This study aimed to identify the most frequently used types of hedging devices in basic science and clinical science research studies and to determine whether there was a significant difference in the use of hedging devices between these two types of research studies published in the Medical Journal of the Islamic Republic of Iran (MJIRI) in 2024.

Methods: This study employed a quantitative, corpus-based research design. Three PhD holders in applied linguistics examined the whole 150 published papers in 2024 in MJIRI and extracted the hedging devices manually from the conclusion sections of the papers. The frequency and type of the hedging devices were counted and recorded. The number and frequencies of the basic science and clinical science papers were recorded separately for later comparison. Hu and Cao's (2011) simplified taxonomy was used to classify the data. Descriptive statistics and Chi-Squared Tests were run using SPSS version 22 to answer the questions.

Results: In the clinical science papers, hedging were used 330 times, while the number was 154 for the basic science. In all four categories of the taxonomy, clinical studies enjoyed more hedging devices than basic science ones. The result of the inferential test showed that there was no statistically significant difference in using hedging devices between basic science and clinical science research studies (P=0.064).

Conclusion: Hedging is not limited to specific disciplines but is also influenced by journal standards and cultural factors. The findings underline the importance of balancing hedging with clarity, especially in medical writing where precise communication is essential.

Keywords: Hedging Devices, Basic Science Studies, Clinical Science Studies, Medical Journal

Conflicts of Interest: *None declared*
Funding: *None*

Cite this article as: Hamidi H, Najafi Sarem S, Lotfi AH. Exploring Hedging Devices in Scientific Research Papers: A Content Analysis Study of the 'Medical Journal of the Islamic Republic of Iran'. *Med J Islam Repub Iran.* 2025 (24 Sep);39:125. https://doi.org/10.47176/mjiri.39.125

Introduction

Communicating precisely in scholarly writing is crucial, especially in science and medicine (1). Researchers aim to share their findings accurately and highlight the inherent unpredictability of research (2). Authors employ hedging as a rhetorical strategy to balance making claims with sufficient conviction to sound credible while still maintaining caution (3, 4). Hedging allows authors to present their arguments with enough rhetorical strength so that their position appears convincing, while also expressing uncertainty about knowledge and the norms and conventions that guide scholarly published discourse (5).

Hedging generally serves several important rhetorical

Corresponding author: *Dr Hadi Hamidi, Hamidi.h@iums.ac.ir*

1. Department of English Language, School of Health Management and Information Sciences, Iran University of Medical Sciences, Tehran, Iran
2. Department of English Language, Ha.C., Islamic Azad University, Hamedan, Iran
3. Department of English, Faculty of Humanities, Bu-Ali Sina University, Hamedan, Iran

↑What is "already known" in this topic:
Hedging devices help qualify claims, express uncertainty, and maintain credibility. Most previous research has concentrated on the types and frequency of hedging across various disciplines, highlighting its role in reflecting authors' awareness of evidence complexity.

→What this article adds:
This study contributes to the existing knowledge by providing a detailed analysis of hedging practices in the Medical Journal of the Islamic Republic of Iran (MJIRI). The results show that hedging is not limited to specific disciplines but is also influenced by journal standards and cultural factors. The findings underline the importance of balancing hedging with clarity, especially in medical writing where precise communication is essential.

[DOI: 10.47176/mjiri.39.125]

and epistemic purposes in academic writing. It allows authors to qualify their claims, signal politeness, delay potential challenges, and preserve their credibility. In this way, hedging reflects the author's awareness of the complexity in the evidence and/or multiple interpretations (6, 7). Hedging, as well as its epistemic role, also somewhat expresses the author's constructed negotiation of the knowledge and power relationship with the audience. The aspect of hedging to the claims, the authors are acknowledging the beliefs, values and disciplinary expectations of the audience, just simply assisting the construction of credibility without commitment of complete certainty. In this way, hedging is then also a rhetorical strategy about negotiating humility and authority whilst allowing the author to advance their position in relation to the interpretive space of the audience. Authors often use phrases like "the results suggest," "it appears that," or "this may be due to" to hedge their arguments or claims with tentativeness, mainly in the meaning-making sections of academic articles. The conclusion is especially important because it highlights the study's key contributions while often addressing limitations and implications of those contributions directly.

