Avoiding Common Writing Mistakes

1. **Introduction Section:**
   - Build a case for why this problem is important with literature review
   - Identify a gap in the literature and how this study will fill the gap
   - Conceptual framework is explicit and justified
   - Specific aim/hypothesis is clearly stated

2. **Methods Section:**
   - Explain how the study was conducted
   - Very clear to allow another investigator to replicate
   - Methodology behind all data that in the results is represented
   - **Specific components** to include:
     - Study Design/Methodology
     - Study setting
     - Timeframe
     - Sample and control groups
     - Educational intervention (aka treatment)
     - Outcome/evaluation measures
     - Data analysis
     - Remember Institutional Review Board and consent

3. **Results Section:**
   - Statements of **facts only**
     - No commentary or interpretation
   - Clarity is key
   - Avoid wordiness
   - Consider whether a table/figure is better than text to display the results
     - Do not repeat the same data in both text and table/figure
   - Align results with hypothesis
   - Order the results in a consistent manner with methods section
   - **Keep results in results!**

4. **Discussion Section:**
   - Interpret your results in the context of the question, hypothesis and/or conceptual framework posed in the introduction section
   - Begin with summary of your main results – 1st paragraph
   - Place findings in the context of relevant literature
     - How does this study add?
     - How do your results differ?
   - Comment on the practical significance, theoretical implications or application of the results
   - Careful not to overstep or over-interpret
   - Provide guidance for future studies
   - Remember the limitations of your study
# Checklist for Authors Prior to Educational Manuscript Submission

## Title/Abstract

1. Title is clear and representative of content
2. Abstract concisely describes study and key findings
3. Conclusions in abstract are justified given information provided in abstract
4. All information provided in abstract are presented in text
5. All information in abstract/ text/figures/tables are consistent

## Introduction

1. Builds a convincing case why this problem is important with literature review
2. Identifies gaps in literature and addresses how this study will fill the gaps
3. Conceptual framework is explicit and justified (and/or in Discussion)
4. Specific aim of the study (and hypothesis where applicable) is clearly stated

## Methods

### For ALL Studies

1. Research design appropriate to address research question
2. Research design clearly stated (ie., cross-sectional cohort study)
3. Methods clearly described in sufficient detail to permit study to be replicated
   - 3a. Study population (sampling, selection bias)
   - 3b. Study intervention (objectives, activities, time allocation, training)
   - 3c. Study instrument validity evidence (instrument development, content, preparation of observers/interviewers/raters, scoring method, psychometric properties)
   - 3d. Study outcomes clearly defined (and high on Kirkpatrick’s pyramid – may be inversely related to level of innovation, with less innovative ideas requiring higher outcome levels)
4. Data analysis appropriate for research design and research question
5. Data analysis procedures clearly described in sufficient detail to be replicated
6. IRB approval/exemption and consent clearly stated

### For Quantitative Studies:

1. Study is generalizable due to selection of participants, setting, educational intervention/materials (external validity – less innovative studies require higher generalizability with more sites, etc.)
2. Potential confounding variables addressed and adjusted for in analysis (internal validity)
3. Statistical tests appropriate. Effect size, functional significance discussed when appropriate. When making multiple comparisons,
<table>
<thead>
<tr>
<th>adjustment for significance level for multiple tests/comparisons are considered.</th>
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<td>4. Power issues are considered in studies that make statistical inferences (particularly if results not significant)</td>
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**For Qualitative Studies:**

| 1. Study offers concepts or theories that are transferable to other settings and methods described in sufficient detail (setting, sample) |
| 2. Philosophical framework clearly stated (ie., grounded theory) |
| 3. Study design incorporates techniques to ensure trustworthiness (ie., triangulation, prolonged observation) |
| 4. Characteristics of the researchers that may influence the research are described and accounted for during data collection/analysis |
| 5. Describe how members of the research team contribute to coding, identifying themes, and/or drawing inferences (dependability, confirmability) |

**For Mixed-Methods (Quantitative and Qualitative) Studies:**

| 1. Justify use of mixed-methods (Study must do justice to both methodology) |
| 2. Justify order of quantitative and qualitative study |

**Results**

| 1. All results are presented and align with study question and methods. All results are presented in Results section (and not in other sections) |
| 2. Sufficient data is presented to support inferences/themes |
| 3. Tables, graphs, figures used judiciously to illustrate main points in text |

**Discussion**

| 1. Key findings clearly stated. Conclusions follow from design, methods, results |
| 2. Findings placed in context of relevant literature, including conceptual framework. Alternative interpretations of findings are considered as needed |
| 3. Study Limitations and Study Strengths discussed |
| 4. Practical significance or implications for medical education are discussed. Guidance for future studies is offered. |

**References**

| 1. Literature review is comprehensive, relevant, and up-to-date |
| 2. Ideas and materials of others are appropriately attributed (No plagiarism) |

**Final Journal Check**

| 1. Study is relevant to mission of journal and journal audience |
| 2. Author guidelines are followed (including word count) |
| 3. Prior publication(s) by author(s) of substantial portions of the data are appropriately acknowledged |
| 4. Conflicts of interest are disclosed |
| 5. Text is well written and easy to follow |
| 6. Manuscript is well organized |