Learn to Thrive 2025

Navigating CE Research:
A Practical Guide

A product of the Learn to Thrive 2024 Working Group
Fostering Greater Engagement in CE Research

Learn to THRIVE by ACCME

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Working Group

Acknowldgement

The development of this resource has been a true labor of love, driven by the dedication, expertise, and collaborative spirit of our incredible working group. Each member has contributed their time, insight, and passion to ensure that this resource is both comprehensive and impactful.

We are deeply grateful for everyone's unwavering commitment, thoughtful discussions, and tireless efforts in bringing this toolkit to life. Their contributions will undoubtedly support and empower many in the field of continuing education and research.

Thank you for the hard work, enthusiasm, and shared vision. This achievement would not have been possible without you.

Using This Toolkit

Getting started with conducting continuing education (CE) research can feel very daunting at first. Therefore, we have created this toolkit to help you. The first section has background information and definitions to provide you with a base to begin. The second section provides a framework to guide you through the steps needed for conducting the CE research. The final section has useful resources. *(Note: Double clicking the headings below will link you directly to the relevant section).*

Background Information to Get You Started

01
Working Group Aim

02
Understanding CE Research

03
Meeting Accreditation Requirements

04
Areas For CE Research

A Framework to Guide You Through Conducting CE Research

01
Define Purpose

02
Research Methodology

03
Research Methods

04
Data Collection and Analysis

05
Ethical Considerations

06
Dissemination

Useful Reflection and Additional Resources

01
Reflection and Action Plan

02
Appendix

Working Group Aim

The goal of this working group is to develop a CE Research Toolkit that will provide the accredited continuing education (CE) community with the strategies and resources to pursue the **Demonstrating Educational Leadership through Engaging in Research/Scholarship** requirement from the Menu of Criteria for Accreditation with Commendation for the Accreditation Council for Continuing Medical Education (ACCME) and Joint Accreditation for Interprofessional Continuing Education (Joint Accreditation).

Background

Accredited CE programs play a crucial role in enhancing the competence and performance of healthcare professionals (HCPs)[1,2,3]. Identifying effective CE strategies and approaches to achieve desired outcomes is a significant responsibility of accredited CE/CPD providers. The connection between effective CE strategies and practices underscores the need for extensive research to identify and optimize these methods, ensuring HCPs receive the most beneficial and impactful educational experiences.

However, there is a pressing issue: the accredited CE community is not engaging enough in CE research! This toolkit aims to bridge that gap by guiding and encouraging CE professionals to undertake research in their field.

Understanding CE Research

Continuing education (CE) research systematically gathers and analyzes information to answer specific questions about healthcare professional development. The purpose is to enhance the quality and effectiveness of learning experiences and promote ongoing professional development and lifelong learning.

Here are examples of research questions in continuing education:

- How do HCPs learn and develop new skills?
- What are effective ways to design, deliver and assess Continuing Medical Education/Continuing Professional Development (CME/CPD) programs?
- How can technology enhance CE programs?
- What impact does CE have on patient outcomes and clinical practice?
- What factors motivate or challenge HCPs in their learning journey?

So why should you engage in CE Research?

You should engage in CE research as it supports with the following:

Advancing	Advancing the field of CE through the generation of new knowledge and best practices to improve the practice of HCPs.
Meeting	Meeting ACCME accreditation standards through demonstrating commitment to scholarly activity.
Improving	Improving CE programs by an evidence-based approach to refine and enhance educational offerings. Helps identify what works best for learners.
Enhancing	Enhancing patient care through the delivery of better education that may lead to better patient outcomes.

Tips for Beginners

How can you get started? Here are four key approaches that may help you begin your CE research journey. We recommend you:

01

Start Small

Focus on a single question or small project.

02

Learn from Others

Look at similar studies.

03

Use Available Tools

Online survey tools, data analysis software.

04

Ask for Help

Reach out to experienced researchers or mentors and/ or consider collaborating.

CE research is a structured process to understand and improve how HCPs learn and develop skills through workshops, courses, conferences, and self-directed learning. Additionally, As artificial intelligence (AI) tools become increasingly embedded in research workflows, it is essential to leverage their use. Used responsibly, AI supports innovation and upholds the research ethos by enhancing rigor, efficiency, and insight. For a practical overview of how AI can support different stages of student-led research, see the narrative review by Jhajj et al, 2024, which details a review of AI tools for research[4].

Meeting Accreditation Requirements

ACCME Menu of Criteria for Accreditation with Commendation®
https://accme.org/accreditation-process/accreditation-with-commendation/

ACCME and Joint Accreditation reward organizations that demonstrate leadership in CE, including those that engage in research of scholarship related to the effectiveness of their CE programs. The ***Engages in Research/Scholarship*** (The provider engages in CME research and scholarship) accreditation criterion is part of the Menu of Criteria for Accreditation with Commendation available to ACCME-accredited and jointly accredited providers.

The provider engages in CME research and scholarship. (ACCME)

The provider engages in research and scholarship related to accredited IPCE and/or CE and disseminates findings through presentation or publication. (JAC 16)

Rationale

Engagement by CME providers in the scholarly pursuit of research related to the effectiveness of and best practices in CME supports the success of the CME enterprise. Participation in research includes developing and supporting innovative approaches, studying them, and disseminating the findings.

Critical Elements

- Conducts scholarly pursuit relevant to CME, AND
- Submits, presents, or publishes a poster, abstract, or manuscript to or in a peer-reviewed forum

The Standard

- At review, submit description of two projects completed during the accreditation term and the dissemination method used for each. Describe a scholarly project your organization completed during the accreditation term relevant to CME (i.e., related to the effectiveness of and best practices in CME supports the success of the CME enterprise) and the dissemination method used for each one (i.e., poster, abstract, manuscript).

Tip for Beginners

Please refer to the ACCME website for examples of compliance/non-compliance.

In summary, **Meeting the Criterion** means you are actively involved in research that:

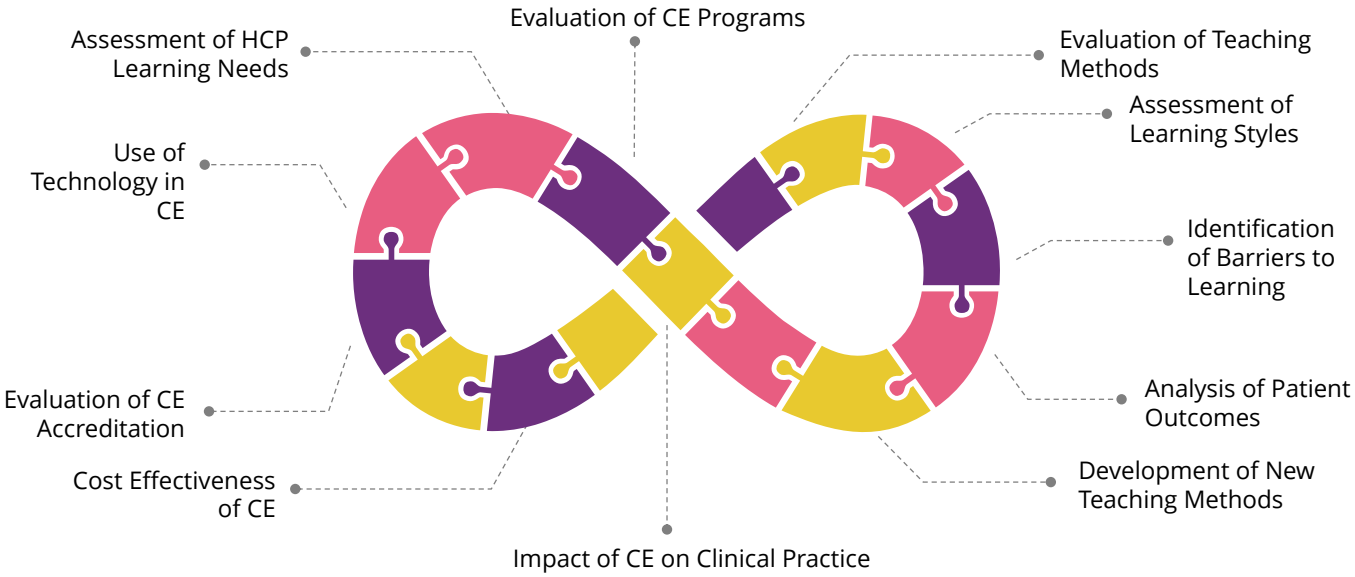
- Produces new knowledge.
- Is shared through publications, presentations, or other scholarly outputs.
- Is relevant to CME (i.e., related to the effectiveness of and best practices in CME, supports the success of the CME enterprise)

