Research question

A research paper typically begins with a clear research question or hypothesis that the study aims to address. This question guides the entire research process.

A research question is a question that research project sets out to answer. Choosing a research question is an essential element of both quantitative and qualitative research. ... To form a research question, one must determine what type of study will be conducted such as a qualitative, quantitative, or mixed study.

The most important step in conducting a high-quality research study is to create a study question that will guide the planning, analysis, and reporting of your study. The process of generating a novel, answerable study question seems like it should be simple at first blush. Perhaps your keen interest in a particular topic sparks an idea for a study that starts the creative process of hypothesizing and wondering “what if.” It is a wonderful experience to witness or be caught up in the joys of such a process. Finding inspiration for a study may, however, be a challenge, and the study idea emerges, instead, with time after thoughtful consideration of a topic. In either scenario, in order for you to design and execute your study, honing your idea and hypothesis into questions that can be realistically studied is required, adding a level of complexity to what at first seemed simple.

Creating the final study question is a formal and iterative process: You create an initial study question by answering questions, defining parameters, getting feedback from colleagues, and conducting a limited literature search. Then you refine your question and define major aspects of your study by using a Patients, Intervention, Comparison, and Outcomes (PICO) table for treatment and diagnostic studies, or a Patients, Prognostic factors, and Outcomes (PPO) table for prognostic studies. By taking the time to complete these steps, you will have a good structure for your research study and will be able to proceed to the next part, a literature review.

Improving study question focus

Study question too broad	Study question somewhat more answerable	Study question with improved focus
What is the comparative effectiveness of laminoplasty versus laminectomy and fusion?	What is the comparative effectiveness of laminoplasty versus laminectomy and fusion for adults with cervical myelopathy?	What is the comparative effectiveness of laminoplasty versus laminectomy and fusion for adults with myelopathy due to spondylosis in the cervical spine?

Final study question

In symptomatic adults with cervical myelopathy due to spondylosis, does laminoplasty improve the severity of myelopathy (as measured by the JOA recovery rate) compared with laminectomy and fusion at 12 months? or, more specifically In symptomatic adults with cervical myelopathy due to spondylosis, does laminoplasty lead to a minimum 75% JOA recovery rate (from baseline to 12 months) more frequently than after laminectomy and fusion?

Approach

As with any systematic review, the first step is to define the research question.

Development

Developing a research question is a critical first step in the research process. A well-crafted research question will guide your research, focus your efforts, and help you determine the direction of your study. Here are the steps to develop a research question:

Identify a Broad Topic: Start by choosing a broad topic that interests you or is relevant to your field of study. This topic should be something you want to explore and delve deeper into.

Conduct Preliminary Research: Before you can formulate a specific research question, it's essential to conduct some preliminary research to get a better understanding of your chosen topic. This will help you identify gaps in existing knowledge and narrow down your focus.

Make it Clear and Specific: A good research question should be clear, concise, and specific. Avoid vague or overly broad questions. Instead, aim for a question that can be answered in a focused manner.

Consider the “5 W's and H”: Use the “5 W's and H” (Who, What, When, Where, Why, and How) as a framework to help structure your question. Depending on your research topic, some of these elements may be more relevant than others. For example:

Who or what is the subject of your research? What is the main issue or phenomenon you want to investigate? When and where does this issue or phenomenon occur? Why is it important or significant? How do you plan to investigate or address this issue? Ensure Feasibility: Consider the resources, time, and access you have for conducting research. Your research question should be feasible given your constraints.

Check for Relevance: Ensure that your research question is relevant to your field of study, the goals of your research project, and the intended audience.

Avoid Yes/No Questions: A good research question should not have a simple yes or no answer. It should invite discussion, analysis, and exploration.

Test Your Question: Share your research question with peers, advisors, or mentors to get feedback. They can help you refine and improve the question.

Revise as Needed: It's okay to refine and revise your research question as you continue to explore your topic and gather more information. Research questions can evolve as your understanding deepens.

Write Down Your Final Research Question: Once you have a well-crafted research question, write it down clearly and concisely. This will serve as the guiding focus for your research project.

Remember that the quality of your research question can significantly impact the success of your research project. A well-formulated research question will help you stay on track, gather relevant data, and contribute meaningfully to your field of study.

Validating the Clinical Question

The reviewers can promote a general evaluation of the proposed research question by using the FINER criteria: Feasible, Interesting, Novel, Ethical, and Relevant [1].

They must verify closely the research question or objective (aim) of the study because it is the most important part of the entire project. All the components of the study are strict- ly structured based on a clinical question: type of study, methodology applied, population studied, sample size cal- culation, time available, equipment, funding, instruments or questionnaire to measure the primary and secondary outcome or endpoint, and implementing the work. The questions that need to be answered by the reviewers are the following: 1) is there a clear, focused, and answerable study question; 2) is the study question innovative or rel- evant; 3) does the manuscript present an updated literature; 4) has the question already been answered in the literature; 5) does the study have the potential to advance scienti c knowledge, in uence clinical management and health pol- icy, or provide some directions to future research; 6) does it matter; 7) what relevant information will the study add to the literature; and 8) is the paper clearly written and well organized? [2].)).

1)
Cummings SR, Browner WS, Hulley SB: Conceiving the research question, in Hulley SB, Cummings SR, Browner WS, et al (eds): Designing Clinical Research: An Epide- miologic Approach, ed 2. Philadelphia: Lippincott Williams & Wilkins, 2001, pp 17–23

2)
((Falavigna A, Blauth M, Kates SL. Critical review of a scientific manuscript: a practical guide for reviewers. J Neurosurg. 2018 Jan;128(1):312-321. doi: 10.3171/2017.5.JNS17809. Epub 2017 Oct 20. PubMed PMID: 29053077.