In medical research where findings can impact clinical practice, the issue of hedging is even more important. Medical writers must balance the need to present evidence clearly with the responsibility not to exaggerate or overstate conclusions. Overconfident statements can cause misunderstandings about how findings apply in real-world settings, while excessive hedging can hide significant results. Thus, while hedging can improve politeness, credibility, and disciplinary coherence, to the point of hedging may obscure the implications of results, diminish clarity, reduce impact, and downplay the findings. Accordingly, it is imperative to find a balance between caution and clarity; on the one hand, too little hedging could result in overstated claims while too much hedging could reduce readers' consideration of the contribution. Therefore, examining the use of hedging in medical writing can provide valuable insights into disciplinary norms, rhetorical strategies, and cultural influences on scientific communication (8, 9).

While several researchers have investigated hedging in academic discourse across various disciplines (10-12), there has been very little research on hedging particularly in medical academic journals (furthermore, no research outside of Western contexts or in relation to medical journals); furthermore, nearly all the research on hedging examined English-medium or Western journals, therefore we have little knowledge of how hedging might work in non-Western contexts or contexts where the cultural, linguistic, and editorial/norms might shape different rhetorical practices. This is a clear gap in the literature. What this study will do, therefore, is address this gap in the academic literature by examining hedging in the Medical Journal of the Islamic Republic of Iran (MJIRI) while furthering our understanding of how medical researchers are negotiating knowledge, credibility, and authority across a broad spectrum of academic traditions. Importantly, hedging practices may also differ between journals and within a journal depending on the type of research or the background of contributing authors (13, 14). This point is significant because it warns us that hedging might be not just discipline-dependent but potentially also dependent on more local aspects of research such as type of research and background of the author. If these variables determine how authors employ hedging, investigating these variables in the context of MJIRI should help us understand how knowledge and authority are negotiated in medical research. By considering these kinds of factors, this study does more than conduct a purely disciplinary comparison; it acknowledges authorial or contextual variables, which help shape rhetorical strategies.

This study aims to fill this gap by examining how often and what types of hedging devices appear in the conclusion sections of articles published in 2024 in the Medical Journal of the Islamic Republic of Iran (MJIRI). MJIRI is a respected open-access journal that publishes various articles in both basic and clinical medical sciences; therefore, MJIRI is a suitable case for exploring academic writing trends within a specific yet broad medical context. The study also investigates whether hedging varies between basic science and clinical science research articles and whether Iranian and non-Iranian authors use hedging devices differently.

This study hopes to help develop a better understanding of hedging as a rhetorical strategy in medical writing through a quantitative, corpus-based analysis of 151 conclusion sections. The study is expected to empirically illustrate how authors negotiate between certainty and caution in academic discourse. The study's implications may also be of interest to academic writing instruction, peer review, and editorial policies for those who work with authors from varied linguistic backgrounds and cultural experiences.

In the sciences, especially in medicine, academic writing is not just about sharing knowledge; it also involves carefully managing uncertainty. One key linguistic tool for handling this delicate balance is hedging, which acts as a rhetorical device allowing writers to express claims with a suitable level of distance or caution (5, 8). Hedging reflects an important epistemological stance that knowledge is provisional, context-dependent, and open to reinterpretation. In epistemic discourses where accuracy, objectivity, and credibility are crucial, hedging serves both rhetorical and epistemic purposes; it conveys a level of probability rather than absolute certainty and situates claims within the ongoing academic dialogue (15, 16).

This viewpoint can be more thoroughly informed with Halliday's position on Systemic Functional Linguistics (SFL) and the interpersonal function of language. Halliday advances the notion that language serves a communicative function by neither broadcasting information exclusively nor acting as a static transport of knowledge or meaning; language is also negotiating relationships, positions, attitudes, and social roles. Consistent with SFL positions, hedging is not simply an epistemic marker of indecisiveness, but rather a component of a semiotic / linguistic resource which, conceptually, manages the interaction between writers, and readers. Halliday's work laid down the educational and theoretical ground for future scholars to study hedging as a rhetorical practice in relation to its social context and disciplinary conventions.