Areas for CE Research

As you consider areas for CE research, you may find *Boyer's model of scholarship*[5,6] helpful for appreciating the broadness of what can be considered research. In 1990, Boyer advocated for expanding the definition of scholarship beyond traditional academic research, as he argued that *scholarly contributions are not limited to generating new knowledge (pure research) but also include synthesizing existing knowledge, applying knowledge to real-world challenges, and improving teaching practices through reflective evaluation*. Thus, all forms of scholarship should be recognized and rewarded. The table below outlines the four types of scholarship, namely, Scholarship of Discovery, Integration, Application, and Teaching & Learning and their alignment to CE research.

Scholarship Type	**Definition**	**Description**	**Example**
Discovery	Original, traditional and purely investigative research that leads to new knowledge (*What is to be known?*).	Typically involves empirical methods and aims to produce generalizable findings	Conducting a study on the use of chatbots and other AI tools to improve medical student communication skills
Integration	Involves synthesis of information across disciplines, topics, time to interpret and bring new insight to original research (*What do the findings mean?*)	Systematic and scoping reviews typically fall under this category, as they involve systematic and peer reviewed synthesis of existing research. Contributes to evidence-based practice	Writing an article on how adult learning theory can be applied to remediating communication skills of medical students
Application	Seeks ways in which new knowledge and innovations can be used to solve real-world problems and serve society (*How can knowledge be applied to problems?*)	Can include scholarly inquiry. Systematic program evaluation in CE applies research to improve real-world practice. It is collaborative, improves programs and performance, and generates useful knowledge to enhance patient outcomes	Implementing a quality improvement initiative where CME programs are tailored to reduce infections in hospitals
Teaching and Learning	Involves the dissemination of good practice and ongoing reflective evaluation of own practice (*How can knowledge best be transmitted and learned?*)	Can involve research elements. Often includes reflective practice, instructional design, and program evaluation. Considered scholarly when systematic, evidence-informed, and publicly shared	Assessing the effectiveness of utilizing virtual reality to enhance anatomy learning and sharing outcomes

CE research is an important area of inquiry that can help improve the quality of healthcare delivery by identifying effective educational interventions and strategies for HCPs. The image below includes different areas that may be considered as CE research.



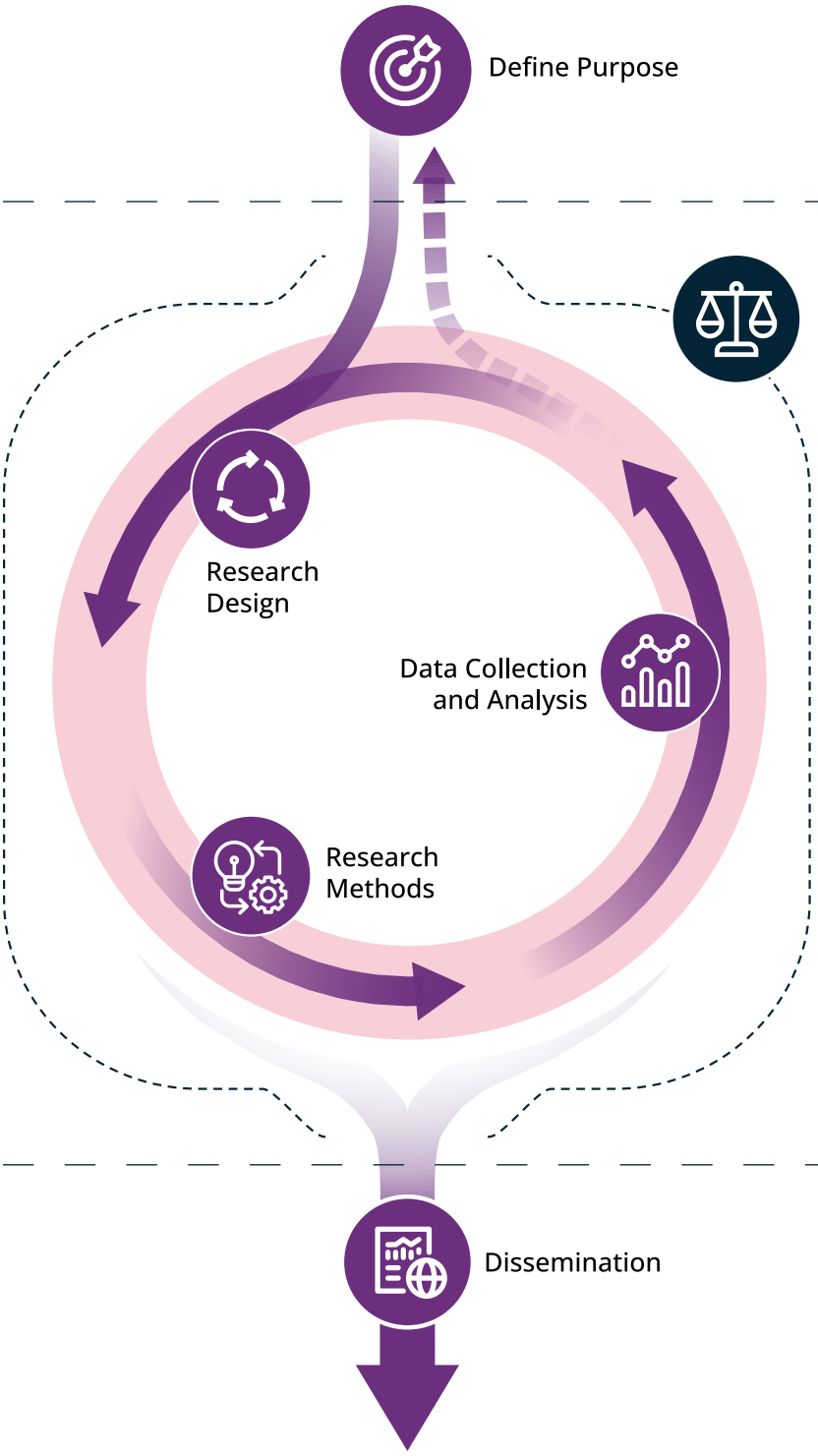
The following are examples for you to consider:

- *Evaluation of CE Programs:* Measure the effectiveness of existing CE programs.
- *Assessing Teaching Methods:* Analyze the success of different teaching approaches for achieving the desired outcomes of your program/activity (i.e., lectures versus interactive sessions).
- *Technology Integration:* Assess how technology (i.e., e-learning platforms, mobile applications) can improve learning.
- *Impact on Practice:* Evaluate if the CE activity improved patient care.
- *Patient Outcomes:* Determine if the CE activity had an impact on clinical outcomes (Does learning improve patient care?).

