Research to Publication: CORD AA Resident Track

April 15, 2015

Paige Armstrong MD MHS (parmstro@gwu.edu)

Lainie Yarris, MD, MCR (yarrisl@ohsu.edu)

Work-in-Progress Checklist for Resident Studies

Step	Done	N/A
Brief literature search		
Identify potential question(s) FINER (Feasible, Interesting, Novel, Ethical, Relevant) & conceptual framework		
Identify mentor		
Identify colleagues		
Identify sites (>1 better). If 1 site, repeat intervention more than once		
Identify statistical help		
Meetings/emails to refine research question		
Determine research approach to best answer the questions: quantitative, qualitative, or mixed methods. *Note: these resources mainly address quantitative approaches*		
Intervention studies: define intervention operationally (recipe that others can replicate) & identify comparison group (controls with active alternative intervention better)		
Observation or cohort studies: thorough sample recruitment; comparison of responders/participants to non-responders/non-participants, or to total population		
Determine meaningful outcomes		
Determine instruments to measure outcomes		
Describe validity evidence for instruments used; for 'home grown' outcome instruments describe development, testing, modifications		
Can outcomes be measured objectively (external better than self-assessment)		
Can outcomes be measured distant from intervention (ie not just immediate)		
IRB request for exemption or approval (if humans involved)		
Quantitative study: determine likely effect size (from lit., pilots, minimum change considered of value) & use with type I error (p), & type II error (β) to calculate sample size		
Quantitative study: determine comparisons to be made; adjust p level for #comparisons		
Use available quality scales to rate quality of your project: can you enhance? (for quantitative studies)		
Construct flow chart of study steps and participants, as applicable		
Ongoing: Write everything down at least in outline format Keep references in End Note, Refworks or similar		

Action Plan

Write down 3 steps you will commit to undertake within the next 5 days, in the area most relevant to your project.

Ready – planning your study

Set – conducting your study

Go – analyzing, writing, and submitting your study for publication

Handout Adapted from AAMC/GEA JGME Sponsored Workshop, Nov 5, 2012 (The Personal Trainer Approach to Writing for Education Journals: Ready, Set, Go), developed by JGME Editor Facilitators (Artino A, Lypson M, Simpson D, ten Cate TJ, Opas L, Sullivan G, Chretien K, Philibert I, Yarris L, DaRosa D, Sargent J) and used with permission.

WRITING STEPS

1	€ Re-do literature search; hand-search bibliography of 'best' paper on topic
2	€ Review stated aims of journal of interest and skim an issue; does project/study fit?
3	€ Read author guidelines and choose category that best fits article. Follow author guidelines *exactly*.
4	€ Adhere to word count and #tables/figures. If not possible, explain why in your cover letter to journal.
5	€ Set deadlines; don't disappoint your colleagues. € If writing is difficult, make outline, jot phrases, organize. Try dictating (voice-recognition software).
6	€ If English *is not* your first language, have someone who is review and proof your paper. € If English *is* your first language, have someone review and proof your paper.
7	€ **Title**: usually ≤15 words. Include intervention, type of study, trainee type, setting - if possible - to help reader decide if should read further/click on link
8	€ **Abstract**: may be only part of paper that is read. Usually introduction, methods, results, conclusions but follow author guidelines. Always include sample size.
9	€ **Introduction**: 1-2 sentences introduce the topic: why important and relevant to journal's readership. Set your research purpose or hypothesis within a conceptual framework (why should it work?)
10	€ **Introduction**: 1-2 paragraphs outlining the research or evidence gap that exists. This justifies why your project needs to be done, published, and read. The introduction is not a review of the topic.
11	€ **Introduction**: end with a sentence (or two if complicated study) that is your study hypothesis (question) or purpose.
12	€ **Methods**: organize. Relevant sections are: Setting and Participants, Intervention, Outcomes, Analysis, IRB statement (1 sentence only).
13	€ **Methods**: include all steps so your intervention could be replicated. If long, put in table or box. If still too long, label as appendix (online supplemental material) and keep brief description in paper.
14	€ **Methods**: describe validity of outcome measures or cite literature. At minimum provide who developed/expertise, any testing/piloting, modifications if 'home grown.'
15	€ **Methods**: describe all planned analyses, in terms that a non-statistical expert (the average reader) can understand.
16	€ **Results**: report in same order that hypotheses stated (if >1). Usually general information (number of participants, demographic info) goes first.
17	€ **Results**: if many numbers or hard to follow – put into Table or Figure, to enhance clarity (and manage word count)
18	€ **Discussion**: first 1-3 sentences summarize the most important, unique, or surprising results of your study. *Do not repeat justification for the study, which is in the Introduction. Do not put Results here.*
19	€ **Discussion**: next 1-2 paragraphs compare/contrast your findings with those of others, analyzes why similar or different, and what your findings may imply. Label opinions as such; limit these.
20	€ **Discussion**: next 1 paragraph analyzes how your study's limitations may have impacted the results, in either direction; full evaluation of limitations enhances chance of publication. *Don't list.*
21	€ **Discussion**: then brief statement of next steps to study this area
22	€ **Conclusion**: 1-3 sentences that describe strictly your study findings, without speculation