[DOI: 10.47176/mjiri.39.125]

Early attention to the brightness of hedges as a descriptor for "fuzziness" (17) opened new opportunities for viewing hedging as a more complex and multifaceted phenomenon observable in real academic settings. Scholarly research on hedges, particularly in applied linguistics, shifted away from purely semantic analysis towards understanding hedging as a social and rhetorical phenomenon. (18) created a system for classifying hedging devices in medical discourse. For instance, he identified a group called modal verbs (e.g., may, might) and epistemic adverbs (e.g., possibly, likely), along with imposters and approximate language. His systematic classification has provided a valuable framework for studying the forms and functions of hedging across various disciplines (19, 20). These markers primarily weaken and/or qualify the author's claims in research studies or articles, while reflecting the discipline-specific expectations of tentativeness when asserting knowledge.

Corpus-based research has also enhanced our understanding of hedging by examining large-scale real-life texts across various disciplines, cultures, and languages. Additionally, research shows that hedging is highly sensitive and continually adapts to disciplinary differences (21). For example, hard sciences such as medicine and biology tend to exhibit lower frequencies of hedging than softer disciplines like sociology and linguistics. However, this does not mean that hedging is entirely absent or irrelevant in medical writing (22). In fact, medical research operates within a framework where those involved in medical writing and research handle empirical data, clinical applications, and ethical codes while balancing the use of hedging strategies (23). The conclusion sections of medical and health-related research articles typically contain fewer hedging devices overall. Nonetheless, these sections are densely packed with hedging, as authors aim to confirm their findings, highlight limitations, suggest implications without overstating, and call for future research (16, 24).

Cultural and linguistic influences also affect hedging practices. A range of recent studies indicates that writers from non-English educational contexts may hedge differently from those from English educational contexts. This may stem from educational contexts, rhetorical traditions, or interpretations of authorial voice and stance (25, 26). For example, Iranian academic writing hedges differently from the Anglophone context, particularly regarding writer responsibility and epistemic distance (13). Authors such as (27) and (28) contend that these differences are not deficiencies; they are real legitimate differences in hedging in a rhetorical culture that ought to be recognized and acknowledged, especially in the international publishing space.

It remains unexplored mainly at the intersection of hedging and medical writing, especially in non-Western contexts. While several studies have examined hedging in prominent Western medical journals, comparatively few studies have examined how hedging operates in journals published outside these dominant, English-language academic spaces. Such an oversight is important to remedy since the journals in question may abide by different editorial policies, audience expectations, and academic conventions. Few researchers have examined the actual genre in which these forms of discourse appear, as associated with peer-reviewed journals. However, the Medical Journal of the Islamic Republic of Iran (MJIRI) offers a rich opportunity for this kind of analysis. MJIRI is a peer-reviewed, open-access journal that publishes research in basic and clinical sciences. Although it has only been published since 2001 and with a relatively small readership, the journal has published a wider variety of articles than one might assume. This provides an excellent opportunity for researchers to examine how authors navigate a purely rhetorical space as they adhere to scientific reporting and scholarly persuasion conventions, while employing potentially rhetorical strategies to hedge.

The difference between basic and clinical research also provides important context for understanding hedging. Both basic and clinical research are empirical but differ in terms of practical orientation, epistemological basis, and significance. Basic science typically favors exploratory and theoretical understanding, and this emphasis potentially calls for more hedging language (29). Clinical research usually engages in practical application, with direct consequences for patients, and therefore may reflect a combination of authoritative statements and careful hedging (30, 31). These distinctions suggest that hedging strategies may not be similarly mentioned across all articles, a hypothesis that is still somewhat under-explored in the literature.

Recent scholarship is beginning to reframe hedging as a strategy of uncertainty and a marker of disciplinary literacy and rhetorical competence (32). Hedging is now perceived as an indicator of a writer's ability to interact with readers dialogically, locate knowledge claims within extant literature, and exhibit an authorial stance that demonstrates a connection to academic norms (33). As a result, awareness of hedging is vital in academic writing pedagogy, especially for scholars working in multilingual or multicultural academic contexts. For novice researchers or researchers writing in a second language, improper use of hedging devices may lead to overstatement, which may jeopardize credibility, or excessive vagueness, which diminishes the relevance of the findings (7, 10).