Accreditation Alignment: Select topics that focus on advancing educational techniques or evaluating educational outcomes to meet the Commendation criterion for accreditation.

Framework for Conducting CE Research

We have developed this research framework based on the work of Kumar, 2019; Creswell 2018; Popper, 2002 and Babbie; 2020[7,8,9,10]. It serves as a roadmap to help guide you through complex processes, ensuring that each step is purposeful, transparent, and aligned with research goals. This enhances the quality, consistency, and impact of the research.



First you begin with defining your purpose and describing the problem.

Then you need to consider three iterative steps: research design, research methods and data collection and analysis, all guided by ethical considerations. As you work through these steps, you may find a need to go back and forth and make adjustments to them.

The most important part of doing CE research is helping others with your insights. How will you share your findings?

In the next few pages we will guide you through the different parts of the framework. Let us proceed!

Tip for Beginners

Use the “Getting Started on Your CE Research Journey” template (Appendix I) in conjunction with the framework (Don’t forget to review the example of a completed template! Appendix II).

Define Purpose

The first step in your CE research journey is to identify a research question, gap or problem. Consider what are you trying to investigate. For example: Is your program or intervention making a difference in learners' competence, performance, and/or patient outcome? Has shifting from onsite to online delivery improved the learning experience?

How can you identify these gaps?

- By engaging in discussions with other stakeholders, individually or as part of a focus group to gain feedback and perspective about issues observed.
- Through your own personal observations.
- By reviewing evaluation reports of activities or audit reports.
- By doing a literature review.

We recommend you ask yourself the following questions:

What problem am I trying to solve?	What question do I want to answer?	What information do I need?
Defining the problem is the first and most critical step.	Ensure your question is specific, measurable, attainable, relevant & timely (SMART).	Conducting the literature review will help with answering this.

Next, it will be important to conduct a literature review.

You may wonder **WHY** you should do a literature review. You will:

- Be able to identify gaps in your knowledge that could be a useful addition to your research.
- Have a better understanding of what is already known. That will help you build on this information.
- Have the opportunity to review published methodologies that will help you identify relevant methodologies to use.

Then, you may ask **HOW** you can do a literature review. You will need to:

- Define the scope of the research work by considering keywords to be used in the literature review.
- Use multiple databases, including, but not limited to: PubMed, Google Scholar, Scopus, Web of Science. You may benefit from support from a librarian.
- There may be some AI tools that can be responsibly and ethically levereged for this.
- Tabulate and summarize your key findings.

Here are some useful resources that can get you started

- How do I do a literature search? (McMaster University)
- Literature searching tips and tricks (University of Reading Library, 6-minute video)
- Identifying research gaps. (University of New England Library Services)
- Narrowing a research topic. (Grand Valley State University)

Tips for Beginners

This is a checklist that can serve as useful guide for creating a good research question:

- Is this a topic you or others care about?
- Is it too broad or too narrow?
- Is it researchable within a given timeline?
- What information is needed?
- Who is your target audience?
- Is it clear? Simple?

Reflection

Reflect on something you have observed:

- What is the main problem or issue?
- Explain the problem
- Why is this a problem worth studying?
- What are the consequences of not studying this problem?
- What do we still need to know about this problem?

Go to the "Getting Started on Your CE Research Journey" template (Appendix I) and consider completing the 'Define the Purpose' section.

Research Design – Developing a Research Plan!

Research design methodologies are a structured approach that you can use to plan, conduct and analyze your study based on your research question. They are a framework of inquiry, e.g., kinds of questions we should ask, the conceptual knowledge, what sorts of inferences to expect. A blueprint that outlines what you want to investigate, what tools you will use to collect the data, and how you will analyze it.

There are two common types of methodologies[7]: quantitative and qualitative or a mix of both (mixed methods or multi-method). At a high level, the main difference between quantitative and qualitative research is the type of data they use and the questions they answer.

Quantitative research uses numerical data and statistical analysis for measuring and testing relationships, trends, or impacts in a structured way, while qualitative research relies on observations, words, and themes to interpret meanings and patterns. Understanding these differences can help you select the most appropriate method for your study.

The table below highlights key differences between the two research approaches.

	Quantitative Research	**Qualitative Research**
Purpose	Focuses on measuring and quantifying variables.	Provides in-depth insights and understanding of real-world problems. Examines behaviors, opinions and experiences of individuals.
Question Type	Answers how many?, how much?, how often?, how satisfied?, type questions	Answers “why” or “what is it like to” questions. It can be about motivation, experiences, thoughts, problems, behaviors or relationships.
Data Type	Questionnaires, experiments (numerical data)	Interviews, observations, open-ended discussions, symbols, words etc., to collect rich descriptive data (non-numerical data)
Analysis	Statistical analysis.	Analyzes using thematic, content-based approaches or narrative. Groups common data (non-statistical analysis).
Strengths	Uses objective measurements and results can be generalized.	Provides in-depth insights and detailed informative descriptions.
Limitations	May overlook context and is less flexible.	Takes time, is subjective and harder to generalize.

We recommend you consider the following questions:

- Are you trying to measure and compare data (quantitative) or are you trying to gain a deeper understanding of an issue (qualitative).
- What data do you need? Do you need statistcal evidence with measurable outcomes (quantitative) or opinions, behaviors and personal experiences (qualitative).
- Do you have enough time to conduct the research? Quantitative research tends to be quicker, although it can lack depth; while qualitative data needs more time for data collection (interviews, observations) and analysis.

Tip for Beginners

The key is to align your research design with the question you want to answer, the type of data you need, and the resources available to you.

Go to the "Getting Started on Your CE Research Journey" template (Appendix I) and consider completing the 'Research Design' section.

Research Methods

Research methods are the specific investigative tools or procedures you use to gather your data[11] whereas research methodology (previous section) is the primary principle that will guide your research. The purpose of the research should provide a good indicator as to what research method will be most appropriate. Additionally, personal skills, preferences and practical constraints also play a role in determining the best approaches. Therefore, selecting the suitable method helps you collect and analyze data effectively. To help you select the suitable methods and tools for gathering your data you may need to ask yourself the following questions:

Are you skilled with numbers and mathematics?	If you are skilled with numbers, you might want to check out quantitative methods. If not, you may need to identify a biostatistician or anyone else in or outside your institution to help.
Are you interested in conducting interviews?	Have you conducted interviews before? Is there a framework you can work with? Do you know who you want to interview? Will anyone be able to support you?
Do you have the desire for creating a questionnaire?	Do you have an existing questionnaire that you can use? Is it reliable? Do you know how to create one if needed? Can someone help you with this?
How do you prefer to interact: written communication or face-to-face?	If you prefer electronic communication, then you may wish to send out a survey with multiple-choice and open-ended questions. Or you may prefer talking with/interviewing individuals. Will it be online? Or in-person?
What is your previous experience?	If you have no or limited experience with any of the tools, you should either seek help or use an alternative that is still aligned with your research study.
Do you have a budget?	Do you have enough funding to support the study? For example: Can you afford to pay a biostatistician or a consultant or have an external entity help with data gathering and analysis? What can you afford?
Do you have time to complete the research?	If you are limited with time, send a survey and do a quantitative analysis. If you have more time, you may do several interviews and conduct a thematic analysis of data.

