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# **Exploring Metadiscourse Markers in Medical English Research Article Abstracts Written by Native English vs. Non-native Iranian Scholars**

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## **1. Introduction**

Academic discourse in the medical sciences is characterized by stringent conventions and precise communicative demands, requiring writers to balance informational clarity with persuasive impact. In this high-stakes rhetorical context, metadiscourse markers (MDMs) serve as indispensable linguistic tools that enable authors to structure their texts, guide reader interpretation, and position themselves within disciplinary conversations. The globalization of academic publishing has intensified the analysis of cross-linguistic rhetorical differences. This is especially relevant for non-native English scholars, who must master English academic writing norms while mediating potential transfer from their first-language rhetorical traditions.

This study conducts a systematic comparison of metadiscourse usage in medical research article abstracts authored by native English-speaking (NW) and Iranian non-native English (NNW) scholars. Situated within Hyland's (2005) metadiscourse framework, the research examines how interactive MDMs (which organize discourse) and interactional MDMs (which convey stance and engagement) are deployed differently across these two writer groups. By analyzing 102 abstracts from ISI-indexed medical journals, this investigation addresses a significant gap in contrastive rhetoric research, offering insights into how disciplinary norms,

linguistic proficiency, and cultural backgrounds intersect in medical academic writing.

## **2. Theoretical Framework and Literature Review**

The analytical approach of this study is grounded in Hyland's (2005) taxonomy, which categorizes MDMs into interactive resources (transitions, frame markers, evidentials, endophorics, and code glosses) and interactional resources (hedges, boosters, attitude markers, engagement markers, and self-mentions). This framework recognizes academic writing as fundamentally social and interactive, where linguistic choices reflect writers' attempts to negotiate meaning with their disciplinary communities.

Previous research has documented varied patterns in metadiscourse usage across linguistic and cultural boundaries. Pérez-Llantada (2010) observed that English writers often employ more interactional metadiscourse to directly engage readers, while writers from other language backgrounds may prioritize interactive elements for textual organization. Within medical writing specifically, studies such as Farrokhi and Ashrafi's (2009) cross-disciplinary comparison identified higher frequencies of MDMs in medical texts compared to engineering or applied linguistics articles, suggesting field-specific rhetorical conventions.

Research on Iranian scholars' academic writing has yielded mixed findings. Zarei (2015) noted that Persian research articles emphasized interactive resources for coherence, while English articles balanced interactive and interactional elements. However, few studies have specifically compared Iranian medical scholars' English writing with that of native English counterparts, particularly focusing on the abstract genre that serves as a critical gatekeeping element in academic publication. The present study addresses this gap through systematic corpus analysis and statistical comparison.

## **3. Methodology**

The research employed a mixed-methods design combining quantitative corpus analysis with qualitative functional interpretation. The corpus comprised 102 English-language research article abstracts from ISI-indexed medical journals (2008–2023), evenly divided between 51 abstracts by native English-speaking scholars (from the US, UK, Australia, New Zealand, and Ireland) and 51 by Iranian non-native scholars. Abstracts covered

diverse medical specialties including nursing, surgery, internal medicine, and public health.

The analysis followed Hyland and Tse's (2004) taxonomy for identifying and categorizing MDMs. Each abstract was systematically coded for marker frequency and function, with inter-rater reliability established through independent review by an expert linguist. Quantitative analysis utilized SPSS with Mann-Whitney U tests (selected due to non-normal data distribution) to compare frequency patterns between NW and NNW groups. Qualitative analysis examined contextual functions and rhetorical effects of MDMs in representative excerpts from both corpora.

#### **4. Results and Discussion**

The analysis revealed several significant patterns in metadiscourse usage between native and non-native medical scholars. Both groups demonstrated a clear preference for interactive MDMs over interactional MDMs, aligning with the informational and structural priorities of medical discourse. However, statistically significant differences emerged in specific marker categories.

**Interactive MDMs:** NNWs employed interactive markers significantly more frequently than NWs ( $p = 0.007$ ). This difference was particularly noticeable for frame markers ( $p = 0.000$ ), which NNWs used substantially more often. Frame markers (e.g., "first," "in conclusion," "methodologically") provide explicit textual scaffolding, suggesting that non-native writers may rely more heavily on overt organizational signals, possibly due to greater attention to reader guidance or adherence to specific journal formatting conventions prevalent in Iranian medical publications. No significant differences were found for transition markers, code glosses, endophoric markers, or evidentials, indicating shared disciplinary norms regarding logical connections, clarification strategies, and source referencing in medical abstracts.

**Interactional MDMs:** Contrary to some previous cross-cultural research, no statistically significant differences emerged in overall interactional marker usage ( $p = 0.085$ ) or in any of the five subcategories: hedges, boosters, self-mentions, attitude markers, and engagement markers. Hedges were the most frequent interactional marker in both groups, reflecting the knowledge-based caution characteristic of scientific discourse. This convergence suggests that disciplinary conventions in medical writing may

override potential cultural differences in stance expression, with Iranian scholars effectively adapting to English writing norms of qualification and moderation.

Detailed examination revealed nuanced patterns within interactional categories. Boosters showed slightly higher (though not statistically significant) usage among NNWs, potentially reflecting a compensatory strategy to assert authority in a second language. Self-mentions occurred modestly in both groups, with slightly higher frequency among NNWs, challenging assumptions about cultural preferences for impersonal expression in academic writing from certain backgrounds. Engagement markers were the least frequent interactional category for both groups, consistent with the informational focus of medical abstracts.

### **Implications and Conclusion**

This study yields important theoretical and pedagogical implications. Theoretically, the findings contribute to understanding how disciplinary norms interact with linguistic and cultural factors in specialized discourse communities. The convergence in interactional marker usage suggests strong disciplinary enculturation that outrides writers' linguistic backgrounds, while divergence in interactive marker usage indicates that textual organization may be more susceptible to educational, cultural, or journal-specific influences.

Pedagogically, the research highlights areas for targeted instruction in English for Academic Purposes (EAP) programs for medical scholars. Iranian writers would benefit from instruction that addresses strategic rather than formulaic use of frame markers and other interactive resources. Additionally, explicit attention to subtle variations in interactional marker deployment could enhance the rhetorical effectiveness of non-native scholars' writing. For journal editors and writing consultants, the findings encourage a nuanced approach to evaluating non-native scholars' texts, recognizing certain metadiscourse patterns as adaptive strategies rather than deficiencies.

Future research could extend this investigation to full-length research articles, employ more nuanced measures of linguistic repertoire beyond the native/non-native binary, or conduct longitudinal studies tracking metadiscourse development.

Experimental research testing pedagogical interventions focused on metadiscourse awareness would further advance EAP practices. In conclusion, this comparative analysis reveals both shared rhetorical priorities and systematic differences between native English-speaking and Iranian non-native medical scholars. While disciplinary norms strongly shape interactional stance-taking, textual organization reflects more varied influences. By illuminating these patterns, the study contributes to more informed, equitable approaches to medical writing instruction and support in an increasingly globalized academic landscape.

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