In conclusion, hedging is a multi-faceted and complicated type of academic discourse that captures the wider epistemological, rhetorical, and cultural dimensions of academic communication. Much has been accomplished in terms of documenting hedging practices across disciplines and languages; however, we need more research to understand how these documented practices are represented in under-explored academic spaces. This study adds to those dialogues by examining hedging in conclusion sections of articles published in MJIRI, with respect to the differences in hedging by research type (basic versus clinical). This study improves our understanding of academic writing practices in one locality and contributes to a global understanding of the diversity of scientific rhetoric. This study aims to answer the following research questions:

1. Which types of hedging devices are most frequently employed in basic science and clinical science research studies?

[DOI: 10.47176/mjiri.39.125]

2. Is there a significant difference in the use of hedging devices between basic science and clinical science research studies?

The study aims to identify specific hedging patterns and encourage greater rhetorical awareness among medical researchers. It highlights how linguistic nuances play a crucial role in constructing scientific dialogues and interpreting medical knowledge.

Methods

Participants and design

This content analysis study employed a quantitative, corpus-based research design because it aimed to measure the frequency of hedging devices in the conclusion sections of articles published in the Medical Journal of the Islamic Republic of Iran (MJIRI). Three PhD holders in applied linguistics examined the published studies in 2024 and extracted the hedging devices manually.

Procedure

The authors selected an Iranian journal which published both basic and clinical science studies and was both indexed in PubMed and Scopus. The inclusion criteria were all published papers (basic science and clinical science) in the 2024 issue. The exclusion criteria were letters to the editor and pre-print papers (if any). First, 150 papers were downloaded from MJIRI, and the conclusion sections were examined. The justification for studying just conclusion sections arises from their being relatively independent of direct citations. Then, hedging devices were extracted from the conclusion sections. Each conclusion section was examined by three researchers to ensure all hedging devices are taken into account. The frequency and type of the hedging devices were counted and recorded. The number and frequencies of the basic and clinical studies were recorded separately for later comparison.

Taxonomy

Considering the taxonomy, the authors had two brainstorming sessions and checked some handy and frequently used taxonomies such as (18) classification, Hyland's (34) pragmatic framework, and Hu and Cao's (35) Simplified Taxonomy. Finally, they decided to use Hu and Cao's (2011) taxonomy which was an updated and handier version. This framework groups hedging devices into four types:

1. Modal auxiliaries (e.g., "may," "would")
2. Epistemic lexical verbs (e.g., "appear," "assume")
3. Epistemic adjectives/adverbs (e.g., "likely," "possibly")
4. Miscellaneous (e.g., "in general," "under certain conditions")

Data Analysis

We used descriptive statistics to calculate frequencies and percentages for each type of hedging device identified in the corpus. We performed Chi-Squared Tests to examine differences in categorical frequencies of hedging devices between basic science and clinical science research studies. A bar chart was also used to create visual representations showing the frequency and distribution of hedging devices. The data were analyzed using SPSS version 22.

Results

Answering the first question

The first question examined the types of hedging devices most frequently employed in basic science and clinical science research studies.

Commonly employed modal auxiliaries (Table 1) such as may, might, would, can, and should appear in statements like "This study may guide future in vitro research" and "This procedure would likely benefit pediatric patients." Epistemic lexical verbs, including appear, suggest, indicate, and seem, also feature prominently, as seen in examples like "Results appear to support the use of this method as primary treatment." Additionally, epistemic adjectives and adverbs such as likely, possibly, and probably were used to qualify claims, as in the sentence "The rise in suicidal ideation notably emphasizes..." Miscellaneous hedging devices such as in general and at least in part were also common; for example, "The gastroprotective action of betahistine is, at least in part, a result of..."

Table 2 shows the numbers and percentages of the hedging devices found in 150 studies. As for the clinical science (CS), hedging devices with the highest to lowest usage were modal auxiliaries (27.9%), miscellaneous (26.1%), epistemic lexical verbs (25.8%), and epistemic adjectives/adverbs (20.3%), respectively. Regarding the basic science (BS), hedging devices with the highest to lowest usage were modal auxiliaries (33.1%), epistemic lexical verbs (26.0%), epistemic adjectives/adverbs (25.3%), and miscellaneous (15.6%), respectively.

Answering the second question

The second question investigated whether there could be a significant difference in the use of hedging devices between basic science and clinical science research studies.