ACCME Alignment: Be mindful of how you can share the methods you used so that other CE researchers can learn from your work.

Go to the "Getting Started on Your CE Research Journey" template (Appendix I) and consider completing the 'Research Method' section.

Data Collection and Analysis

The tools you will choose to collect data for your research will depend on the research method you selected. The graphic below outlines the variety of tools that can be used as it relates to the type of chosen research method.

Qualitative Tools	Quantitative Tools	Mixed Methods
• Interviews and/or focus groups • Face-to-face, on Zoom, or via telephone • Hand-written notes, audio/video recording or AI transcription • Open-ended surveys	• Structured surveys • Closed-ended questionnaires • Observations using frequencies • Use data with Yes/ No answers and/or a Likert scale.	• Combine both approaches for a comprehensive review • Use a mixture of tools

Additionally, the table below provides a comparison between a qualitative and a quantitative study. You can see the difference between the two approaches for sampling size, data collection tools and analysis.

	Quantitative Research	**Qualitative Research**
Sampling	Large numbers, random	Small numbers, purposive
Data Collection	Surveys/questionnaires	Interviews, focus groups, surveys with narrative
Data Analysis	Statistical tests, generalization	Thematic

Once you use the relevent tools to collect your data, you can then analyze your findings to identify trends, patterns, or answers to your research questions.

Tips for Beginners

Here we have provided some useful resources:

- Creating a questionnaire: How-tos, templates, and tips (Canva)
- Questionnaire templates (Canva)
- Using focus groups in medical education research: AMEE Guide No. 91
- Focus Group Tip Sheet, US Department of Health and Human Services - Office of Population Affairs (Evaluation Briefs)
- Guide to Qualitative Research Methodology (Appendix III). The original detailed document can be found in this link (Medecins sans Frontieres).

Go to the "Getting Started on Your CE Research Journey" template (Appendix I) and consider completing the 'Data Collection and Data Analysis' section.

Ethical Considerations

Ethical considerations are important for ensuring integrity, fairness and credibility of the research. Hence, every researcher has a responsibility towards their research participants and others. The following are core ethical principles that should be considered:

- Autonomy; respect the rights of individual
- Beneficence; doing good
- Non-maleficence; not doing harm
- Justice; particularly equity

Briefly:

- Everyone who participates in your study should be able to freely consent to participate. They need to be informed about the purpose, risks and benefits of the study.
- Research should aim to maximize benefits while ensuring that they minimize harm to participants.
- The selection of the participants should be fair, avoiding exploitation or discrimination.
- It is important to protect the identity of the persons from whom you gather information.

Here is some useful information that may be helpful:

If you are doing research that utilizes a survey or questionnaire, you need to ensure:

- Individuals have a choice in participating.
- Participants sign an informed consent form that outlines the reason for the study and any risks/benefits.
- Confidentiality of the collected data as well as anonymity and privacy.

However, if you are doing research on existing data, you need to ensure:

- Compliance with any data protection laws applicable where you are.
- Anonymity of the data to protect the privacy of the participant.

To summarize, here are a set of principles to guide the research design and practice. The purpose is to:

- Protect participants' rights.
- Get consent from participants.
- Ensure data confidentiality and anonymity.
- Maintain scientific/academic integrity.

The following are additional ethical considerations:

Informed Consent	You MUST ensure that everyone who participates in your research study freely consents to participating, without any coercion or pressure. They should be well-informed about the details of the study and any risk of harm.
Confidentiality	It is essential to protect the identity of the participants. The identity details cannot be lying around in notebooks or unprotected computer files. Hence, only the investigator(s) can identify individual responses.
Anonymity	You may wish to collect anonymous data. This means that your study does not collect identifying information of participants (e.g., name, contact etc..) or the study cannot link participant responses with participants' identities.
Human Subject Protection	The protection of human subjects is designed to ensure participants are given information they need when deciding whether to participate in research. They need to be aware of any potential risks and benefits of the research study.
Adherence to Data Protection	As research may involve handling participants' personal information, it is important to be aware of your instiututions data protection policies and procedures and to adhere to them to protect the rights of individuals.
Communication of Results	Findings need to be presented accurately, ensuring alignment with the data. It is important to follow ethical authorship guidelines, disclose study limitations, potential bias and any conflicts of interest.

Who ensures the research study is compliant with ethical principles?

The Institutional Review Board (IRB) [Research Ethics Board in Canada; Research Ethics Committee in UK] is charged with reviewing and monitoring research with human subjects to ensure the rights and welfare of research participants are protected.

Determining whether a project constitutes human subjects research rather than quality improvement or program evaluation involves multiple factors. This is an important distinction to make because it determines whether IRB review and oversight of a project is needed since IRB oversight is limited to human subjects research.

This table is intended to help in determining whether a project requires submission to the IRB as a research project involving human subjects. If the project involves some characteristics of a research project, submission to the IRB for review is expected.

	Research	**Quality Improvement**	**Program Evaluation**
Intent	Generate new, generalizable knowledge	Improve a practice or process in an institution or or ensure it confirms with expected norms.	Improve a specific program.
Motivation	Project occurs largely due to individual professional goals and requirements.	Project occurs regardless of whether individual(s) conducting it may benefit professionally from it.	Project occurs regardless of whether individual(s) conducting it may benefit professionally from it.
Design	May draw random or purposive sample. May involve control groups.	Draws convenience samples with no control group (often). Does not tend to involve randomization to different practices or processes.	Does not involve randomization of individuals. May involve comparison of variations in programs
Mandate	Activity not mandated by institution or program.	Activity mandated by the institution or clinic as part of its operations.	Activity mandated by the program, usually its funder, as part of its operations
Benefit	May or may not have direct benefit to participants.	Has direct benefit to participants.	No benefit to participants expected. Evaluation concentrates on program improvements.
Dissemination of Results	Intended for scholarly dissemination.	Dissemination may occur in quality improvement publications. Intent to share effective models, strategies or assessment tools.	Often internal dissemination; may be shared in grey literature, reports, posters or websites.
Example Project Title	The Impact of AI-Powered Chatbots on Diagnostic Accuracy in Online CME Modules	Improving Timeliness of CME Certificate Issuance through Workflow Redesign	Developing a team-based learning CPD program in Qatar: key learnings from a pilot workshop.

Adapted from University of Wisconsin – Madison Health Sciences IRB Version date 11/2/08
Authors: Nichelle Cobb & D. Paul Moberg

Tips for Beginners

Most educational research is exempt from IRB oversight, but confirm by talking to your Institutional Review Board (IRB) representative to get clarifications about the process and exemptions.

Review Appendix IV Ethical Considerations and Reflective Questions.

Useful resources:

- This checklist will help you assess whether a proposed project is QI/PE or potentially human subjects research (Weill Cornell Medicine)
- To determine if an activity is Research or Quality Improvement/Quality Assurance (QI/QA) (Georgia Southern University)

Go to the "Getting Started on Your CE Research Journey" template (Appendix I) and consider completing the 'Ethical Considerations' section.

Dissemination

Effectively sharing research findings is important for maximizing impact, fostering collaboration, and contributing to the broader knowledge base. There are numerous ways to disseminate research, and researchers can choose multiple strategies depending on their goals, target audience, and the level of rigor required.

Some dissemination approaches, such as online platforms, social media, or conference presentations, allow for rapid sharing and engagement with a wider audience. Others, like peer-reviewed journal publications, conference proceedings, and book chapters, undergo rigorous evaluation, ensuring higher credibility and recognition within the academic community.

