**Online Appendix C (Page 1 of 4)**

*for the CAEP 2016 Academic Symposium: A Writer’s Guide to Key Steps in Producing Quality Medical Education Scholarship by Chan and colleagues.*

This appendix provides clarifications about the top genre-specific recommendations identified by the 2016 Academic Symposium.

|  |
| --- |
| **Section 1: Recommendations for Writing Quantitative Medical Education Papers**   * **Ensure the research question is important** **to a key audience within the field medical education.** The research question should be clear, well focused, and novel to a specific target audience within the field of medical education (e.g. program directors, deans, students, clinical teachers).38,39 Novel questions address a gap in the knowledge base, expand on what is already known in the literature, or present the voice of individuals or populations that were not previously considered.40 Well focused and important questions either incorporate and expand upon a relevant conceptual frameworks or clarify an educational process.29,41 * **Define a research question before justifying the most appropriate methodology to answer it.** A well-defined research question will guide the choice of methodological approach and delineate parameters and variables of interest.37,38,42 There are many methodological choices, and one should match the most appropriate method to their research question.29,38,43–45 While quantitative methodologies are popular, likely due to their extensive use in clinical medicine, it is important to ensure that a quantitative method is the best approach to answering the question being posed.46,47 Identifying the question early on will facilitate study design and minimize threats to valid study interpretation.48,49 * **Clearly define the population of interest and the inclusion/exclusion criteria of participants.** The generalizability of a medical education study to another context is significantly influenced by the population of participants.50 Ideally the study participants are representative of learners outside of the study’s context. Regardless of inclusion or exclusion criteria, it is important to ensure that study participants are well-defined and explicitly reported.42 * **Discuss the results in relation to the strengths and weaknesses in the methodology.** A well-written manuscript increases the likelihood of successful publication. Presenting the inherent strengths and weaknesses of the methodology will allow the findings to be considered in appropriate context.49 |

**Online Appendix C (Page 2 of 4)**

*for the CAEP 2016 Academic Symposium: A Writer’s Guide to Key Steps in Producing Quality Medical Education Scholarship by Chan and colleagues.*

|  |
| --- |
| **Section 2: Recommendations for Writing Qualitative Medical Education Papers**   * **Declare and report one’s theoretical paradigms, values, or position.** Being clear about conceptual linkages to existing theory26 and literature is important.21 Particularly with qualitative methodologies, it is important to explain the theoretical paradigms and values that an educator holds21, and possibly their position within those paradigms.21 Explaining perspective allows the reader to interpret findings analysis, arguments within the adopted lens. Declaring and reporting the research team’s position(s) is an aspect of reflexivity (i.e. reflexivity about personal perspectives that may colour analysis)20,26, which is a marker of rigour. * **Use a sampling plan that ensures that participants are relevant to the research question; ensure participant selection is well-reasoned.**21,51Whereas quantitative methods will often cast a wide net, wading through wide swaths of people via very specific inclusion and exclusion criteria, qualitative scientists often take a more targeted approach in selecting their participants. Since qualitative methods use different approaches to isolate and purposively identify specific individuals with a certain perspective or experience, it is important for authors to be very clear about the rationale they used for their sampling plan. Sometimes authors attempt to complete a very in depth study of a select group of individuals, other times, they will intentionally attempt to sample for diversity. Explaining the rationale for the sampling technique used is important in the methods section, and explaining the use of this technique to isolate the population. * **Ensure that the data collection is comprehensive enough to support rich and robust observations of the observed/experienced events.** Qualitative research has the ability to observe phenomena and explain association or causation, asking the questions “why?” and “how?”. To achieve this, data are often collected in preference for greater depth rather than greater width. Holistic data collection allows research participants to add their own perspectives and contexts. These resulting data are used to generate conclusions that reflect real-life complexity in an inductive fashion.52,53 * **Use techniques to minimize biased or incomplete analysis: sufficiency**20**, triangulation**20,21**, respondent feedback**20 **(a.k.a. member checking), and fair dealing.**20Qualitative techniques have been established to reduce bias and increase transferability (i.e. generalization) of the study findings. Sufficiency means that the researcher continues to gather data until no new themes emerge; which is especially important in a heterogeneous sample. Triangulation is comparing multiple data sources and using multiple methods to see if the different sources and methods all point to a similar result, and to explain differences when they are found. Respondent feedback involves reviewing the study findings with the actual study participants to ensure that the aggregated findings encompass their experiences. Fair dealing requires the inclusion of a broad range of perspectives with special attention towards negative cases. This approach strengthens the analysis by ensuring that a straw dog argument has not been developed. * **Critique the study, reflecting on whether the results are readily transferable.** Glassick54 lists reflective critique as one of six criteria to evaluate scholarship. In research papers, reflective critique often comes in the form of a limitations section. With qualitative studies, reflective critique may take the form of discussing lessons learned about a new innovation or curriculum. Critique may also address the intimacy and depth of the analytic process, which influences the transferability of the findings to other, more general contexts. |