Table 1. Sample of hedging devices found in basic and clinical sciences

Device Type	Samples found in Basic Science studies	Samples found in Clinical Science studies
Modal auxiliaries: may, might, would, can, should	"This study may guide future in vitro research to validate these data."	"This procedure would likely benefit pediatric patients."
Epistemic lexical verbs: appear, suggest, indicate, seem	"This study demonstrated the possible molecular pathways..."	"Results appear to support the use of this method as primary treatment."
Epistemic adjectives/adverbs: likely, possibly, probably, relatively	"The possible shared genes between SLE and DLBCL..."	"the rise in suicidal ideation notably emphasizes..."
Miscellaneous: in general, under certain conditions, overall	"The gastroprotective action of betahistine is, at least in part, a result of..."	"In general, 5 attributes... were selected."

[DOI: 10.47176/mjiri.39.125]

Table 2. Frequency of hedging devices found in basic and clinical science studies

Types			Hedging devices				Total
			Modal auxiliaries	Epistemic lexical verbs	Epistemic adjectives/adverbs	Miscellaneous	
Studies	CS	Count	92	85	67	86	330
		% within studies	27.9%	25.8%	20.3%	26.1%	100.0%
		% within Hedging devices	64.3%	68.0%	63.2%	78.2%	68.2%
		% of Total	19.0%	17.6%	13.8%	17.8%	68.2%
	BS	Count	51	40	39	24	154
		% within studies	33.1%	26.0%	25.3%	15.6%	100.0%
		% within Hedging devices	35.7%	32.0%	36.8%	21.8%	31.8%
		% of Total	10.5%	8.3%	8.1%	5.0%	31.8%
Total		Count	143	125	106	110	484
		% within studies	29.5%	25.8%	21.9%	22.7%	100.0%
		% within Hedging_devices	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	29.5%	25.8%	21.9%	22.7%	100.0%

Table 3. The Result of the Chi-Square Test of Independence for Basic and Clinical Science Studies

Tests	Value	df	*P* value
Pearson Chi-Square	7.256	3	.064
Likelihood Ratio	7.566	3	.056
Linear-by-Linear Association	3.667	1	.056
N of Valid Cases	484		

To answer this question, the researchers ran the Chi-Square Test of Independence.

The result of the inferential test (Table 3) showed that there was no statistically significant difference in using hedging devices between basic science and clinical science research studies (*P*=0.064). Therefore, we fail to reject the null hypothesis.

Discussion

The results of this study show a clear difference in the raw frequency of hedging devices in the conclusion sections of studies published in the Medical Journal of the Islamic Republic of Iran (MJIRI). As documented in the results, clinical science studies invoked the use of hedging devices a total of 330 times in the conclusion section - a usage rate that is more than double the frequency noted in basic science studies (154 times) (Figure 1). Certainly, this large difference in raw counts is perhaps the main finding of importance in this study and should at least warrant some theoretical speculation.

While both basic science and clinical science are empirical, they differ regarding their practical orientation and epistemological basis (18, 35). Because clinical science relates to patient care, clinical researchers may wish to be more rhetorically appropriate to ensure they do not overstate claims or make problematic and/or exaggerated claims from their findings (30), especially in consideration of the clinical context. In a clinical context, being more careful and nuanced in communicating what you meant can be important to an author's credibility in terms of a misunderstanding, especially considering the real-world, and practice-fit, settings. It also may account for higher communicative marks, which means that some authors have more hedges. In a more basic science context, authors may be able to/care about being bolder and/or hedging less, in addition to the fact that papers in the journal were written with different positioning regarding hedges (i.e., verbally iterating fact with validity and/or profession strength) (5). Additionally, average clinical science papers are longer, and potentially more complex, which require more words, and consequently more hedges.

It is at this point that the interpretation of the Chi-Square Test of Independence finds its significance. While the raw count of hedges diverges quite a bit between the two fields, our inferential test revealed no statistically significant difference in the proportions of the different types of hedging

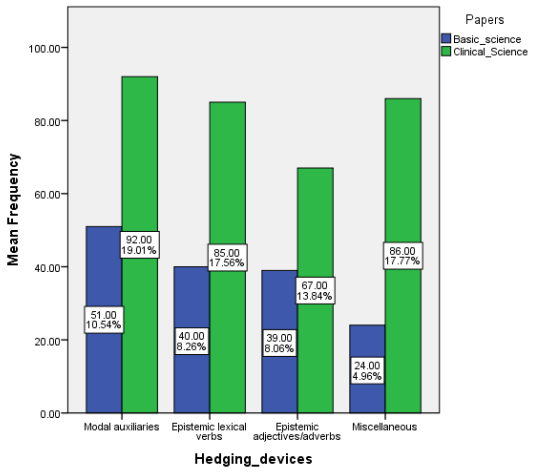

Figure 1. The above bar chart shows the number and frequency and hedging devices found in the studies. Totally, in the clinical science studies, hedging were used 330 times, while the number was 154 for the basic science. As the figure shows, in all four categories, clinical studies enjoyed more hedging devices than basic science ones.