While all dissemination methods have value, peer-reviewed publications hold a special place in academic and professional recognition. They serve as the benchmark for scholarly contribution, meeting the minimum bar required for research commendation. Peer review helps ensure methodological rigor, originality, and relevance, making these publications a highly regarded means of knowledge dissemination.

The following outlines key dissemination strategies, emphasizing their benefits and levels of rigor:

- **Academic Journals:** Submit research articles to peer-reviewed journals. Refer to 'Where Can We Publish Research' (Appendix IV), which provides a comprehensive list of academic journals, including their aim/scope, open access options, submission guidelines, and links to journal websites. This resource helps researchers identify suitable publication venues based on their research focus and dissemination goals. Submissions in journals may include original research, reviews, innovations, short reports, commentaries, opinion pieces, focus on research methods and more.

Beware of Predatory Journals

Predatory journals can be described as publications that attempt to generate an income by portraying themselves as legitimate academic journals without actually providing the services expected from legitimate journals: in the worst cases, they may claim to peer review submissions when in fact they do not – they simply publish anything they receive, for a price.

Strategies to determine if a journal is predatory or legitimate include: (i) finding independent confirmation that journal is legitimate (e.g., by its inclusion in the Directory of Open Access Journals); (ii) checking that claims made by the journal are correct (e.g., is it really indexed in Scopus?); and (iii) using a checklist to assess the journal (e.g., does it claim to provide peer review in a week – see the webpage ThinkCheckSubmit.org).

- **Conferences:** Present research findings at academic conferences, symposia, and professional meetings. Conferences provide opportunities for networking, receiving feedback, and engaging with scholars, practitioners, and industry experts.
- **Utilize Online Platforms:** Share research outputs through various digital channels. Creating a personal website or blog allows for direct engagement, while social media platforms can help disseminate research summaries, findings, and publications to broader audiences. This method enhances visibility and facilitates discussions beyond academia.
- **Newsletters:** Many professional associations and research networks publish newsletters, journals, or online platforms where members can share research findings. Submitting research to these outlets ensures targeted dissemination within specific professional communities.

- **Webinars or Workshops:** Organizing or participating in webinars and workshops allows researchers to present findings and engage in discussions with practitioners, policymakers, and stakeholders. This format encourages interactive knowledge exchange and practical applications of research.
- **Policy Briefs or White Papers:** Condense research findings into accessible formats that summarize key insights and actionable recommendations for decision-makers. These documents bridge the gap between academic research and policy implementation, ensuring findings have real-world impact.

The following are additional ideas for collaboration and dissemination that you may wish to consider:

01

Collaborate with other accredited organizations.

02

Produce policy papers or practical guides that translate research findings into actionable insights.

03

Create educational tools or resources based on your research outcomes.

When sharing your work, your introduction must do three things to ensure your CE research is compelling to the readers[12]:

1. Identify a problem in the world that people are talking about or you have observed
2. Establish a gap in current knowledge or thinking about the problem, and
3. Articulate a hook that convinces readers that this gap is a consequence

Go to the "Getting Started on Your CE Research Journey" template (Appendix I) and consider completing the 'Dissemination' section.

Reflection and Action Plan

Now that you have read through the document, why don't you spend a few minutes thinking about the below questions?

What?	So What?	Now What?
What did I learn? Go to the Template to get started with your CE Research Journey.	Reflect and Act. Has this been helpful? Is there anything else you need?	What action will I take? What is next?

Consider the following:

Online Courses

Consider taking basic research methodology or statistics courses.

Mentoring

Seek guidance from experienced researchers.

ACCME Resources

Check out resources such as ACCME Academy and the CE Educator's Toolkit.

Artificial Intelligence

Powerful research companion. Boosts efficiency and aligns with innovation and integrity.

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Appendix: Additional Resources

i. Research Journey Template
ii. Research Journey Template (Completed Examples)
iii. Guide to Using Qualitative Research Methodology
iv. Ethical Considerations and Reflective Questions
v. Where Can We Publish Research?
vi. Checklist for CE Research Project
vii. Research Terminology
viii. Examples of CE/CME Research Published

Getting Started on Your CE Research Journey

Define the Purpose

Describe the problem that motivates the need for your research.

Why is your research important? What is the benefit to you? How will it help others?

Is there any relevant information in the literature? Is there a gap in the literature?

Based on the above, specify your research question.

Research Design

Do you already have data or survey information that you can use to answer your research question? If yes, what is it? (then skip to data collection)

If no, or need additional information, what type of information data will you need to answer your research question? Why is your research important? What is the benefit to you? How will it help others?

Research Method

What method(s) will help you achieve this?

What may be the challenges?

Data Collection

How will you collect the data?

Data Analysis

How will you analyze the data?

Do you need help and do you know anyone who can help?

Ethical Considerations

Is IRB approval necessary? Is an application for exemption required?

Dissemination

Where and how do you plan to share the outcomes of the research?

What information/structure will you need to use for this?

Congratulations on taking your first step!

Getting Started on Your CE Research Journey

Define the Purpose

Describe the problem that motivates the need for your research.

We created a 'Certificate in the Analysis of Medical Data' program as a response to an identified need for training healthcare practitioners in applied biostatistics to improve their research skills and to enhance ability to analyze their data. We wanted to know if the structure and methodology of the program was appropriate and increased research output.

Why is your research important? What is the benefit to you? How will it help others?

The research is important in helping us identify whether addressing biostatistical knowledge gaps through our tailored CPD courses can enhance evidence-based practice and research productivity among healthcare professionals. Insights from the study can inform the design of future CPD courses, potentially leading to improved healthcare outcomes and research productivity.

Is there any relevant information in the literature? Is there a gap in the literature?

Prior research identifies biostatistical knowledge gaps among healthcare professionals globally, including in the Middle East, are exacerbated by limited postgraduate courses. Research conducted among HCPs in various countries worldwide consistently highlights deficiencies in understanding research methodology, particularly in statistical methods as prominent impediments to research progress.

Based on the above, specify your research question.

Would a certificate program with an introductory, intermediate and advanced levels in biostatistics enhance competence and performance and ultimately lead to an increase in research output?

Research Design

Do you already have data or survey information that you can use to answer your research question? If yes, what is it? (then skip to data collection)

We have program evaluation feedback from the different workshops that we ran in 2019 and 2020.

If no, or need additional information, what type of information data will you need to answer your research question? Why is your research important? What is the benefit to you? How will it help others?

We need to gather more data to assess the long-term effect of the workshops on the participants who attended in 2019 and 2020.

Research Method

What method(s) will help you achieve this?

A mixed method approach (numerical data and narratives).

What may be the challenges?

Getting enough participants to respond to the follow-up survey.

Data Collection

How will you collect the data?

Evaluations and follow-up survey questionnaires with yes/no responses as well as narrative responses.

Data Analysis

How will you analyze the data?

Data from the surveys will be summarized using frequencies and percentages. Open ended questions will be categorised thematically and presented as frequencies of occurrence.

Do you need help and do you know anyone who can help?

Data from the surveys will be summarized using frequencies and percentages. Open ended questions will be categorised thematically and presented as frequencies of occurrence.

Ethical Considerations

Is IRB approval necessary? Is an application for exemption required?

IRB is not needed.

Dissemination

Where and how do you plan to share the outcomes of the research?

Poster presentation at the ACCME annual meeting.

What information/structure will you need to use for this?

Need Background details, literature, data and an understanding of the requirements for disseminating the poster.

Congratulations on taking your first step!