**Online Appendix C (Page 3 of 4)**

*for the CAEP 2016 Academic Symposium: A Writer’s Guide to Key Steps in Producing Quality Medical Education Scholarship by Chan and colleagues.*

|  |
| --- |
| **Section 3: Recommendations for Writing Reviews & Integrative Synthesis**   * **Justify the type of review (e.g. systematic review, meta-analysis, scoping review, etc.).** A clear statement allows editors, reviewers, and readers to better understand the framing of a review. However, merely stating the type of review conducted may not be enough to highlight why the type of review was the *most appropriate method* to answer the specific question.25 For guidance refer to the STORIES statement on publication standards for healthcare education evidence synthesis.25 For a practical guide to a number of methodologies for review and synthesis Sharma et al. is a good start.55 * **Specify criteria for study eligibility giving a rationale.**25,55–60Specifying the characteristics of the studies included in your review is akin to identifying your ‘population’ in an experiment. Since integrative scholarship aggregates knowledge from existing literature, it is important to be clear as to what types of studies they included in their final product. Clarity about the types of studies aggregated allows reviewers, editors, and ultimately readers to appraise the review and determine if the results are appropriate. 25,55–60 * **Describe how quality was assessed.**25,58–61 Opinions on quality assessment vary widely with a wide variety of methods used.55 Quality assessments help the reader determine whether they can appropriately trust the findings of the review. Authors often use a critical appraisal tool to decide if a paper is of sufficient quality for inclusion. In light of the variety of tools available, it is important to specify and justify this choice.25 * **Summarize main findings, including strength of evidence for each main outcome.**25,55,59 The main findings of the study should be summarized succinctly for the reader, and authors should attempt to comment on the strength of the studies that informed these ultimate findings.25,55,59 For some works of integrative scholarship the quality of included studies may be less important (e.g. scoping reviews62, realist reviews55,63, meta-narrative reviews55,63), however, for those conducting systematic reviews or meta-analyses where the quality of the literature is essential to interpretation, these judgements should be detailed by authors.25,59 * **Interpret the results in the context of other evidence and provide implications for future research.**25,55,57,59,64 Similar to all other categories of scholarship, it is imperative for review papers to contextualize their findings in light of other research.25,59 Cook & West (2012) suggest that section should be comprised of two to four main points that can be applied immediately or might spur others to conduct future research.57 Explaining how findings can relate to future research in medical education can help lay the impetus for furthering a program of scholarship in the area57 Target audiences to consider when writing this section might include: clinical teachers, clinician educators, program directors, policy makers, or other governmental bodies.25 |

**Online Appendix C (Page 4 of 4)**

*for the CAEP 2016 Academic Symposium: A Writer’s Guide to Key Steps in Producing Quality Medical Education Scholarship by Chan and colleagues.*

|  |
| --- |
| **Section 4: Recommendations for Writing Innovation Reports**   * **Describe a clear and thorough description of the problem, its importance and the need for innovation, including how the problem has been identified, and who is affected.** Problem identification is a key aspect in an innovation report65,66, since that is how a reader is going to decide whether they might adopt a specific innovation. Describing the problem fully allows readers to understand whether the featured innovation will meet their needs.29 * **Present a significant justification for the innovation to pass the “who cares?” test.** It is imperative to explain the importance of your work, situating it within the existing medical education literature. Does it make a novel contribution to the field or is it just confirming existing knowledge?36 In addition to problem identification, authors should make sure that they clearly delineate their target audience (i.e. describe who *should* care).36 Authors may need to go beyond simply explaining the general importance of a specific innovation by outlining why their work is especially relevant for a specific set of stakeholders.66 For example, an innovation that fixes a problem with the mentorship of medical students during their core clerkship, should be written with a target audience (e.g. clerkship directors or undergraduate teachers) in mind. * **Clearly describe the innovation-specific metrics used to evaluate the innovation.** Programevaluation is not always required for all published reports, but reporting an evaluation of the innovation strengthens the case for others to adopt it.4,67 When reporting the evaluation it is important to explain what outcomes or metrics were gathered66 and defend why these are important. * **Describe both successes and failure in implementation, and subsequent lessons learned.** Detailing implementation successes and failures helps other educators not to repeat the trial of errors.36 Being “reflective, analytical, and scholarly”66 about your work is important since it can reveal potential pitfalls for others following your lead. This step is of particular importance ensuring that an innovation report meets the standards of scholarship and does not devolve into a simple descriptive paper.54 * **Clearly state the impact of the innovation on the field.**  Linking the work featured in an innovation report to the relevant field and/or discipline is important for ensuring the innovation is acceptance for dissemination.66 Editors and reviewers have cited a lack of connection with other work as a reason for rejection for publication.27,68 Clearly stating the impact of an innovation on the relevant field situates it within a larger program of scholarship and demonstrates the progressive advancement of a concept.66 |