[DOI: 10.47176/mjiri.39.125]

($\chi^2(3)=7.25$, $P=0.064$). This indicates that although clinical science authors use a greater number of hedges overall, they use the same proportion of modal auxiliaries, epistemic verbs, and other devices as the basic science authors. Thus, although the results seem contrary to studies from Western contexts (21, 22), it is possible that MJIRI embodies a more collective rhetorical culture and a unified editorial practice that lingers beyond disciplinary differences regarding the use of certain hedge types

Moreover, our results contribute to the increasing body of work concerning cultural and linguistic influences on academic writing. We reported on the frequent use of modal verbs, which is consistent with findings that Iranian academic writing privileges epistemic distance (26) and caution (29). This solidifies the emerging consensus that the hedging behaviors of non-Anglophone writers should not be considered deviations from a standard norm (13, 25), but acceptable and culturally-situated rhetorical alternatives (27) and (28).

Academic or medical researchers, or others who publish research articles in non-Western journals, must now recognize the need to balance hedging and clarity in order not to obfuscate their results or nullify their values. Along these lines, it may be useful for editors to consider constructing explicit hedging rules to control or highlight their use of language while remaining aware of the various linguistic backgrounds of authors. Second, for instructors of academic writing, it is important that we teach hedging as a rhetorical skill, particularly for multilingual scholars who are grappling with the international publication process.

This study provides essential insights into this area of study, however, it has limitations. Our analysis was limited to the conclusion sections of the articles we analyzed, and future inquiry should examine other sections of research articles such as introductions and discussion sections, to get a fuller picture of hedging use. Future comparative studies, that included Western journals, would be beneficial for understanding how hedging use varied based on culture, discipline, and journal norms. This information could assist in promoting more equitable and effective communication across academic disciplines, languages, and cultures.

Limitations

The study offers interesting insights into the practice of hedging in MJIRI, albeit with some limitations. First of all, the study is limited to analysis of hedging in conclusion sections only. Although the justification for studying just conclusion sections arises from their being relatively independent of direct citations, this will not allow us to ascertain whether hedging is fairly consistent throughout the entire study. Other sections might, in fact, display quite dramatic variations in hedging because they also serve various rhetorical purposes, e.g., introductions or methods. Second, the exclusion of conclusion sections with citations, although methodologically justified so as to isolate the authorial hedging, may somewhat eliminate instances in which hedging interacts with a cited material. Thirdly, although we tried to compare basic and clinical science studies, we failed to consider potential specific differences between particular medical sub-disciplines, which would conventionally hedge quite differently between each other according to their epistemic norms and their research practices.

The final limitation of the study concerns the representativeness and generalizability of the findings. Since the data were extracted solely from research studies published in the Medical Journal of the Islamic Republic of Iran (MJIRI) in 2024, the results may reflect the specific editorial policies, disciplinary conventions, and cultural context of this journal. Therefore, caution is advised in generalizing these findings to other medical journals, disciplines, or broader scientific communities. Future research could expand the corpus to include multiple journals across different regions to validate the patterns of hedging use identified here.

Suggestions for Further Research

Although this study contributes to our understanding of hedging in a non-Western medical journal, its focus on conclusion sections suggests the need for further research. Future research could investigate other sections of a research article, such as introductions or discussions, to better understand hedging practices overall. Additionally, comparative studies that include Western journals may contribute to understanding how hedging practices differ based on cultural, disciplinary, and journal norms so we can develop more informed theoretical frameworks that also could help foster more equitable and effective communication across academic disciplines, languages and cultures.