A Brief Guide to Using Qualitative Research Methodology

Introduction to Qualitative Research

Qualitative research is designed to understand social phenomena by focusing on words and meanings rather than numbers. It is ideal for exploring people's beliefs, experiences, and perspectives, especially in areas where little is known or when seeking answers to "**WHAT**," "**HOW**," and "**WHY**" questions. Combining qualitative and quantitative methods can provide a richer understanding of a problem.

When to Use Qualitative Research

To understand attitudes, experiences, or barriers (e.g., why people avoid health services).	To explore complex social processes or cultural norms.	As a starting point in areas with limited prior knowledge.

What Are the Main Ethical Considerations?

Obtain Informed Consent (Verbal or Written)

Maintain Confidentiality to Protect Participants

Avoid Harm or Undue Pressure During the Research

Key Steps for Designing Qualitative Research

01

Define the Research Question:

Clearly identify what you want to investigate. Conduct a literature review to ensure the question is unique and researchable.

02

Develop a Research Protocol:

Create a detailed plan, including objectives, methods, ethical considerations, resources, and timelines.

03

Sampling:

Use purposive sampling to select participants who can provide relevant data. Consider maximum variation to cover different perspectives.

Adopted from an An MSF guide to Using Qualitative Research Methodology

Data Collection Methods

1. Individual Interviews

Semi-structured (guided by a topic guide) vs in-depth (exploratory)

Use	Open-ended, neutral, and clear questions.
Establish	Trust and rapport.
Avoid	Leading questions and interruptions.

Tip: Pilot your questions, adapt language to your audience, and manage expectations.

2. Group Interviews

Moderation: *Encourage participation, manage dominant voices, and ensure all members feel comfortable.*

Focus Groups

Gather diverse views in a structured setting.

Natural Groups

Interview pre-existing groups to explore shared experiences.

3. Contextual Data Collection:

Observations:

Note behaviors, interactions, and routines to understand contexts.

Written Data:

Use reports, service records, and policies.

Oral Data:

Informal conversations can provide valuable insights.

Adopted from an An MSF guide to Using Qualitative Research Methodology

Managing and Analyzing Data

Data Management

Ensure confidentiality and secure storage of data.

Use reliable translators and document interviews accurately.

Audio recording is helpful but requires participant consent.

Conducting a Thematic Analysis

01

Annotate Transcripts: Identify recurring themes.

02

Develop a Coding Scheme: Categorize data by themes.

03

Apply Codes: Systematically code the entire dataset.

04

Identify Patterns: Look for relationships and differences across themes.

How to Validate the Research?

Triangulate	Use	Analyze
Triangulate findings by comparing multiple data sources.	Use member checking to confirm interpretations with participants.	Analyze deviant cases to strengthen conclusions.

Useful Tools and Writing Up Results

Software: Use computer programs for large datasets, though smaller studies often manage well without them.

Reporting Findings: Present themes and narratives clearly, ensuring transparency and reliability. Highlight key patterns and relationships.

Adopted from an An MSF guide to Using Qualitative Research Methodology

Ethical Considerations and Reflective Questions

1. Informed Consent

Example: You plan to collect post-course evaluation data and link it with learner performance assessments for research purposes.

Reflective Question: Have I clearly communicated to participants how their data will be used, and have they had the opportunity to provide informed consent freely and without coercion?

2. Privacy and Confidentiality

Example: You are analyzing learner performance data from a CE course and reporting trends across departments.

Reflective Question: Have I taken adequate steps to anonymize or de-identify participant data, and am I storing data in a secure, privacy-compliant manner?

3. Conflict of Interest

Example: You are evaluating an educational intervention you helped design or deliver.

Reflective Question: Could my dual role as educator and researcher introduce bias or affect the neutrality of the findings? How can I disclose or manage this conflict?

4. Voluntary Participation and Power Dynamics

Example: You're conducting focus groups with learners from your institution, some of whom may feel obliged to participate.

Reflective Question: How can I ensure that learners feel safe to decline participation without fearing consequences, especially in hierarchical learning environments?

5. Fairness in Participant Selection

Example: You want to study the impact of a new digital tool but plan to include only high-performing learners.

Reflective Question: Am I selecting participants fairly and inclusively, or am I introducing sampling bias that could affect the validity or generalizability of the study?

6. Ethical Approval

Example: You are collecting new data as part of a program evaluation that you also plan to publish.

Reflective Question: Does this project require ethics committee (IRB/REC) review, even if it is embedded in routine education? Have I sought the appropriate approvals?

Where Can We Publish Research?

Journal Title	Specific Information Links	Open Access?	Submission or Processing Fee?	Impact Factor	Aim/Scope	Journal Owner
Academic Medicine	Instructions for Authors	No	No	5.3	Academic Medicine is the official, peer-reviewed journal of the Association of American Medical Colleges. The journal serves as an international forum for the exchange of ideas, information, and strategies to address the major challenges facing the academic medicine community as it strives to carry out its missions in the public interest. The journal's areas of focus include: education and training issues; health and science policy; institutional policy, management, and values; research practice; and clinical practice in academic settings.	Association of American Medical Colleges
Adult Education Quarterly	Submission Guidelines	Options	No	1.5	Quarterly scholarly refereed journal committed to advancing the understanding and practice of adult and continuing education. Inclusive in scope, addressing topics and issues of significance to scholars and practitioners concerned with diverse aspects of adult and continuing education across the globe.	American Association for Adult and Continuing Education
Adult Learning	Submission Guidelines	Yes	Unclear, probably	0.9	Publishes original manuscripts on the practical challenges of educating adults. A forum for practitioners and researchers to share their insights, research findings, resources and questions that arise from the practice of educating adults.	American Association for Adult and Continuing Education
Advances in Health Sciences Education: Theory and Practice	Submission Guidelines	Options	Yes	3.0	Focuses on research that reviews "important developments" in health education and invites researchers to submit papers that discuss new technologies and teaching strategies.	n/a

*To better understand the **Journal Impact Factor**, see https://en.wikipedia.org/wiki/Impact_factor.*

APPENDIX V – Where Can We Publish Research?

Journal Title	Specific Information Links	Open Access?	Submission or Processing Fee?	Impact Factor	Aim/Scope	Journal Owner
Advances in Medical Education and Practice	Link to Register for Submission	Yes	Yes	1.8	International, peer reviewed, open access journal that aims to present and publish research on Medical Education.	n/a
BMC Medical Education	For Authors	Yes	Yes	2.7	Open access journal publishing original peer-reviewed research articles in relation to the education and training of healthcare professionals. The journal welcomes studies on students and professionals across all levels of education; education delivery aspects; and other education-related topics.	n/a
Canadian Medical Education Journal	Submissions	Yes	No	n/a	Online open-access peer-reviewed journal exploring new developments and perspectives in medical and health professions education that may influence institutional, regional, and national policy and/or practices... examines prominent issues relating to health care professionals' formation, education, and training before and after licensure in Canada and internationally; target audience includes clinician teachers, medical education researchers, practitioners and professionals, administrators, decision-makers, medical schools, universities, and their trainees.	n/a
Education for Health	Author Guidelines	Yes	No	0.9	Peer-reviewed, MEDLINE-indexed journal dedicated to the dissemination of work consistent with TUFH's mission and objectives in international health. Publishes original contributions of interest to health practitioners, educators, policy makers, administrators, and learners in the health workforce that lead to improved health and wellness.	The Network: Towards Unity for Health

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APPENDIX V – Where Can We Publish Research?