Handout Adapted from AAMC/GEA JGME Sponsored Workshop, Nov 5, 2012 (The Personal Trainer Approach to Writing for Education Journals: Ready, Set, Go), developed by JGME Editor Facilitators (Artino A, Lypson M, Simpson D, ten Cate TJ, Opas L, Sullivan G, Chretien K, Philibert I, Yarris L, DaRosa D, Sargent J) and used with permission.

RESOURCES

References

Research – Getting Started & General Resources (for both education and clinical research)

1. Academic Emergency Medicine – Virtual issue on research methods: http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291553-2712/homepage/statistics_and_research_methodology.htm
2. ACEP Research Primer (free download on http://www.acep.org/research/)
3. Yarris LM, Deiorio NM. Education Research: A Primer for Educators in Emergency Medicine. Acad Emerg Med 2011; 18:S27-S35.
4. Beckman TJ, Cook DA. Developing scholarly projects in education: a primer for medical teachers. Med Teacher 2007; 29: 210–218.
5. Bordage G. Conceptual frameworks to illuminate and magnify. Medical Education 2009: 43: 312---319.
6. Bordage G, Dawson B. Experimental study design and grant writing in eight steps and 28 questions. Med Educ. 2003;37:376-85.
7. Sullivan GS. Using effect size – or why the p level is not enough, and 10 FAQs about effect size. J Grad Med Educ 2012;4(3):279-282, 283-284.
8. Sullivan GS. Writing education studies for publication. J Grad Med Educ 2012:4(2): 133-137.
9. Sullivan GM. IRB 101. J Grad Med Educ 2011; 3: 5-6.
10. Norman, Geoff. Data dredging, salami-slicing, and other successful strategies to ensure rejection: twelve tips on how to not get your paper published. Advances in Health Sciences Education 2014. 19:1-5.
11. Gail M. Sullivan (*2014*) Is There a Role for Spin Doctors in Med Ed Research?. Journal of Graduate Medical Education: September 2014, Vol. 6, No. 3, pp. 405-407.
12. Rebecca D. Blanchard, Anthony R. Artino Jr, and Paul F. Visintainer (*2014*) Applying Clinical Research Skills to Conduct Education Research: Important Recommendations for Success. Journal of Graduate Medical Education: December 2014, Vol. 6, No. 4, pp. 619-622.