Building on these directions, future comparative research could offer valuable insights by examining: (1) how hedging practices differ between medical and non-medical studies, revealing discipline-specific conventions in cautious language; (2) whether empirical and non-empirical medical articles use hedging differently, suggesting methodological influences on rhetorical choices; and (3) how studies published in Iranian versus English-language journals vary in their hedging strategies, helping to distinguish linguistic and cultural impacts from disciplinary norms.

Conclusion

In summary, this research highlights the significant contribution that hedging makes in the context of medical academic writing related to scientific safety, situating hedging particularly in the non-Western context of MJIRI. The results support (5) argument about the importance of hedging as an important rhetorical device for indicating or managing certainty in medical academic texts. The absence of distinct differences in hedging practices between basic science studies and clinical science studies challenges previous assumptions regarding discipline-based hedging practices (21). Furthermore, the relatively consistent use of modalities across both types of studies indicates that hedging may not solely be a discipline-specific phenomenon. Instead, it suggests that journal-specific standards or shared academic traditions may significantly influence rhetorical activity in non-Western medical academic writing.

In addition to disciplinary issues, the results suggest a complicated relationship between caution in language and cultural rhetoric. The modal verbs suggest larger trends in

[DOI: 10.47176/mjiri.39.125]

Iranian academic writing where epistemic caution is frequently foregrounded (26). This aligns with an emerging academic consensus that hedging practices of non-Anglophone writers are not deviations from a standard norm, but rather legitimate variants (27). These results give us more insight into hedging as a culturally situated practice, as well as important implications for academic stakeholders.

For researchers (especially for those who publish in MJIRI and journals of a similar ilk), these results suggest that hedging and clarity need to be balanced before vagueness turns their results impotent (10). Editors could begin to look into explicit hedging guidelines as a way to standardize language use while also taking into account a range of salient linguistic backgrounds. For academic instructors, the aim is straightforward: it is essential that we successfully teach hedging as rhetorical skill (32), especially for multilingual scholars who are tasked with understanding how to rise to the complexity of negotiating international publication. Following these practical steps could assist us in reducing the gap between rhetorical norms and the multiplicity of voices that can be found in academia.

Authors' Contributions

All authors were involved in the conception and design of the study, participated in data collection and analysis, and contributed to writing, revising, and approving the final manuscript.

Ethical Considerations

This study relied entirely on analyzing previously published journal articles. Since authors did not work directly with people or handle any personal information, there was no need for ethical approval. Authors made sure to properly cite all sources, and the research was carried out with care and integrity, following the principles of responsible academic conduct.

Acknowledgment

None.

Conflict of Interests

The authors declare that they have no competing interests.