Journal Title	Specific Information Links	Open Access?	Submission or Processing Fee?	Impact Factor	Aim/Scope	Journal Owner
Evaluation & the Health Professions	Submission Guidelines	Options	No	n/a	Peer-reviewed journal that provides health-related professionals with state-of-the-art methodological, measurement, and statistical protocols or tools for conceptualizing the etiology of health promotion and problems, and developing, implementing, and evaluating health programs, teaching and training services, and products that pertain to a myriad of health dimensions. It is designed to provide a forum for keeping health professionals abreast of the latest technological advances in evaluation research methods as well as provide the results of important evaluations.	n/a
Focus on Health Professional Education	Information for Authors	Yes	No	1.4	Open access journal that aims to promote, support and advance education in all the health professions	Australian & New Zealand Association for Health Professional Educators
JAMA: The Journal of the American Medical Association	Information for Authors	Yes	Yes	63.5	Editors publish research on various medical topics, including medical education.	American Medical Association
Journal of Adult and Continuing Education	Submission Guidelines	Options	No	1.1	Peer-reviewed journal focusing on international and national issues and aimed at researchers, professionals and practitioners in all sectors. It publishes both research articles and reflections on policy and practice, and offers opportunities for all concerned with post-compulsory education to make contributions to debate.	n/a

*To better understand the **Journal Impact Factor**, see https://en.wikipedia.org/wiki/Impact_factor.*

APPENDIX V – Where Can We Publish Research?

Journal Title	Specific Information Links	Open Access?	Submission or Processing Fee?	Impact Factor	Aim/Scope	Journal Owner
Journal of Allied Health	Guidelines for Authors	Yes	Yes	0.5	Interdisciplinary allied health periodical, publishing scholarly works related to research and development, feature articles, research abstracts and book reviews. Readers include allied health leaders, educators, faculty and students.	Association of Schools Advancing Health Professions
Journal of Cancer Education	Link to Register for Submission	Hybrid	Yes	1.4	International journal dedicated to the publication of original contributions dealing with the varied aspects of cancer education for physicians, dentists, nurses, students, social workers and other allied health professionals,... anyone interested in effective education about cancer related issues. Includes reports of original results of educational research,discussions of current problems in cancer education. Manuscripts are welcome on such subjects as educational methods, instruments, and program evaluation.	American Association for Cancer Education and the European Association for Cancer Education
Journal of Continuing Education in the Health Professions	Information for Authors	No	Yes	1.6	Presents research on theories, teaching methods, and policies that impact continuing health education	Alliance of Contiuing Education in the Health Professions and the Society for Academic Continuing Medical Education
Journal of Graduate Medical Education	Instructions for Authors	Yes	No	2.4	Peer-reviewed research that improves graduate medical education	Accreditation Council for Graduate Medical Education

*To better understand the **Journal Impact Factor**, see https://en.wikipedia.org/wiki/Impact_factor.*

APPENDIX V – Where Can We Publish Research?

Journal Title	Specific Information Links	Open Access?	Submission or Processing Fee?	Impact Factor	Aim/Scope	Journal Owner
Journal of Medical Education and Curricular Development	Submission Guidelines	Yes	Yes	2.0	Focuses on medical education and curricular development, including basic science, clinical, and postgraduate medical education. Articles will be considered for publication that assess novel ways to improve upon existing curricula, designing of new curricular materials to engage students more effectively, effectiveness of large didactic lecture formats versus small group learning for teaching effectiveness, the value of independent learning assessments on education, and methods to improve effective teaching in the classroom.	
Journal of Transformative Education	Submission Guidelines	Options	No	0.8	Peer-reviewed, scholarly journal focused on advancing the understanding, practice, and experience of transformative education.	American Association for Adult and Continuing Education
MedEdPORTAL	Submission Instructions	Yes	No	n/a	Invites educators to submit innovative and generalizable educational materials that have been implemented with target learners with the aim of helping to improve patient care. The learners must include training or practicing physicians (e.g., professional school, residency, faculty development, continuing professional development) and may include trainees or practitioners across the health professions.	Association of American Medical Colleges
Medical Education	Author Guidelines	Yes	Yes	4.9	Publishes research on faculty development, teaching methods, curriculum design, assessments, and other topics.	Association for the Study of Medical Education

*To better understand the **Journal Impact Factor**, see https://en.wikipedia.org/wiki/Impact_factor.*

APPENDIX V – Where Can We Publish Research?

Journal Title	Specific Information Links	Open Access?	Submission or Processing Fee?	Impact Factor	Aim/Scope	Journal Owner
Medical Education Online	Instructions for Authors	Yes	Yes	3.1	Accepts articles on every topic related to medical education, such as basic science education, residency education, problem-based learning, faculty development, student assessment, and others.	
Medical Science Educator: The Journal of the International Association of Medical Science Educators	Submission Guidelines	Hybrid	No for traditional, yes for open access	1.9	Publishing scholarly activities, opinions, and resources in medical science education. Published articles focus on teaching the sciences fundamental to modern medicine and health, and include basic science education, clinical teaching, and the use of modern education technologies. The Journal provides the readership a better understanding of teaching and learning techniques in order to advance medical science education.	International Association of Medical Science Educators
Medical Teacher: An International Journal of Education in the Health Sciences	MedEdPublish	Hybrid	Yes	3.3	Features research on topics such as teaching methods and assessment strategies that affect health education faculty and administrators.	Association for Medical Education in Europe
Pédagogie Médicale	Instructions aux auteurs	Yes	Yes	n/a	n/a	la Société Internationale Francophone d'Éducation Médicale
PLOS Medicine	Submission Guidelines	Yes	No for member organizations	10.5	Peer-reviewed open-access journal publishes studies examining the "biomedical, environmental, social, and political determinants of health." It has featured many different papers focused on medical education.	n/a

*To better understand the **Journal Impact Factor**, see https://en.wikipedia.org/wiki/Impact_factor.*

APPENDIX V – Where Can We Publish Research?

Journal Title	Specific Information Links	Open Access?	Submission or Processing Fee?	Impact Factor	Aim/Scope	Journal Owner
Postgraduate Medical Journal	Instructions to Authors	Hybrid	No	3.6	Peer reviewed journal published on behalf of the Fellowship of Postgraduate Medicine. The journal aims to support junior doctors and their teachers and contribute to the continuing professional development of all doctors by publishing papers on a wide range of topics relevant to the practicing clinician and teacher.	Fellowship of Postgraduate Medicine
Teaching and Learning in Medicine	Instructions for Authors	Hybrid	No for non-open access, yes for open access	2.1	An international forum for scholarship on teaching and learning in the health professions, with emphasis on medicine; seeks to provide the conceptual foundations, practical analysis, and creative inspiration needed for innovative and transformational educational decision making in such areas as admissions, instructional design and delivery, performance assessment, remediation, technology-assisted instruction, diversity, equity, and inclusion, and faculty development; includes all levels of health professional education, from premedical to postgraduate and continuing professional education.	n/a
The Clinical Teacher	Author Guidelines	Yes	Not to submit, maybe to publish	1.4	Journal for clinicians who teach and people who are involved in education in a health care setting…access to the latest research, practice and thinking in clinical education across the health professions.	Association for the Study of Medical Education
The Lancet	For Authors	Hybrid	Yes, to publish	98.4	Began publishing research on every major medical topic and practice area in 1823, including papers on medical education and medical education research.	n/a

*To better understand the **Journal Impact Factor**, see https://en.wikipedia.org/wiki/Impact_factor.*

APPENDIX V – Where Can We Publish Research?