Qualitative Approaches

1. Kuper A, Reeves, S, Levinson W. An introduction to reading and appraising qualitative research. BMJ 2008;337:404-407.
2. Lingard L, Albert M, Levinson W. Grounded theory, mixed methods, and action research. BMJ 2008; 337:459-461.
3. Reeves S, Kuper A, Hodges BD. Qualitative research methodologies: ethnography. BMJ 2008;337:512-
4. Sullivan GM, Sargeant J. Qualities of Qualitative Research: Part I. J Grad Med Educ 2011;3:449-452.
5. Sargeant J. Qualitative Research Part II: Participants, Analysis, and Quality Assurance. J Grad Med Educ 2012;1:1-3.
6. Turgeon J. Appraising qualitative research articles in medicine and medical education. Med Teach. 2005;227:71-5.
7. O'Brien BC, Harris IB, Beckman TJ, Reed DA, & Cook DA. Standards for reporting qualitative research: a synthesis of recommendations. Academic Medicine 2014. 89(9), 1245-1251.

Research – Surveys

1. Ricards G, Magee C, Artino Jr, AR. You can't fix by analysis what you've spoiled by design: developing survey instruments and collecting validity evidence. J Grad Med Educ 2012; 4(4): 407-410

Research – Systematic Reviews

1. Cook DA, West CP. Conducting systematic reviews in medical education: a stepwise approach. Medical Education 2012; 46: 943-952.

Handout Adapted from AAMC/GEA JGME Sponsored Workshop, Nov 5, 2012 (The Personal Trainer Approach to Writing for Education Journals: Ready, Set, Go), developed by JGME Editor Facilitators (Artino A, Lypson M, Simpson D, ten Cate TJ, Opas L, Sullivan G, Chretien K, Philibert I, Yarris L, DaRosa D, Sargent J) and used with permission.

Research – Instrument Development and Validity studies

1. Sullivan GM. A primer on the validity of assessment instruments. J Grad Med Educ 2011; 3: 119-120.
2. Cook DA, Beckman TJ. Current Concepts in Validity and Reliability for Psychometric Instruments: Theory and Application. Am J of Medicine 2006: 119: 166e10-199.e16.
3. The Standards for Educational Psychological Assessment (http://www.apa.org/science/programs/testing/standards.aspx)
4. Downing S. Validity: on meaningful interpretation of assessment data. Medical Education. 2003;37:830-837.

Writing and Reviewing

1. Bordage G. Reasons reviewers reject and accept manuscripts: the strengths and weaknesses in medical education reports. *Acad Med*. 2001; 76: 889–896.
2. Roediger HL. Twelve tips for reviewers. Assoc Psycholog Science. Apr 2007. www.psychologicalscience.org/observer/getArticle.cfm?id=2157
3. Journal Impact Factors: http://www.citefactor.org/journal-impact-factor-list-2014.html
4. CONSORT criteria (checklist for quality in randomized trials): http://www.consort-statement.org/

On Line Courses for Reviewing Skills (not specific to medical education)

1. Annals of Emergency Medicine course http://www3.us.elsevierhealth.com/extractor/graphics/em-acep/
2. Cochrane Collaboration sponsored: http://eyes.cochrane.org/launch-online-course-journal-peer-review

Websites

1. *BEME* – Best Evidence in Medical Education. International group, like Cochrane Collaboration, that does high quality systematic reviews of education research. Great resource for information and also instruments with validity evidence for your own studies. http://www2.warwick.ac.uk/fac/med/beme/

2. *MedEdPortal* – repository of medical education products, funded by AAMC, for medical, dental, and (adding) other health professions education. These materials are peer-reviewed. http://services.aamc.org/30/mededportal/servlet/segment/mededportal/information/

3. www.biosemantics.org/jane: enter your title or abstract and get suggested journals; usually will generate a lot of suggestions, some quite relevant

4. AAMC Public Health Pathways: an extensive database, very user friendly, that provides many opportunities, including plenty of internships/electives/fellowships in PH research. https://www.aamc.org/students/public-health-training/385442/public-health-all.html

Handout Adapted from AAMC/GEA JGME Sponsored Workshop, Nov 5, 2012 (The Personal Trainer Approach to Writing for Education Journals: Ready, Set, Go), developed by JGME Editor Facilitators (Artino A, Lypson M, Simpson D, ten Cate TJ, Opas L, Sullivan G, Chretien K, Philibert I, Yarris L, DaRosa D, Sargent J) and used with permission.