References

1. Devaki V. From manuscript to publication: Mastering English for academic success. J Teach Engl Specif Acad Purp. 2024:365-78.
2. Chen YC, Benus MJ, Hernandez J. Managing uncertainty in scientific argumentation. Sci. Educ. 2019;103(5):1235-76.
3. Demir C. Hedging and academic writing: an analysis of lexical hedges. J. Lang. Linguist. Stud. 2018;14(4):74-92.
4. Livytska I. The use of hedging in research articles on applied linguistics. J. lang. cult. educ. 2019;7(1):35-53.
5. Hyland K. Hedging in scientific research articles: John Benjamins Publishing; 1998.
6. Haacke J. The concept of hedging and its application to Southeast Asia: A critique and a proposal for a modified conceptual and methodological framework. Int Relat Asia Pac. 2019;19(3):375-417.
7. Liu C, Tseng M-Y. Paradigmatic variation in hedging and boosting: A comparative study of discussions in narrative inquiry and grounded theory research. Engl. Specif. Purp. 2021;61:1-16.
8. Jovic M, Kurtishi I, AlAfnan M. The persuasive power of hedges: Insights from TED Talks. World J. Engl. Lang. 2023;13(5):200-12.
9. Tessuto G. Constructing Scholarly Ethos in Non-mainstream Medical Research Writing: Discursive and Linguistic Strategies. LEA-Lingue e Letterature d'Oriente e d'Occidente. 2025;7:13-26.
10. Chen C, Jun Zhang L. An intercultural analysis of the use of hedging by Chinese and Anglophone academic English writers. Appl. Linguist. Rev. 2017;8(1):1-34.
11. Gribanova TI, Gaidukova TM. Hedging in different types of discourse. Train. lang. cult. 2019;3(2):85-99.
12. Hyland K. Stance and engagement: A model of interaction in academic discourse. Discourse Stud. 2005;7(2):173-92.
13. Ghahraman V, Karlsson M, Kazemi A, Saeedi S, Elhami A. On the functions of hedging in research articles (RAs): A study on RA discussions. Int. J. Lang. Stud. 2023;17(1):165-87.
14. Hashemi MR, Shirzadi D. The use of hedging in discussion sections of applied linguistics research articles with varied research methods. Teach. Engl. Second Lang. Quarterly (Formerly Journal of Teaching Language Skills). 2016;35(1):31-56.
15. Naimmah Hamdan N, K Ahmad U. Asserting Authorial Identity through Stance and Voice: Expert vs. Novice Scientific Writers. Arab World Engl. J. (AWEJ) Volume. 2023;14(2):360-77.
16. Varsanis V, Tsangalidis A. The use of hedges and boosters in linguistic research papers written in English by Greek and English native-speaker writers: a corpus-based study. Online PhD thesis, Aristotle University of Thessaloniki. 2020.
17. Lakoff G. Hedges: A study in meaning criteria and the logic of fuzzy concepts. J. Philos. Log. 1973;2(4):458-508.
18. Salager-Meyer F. Hedges and textual communicative function in medical English written discourse. English for specific purposes. 1994;13(2):149-70.
19. Akbas E, Hardman J. Strengthening or weakening claims in academic knowledge construction: A comparative study of hedges and boosters in postgraduate academic writing. Educ. Sci.: Theory Pract. 2018:831-59.
20. Hyland K. Disciplinary discourses: Writer stance in research articles. Writing: Texts, processes and practices: Routledge; 2014. p. 99-121.
21. Vass H. Analysing hedging in legal discourse using small-scale and large-scale corpora. Research in Corpus Linguistics. 2015:27-35.
22. Varnelytė G. Hedged performatives in written academic discourse of medicine and humanities: Vilniaus universitetas.; 2021.
23. Scott JB, Melonçon L. Manifesting methodologies for the rhetoric of health & medicine. Methodologies for the rhetoric of health & medicine: Routledge; 2017. p. 1-23.
24. Oyewale-Johnson DO. Hedging in the multidisciplinary postgraduate theses of students in a Ghanaian University 2021.
25. Mur-Dueñas P. An intercultural analysis of metadiscourse features in research articles written in English and in Spanish. J. Pragmat. 2011;43(12):3068-79.
26. Yeganeh MT, Ghoreyshi SM. Exploring gender differences in the use of discourse markers in Iranian academic research articles. Procedia Soc. Behav. Sci. 2015;192:684-9.
27. Dontcheva-Navratilova O. Engaging with the reader in research articles in English: Variation across disciplines and linguacultural backgrounds. English for Specific Purposes. 2021;63:18-32.
28. Suau-Jiménez F, Lorés-Sanz R, Mapelli G, Herrando-Rodrigo I. La interpersonalidad discursiva: una alternativa al metadiscurso interpersonal. 2021.
29. Dehalwar K, Sharma SN. Fundamentals of research writing and uses of research methodologies: Edupedia Publications Pvt Ltd; 2023.
30. Jansen JP, Trikalinos T, Cappelleri JC, Daw J, Andes S, Eldessouki R, et al. Indirect treatment comparison/network meta-analysis study questionnaire to assess relevance and credibility to inform health care decision making: an ISPOR-AMCP-NPC Good Practice Task Force report. Value Health. 2014;17(2):157-73.
31. Sacristán JA. Clinical research and medical care: towards

[DOI: 10.47176/mjiri.39.125]

effective and complete integration. BMC Med. Res. Methodol. 2015;15:1-7.

32. Šandová JK. Interpersonality in research article abstracts: A diachronic case study. Discourse Interact. 2021;14(1):77-99.

33. Al Darwesh AQ. The representation of authorial and external voice in popular science book writing: a systemic functional linguistics approach. Saudi Journal of Language Studies. 2025;5(2):108-27.

34. Hyland K. Nurturing hedges in the ESP curriculum. System. 1996;24(4):477-90.

35. Hu G, Cao F. Hedging and boosting in abstracts of applied linguistics articles: A comparative study of English-and Chinese-medium journals. J. Pragmat. 2011;43(11):2795-809.

[DOI: 10.47176/mjiri.39.125]