Journal Title	Specific Information Links	Open Access?	Submission or Processing Fee?	Impact Factor	Aim/Scope	Journal Owner
The New England Journal of Medicine	NEJM Author Center	Some options	No	96.3	Aims to bring the best research to clinicians and health educators.	Massachusetts Medical Society
Journal of CME	For Authors	Yes	Yes	n/a	Journal of CME (JCME) is a PubMed-indexed journal publishing open access, peer-reviewed research on CME-CPD planning, design, delivery, assessment and regulation. JCME aims to serve as the principal international journal for those who provide, accredit, partake in and benefit from the practice of CME-CPD.	The European CME Forum
Weill Cornell Medicine-Qatar Health Science Library	Journal Selection Resources	n/a	n/a	n/a	Scroll to the second section on the page for a list of tools to assist in identifying potential journals.	n/a

*To better understand the **Journal Impact Factor**, see https://en.wikipedia.org/wiki/Impact_factor.*

Checklist for CE Research Project

This checklist can be used to help you confirm what you have done as you progress through your CE research journey.

Define Your Purpose: What's your research question? Is it relevant to healthcare education?

Review Literature: What are the gaps? Ensure it builds on existing knowledge.

Choose a Method: Qualitative, Quantitative or both?

Plan for Ethics: Get consent, protect data.

Collect Data: Surveys, interviews, etc.

Analyze Findings: Look for patterns or insights.

Share Results: Write a report, present at a conference.

Show Educational Impact: Document how your research contributes to the field.

Research Terminology

This section includes a comprehensive glossary of terms related to CE/CME research, Institutional Review Board (IRB) considerations, and any other relevant terminologies that members might encounter during the research process.

Term	Definition	References
Bias	A point of view or preference which prevents impartial judgment in the way in which a measurement, assessment, procedure, or analysis is carried out or reported. Bias creates flaws in the way a study is designed, done, or analyzed that lead to one conclusion being favored over another.	1
Conflict of Interest	A conflict of interest occurs when individuals involved with the conduct, reporting, oversight, or review of research also have financial or other interests, from which they can benefit, depending on the results of the research.	1
Focus Groups	Focus groups are a collection of people who meet together with the investigator to discuss some topic or issue. Depending on the research topic, the members of the focus group may be already acquainted or unknown to each other, may or may not have direct experience with the topic at hand, and the groups may be of different sizes and composition. Typically, focus groups are small (five to 10 members) and meet from a single to a few occasions with the researcher. The researcher proposes the question or topic and then lets the group discuss it; depending on varying strategies, the leader may guide groups' discussion toward the topic of interest or let the group take its own course.	2
In-depth Interviews	An in-depth interview is a qualitative research technique that is used to conduct detailed interviews with a small number of participants. In contrast to other forms of qualitative research, researchers using an in-depth interviewing approach invest a significant amount of time with each participant employing a conversational format. Interview questions are primarily open-ended and lead to a discovery-oriented approach. The purpose of in-depth interviewing is to get detailed information that sheds light on an individual's perspective, experiences, feelings, and the derived meaning about a particular topic or issue.	3

APPENDIX VII – Research Terminology

Term	Definition	References
Informed Consent	Informed consent is one of the founding principles of research ethics. Its intent is that human participants can enter research freely (voluntarily) with full information about what it means for them to take part, and that they give consent before they enter the research. Consent should be obtained before the participant enters the research (prospectively), and there must be no undue influence on participants to consent. The minimum requirements for consent to be informed are that the participant understands what the research is and what they are consenting to.	4
Institutional Review Board (IRB)	An administrative body established to protect the rights and welfare of human research subjects recruited to participate in research activities conducted under the auspices of the organization with which it is affiliated. The Institutional Review Board has the authority to approve, require modifications in, or disapprove all research activities that fall within its jurisdiction.	5
p-Value	A p-value is the measure of probability that the null hypothesis was rejected when in fact the null hypothesis is true. When thinking about the standard normal distribution (bell curve), the p-value corresponds to the area under the curve where extreme values are not likely to be the result of chance. The p-value is related to the significance level. If the critical alpha value is 0.05, then the p-value must be smaller than 0.05 for the test to have a statistically significant result. If the p-value is greater than the critical alpha value, then the test does not have a statistically significant result.	6
Learning Needs Assessment	A learning needs assessment is a systematic process of obtaining information in order to determine learning goals to close the gap between what the student currently knows and what they need to know in order to achieve competency.	7
Literature Review	A literature review is a type of academic writing that provides an overview of existing knowledge in a particular field of research. A good literature review summarises, analyses, evaluates and synthesises the relevant literature within a particular field of research. It illuminates how knowledge has evolved within the field, highlighting what has already been done, what is generally accepted, what is emerging and what is the current state of thinking on the topic. Additionally, literature reviews identify the gaps in the current knowledge - that is, uninvestigated or under-researched areas.	8

APPENDIX VII – Research Terminology

Term	Definition	References
Program Evaluation	A formal definition for program evaluation has been put forth by Mohanna and Cottrell as "a systematic approach to the collection, analysis, and interpretation of information about any aspect of the conceptualization, design, implementation, and utility of educational programmes". Simply stated, program evaluation is the process of identifying the value of an educational offering, but at times it can also be a way of determining issues or problems in need of systematic improvement.	9
Qualitative Research	Qualitative research uses individual in-depth interviews, focus groups or questionnaires to collect, analyze and interpret data on what people do and say. It reports on the meanings, concepts, definitions, characteristics, metaphors, symbols and descriptions of things. It is more subjective than quantitative research and is often exploratory and open-ended. The interviews and focus groups involve relatively small numbers of people.	10
Quantitative Research	Quantitative research uses statistical methods to count and measure outcomes from a study. The outcomes are usually objective and predetermined. A large number of participants are usually involved to ensure that the results are statistically significant.	10
Questionnaire	A questionnaire is a helpful tool for collecting a wide range of information from a large number of respondents. [...]Containing structured groups of questions, it can be used to examine the general characteristics of a population, to compare attitudes of different groups, and to test theories. Questionnaires are any written instruments that present respondents with a series of questions or statements to which they are to react, either by writing out their answers or selecting from among existing answers. It is important to emphasize that the process of developing a questionnaire involves several steps, starting with problem definition and ending with analysis and interpretation.	11
Research	"Research" is defined as systematic study directed toward fuller scientific knowledge or understanding of the subject studied.	12
Research Design	The research design refers to the overall strategy that you choose to integrate the different components of the study in a coherent and logical way, thereby, ensuring you will effectively address the research problem; it constitutes the blueprint for the collection, measurement, and analysis of data.	13

Term	Definition	References
Research Misconduct	Fabrication, falsification, or plagiarism in proposing, performing, or reporting research, or in reporting research results. • Fabrication is making up data or results and recording or reporting them. • Falsification is manipulating research materials, equipment, or processes, or changing or omitting data or results such that research is not accurately represented in the research record. • Plagiarism is the appropriation of another person's ideas, processes, results, or words without giving appropriate credit. • Research misconduct does not include honest error or honest differences of opinion.	12
Statistical Significance	Attained when statistical procedure applied to a set of observations yields a p-value that exceeds the agreed level of probability which determines the null hypothesis will be rejected.	14
Significance Level	In statistical tests, statistical significance is determined by citing an alpha level, or the probability of rejecting the null hypothesis when the null hypothesis is true.	6

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For more information:

- FDA – NIH Clinical Research Working Group. (2024) "FDA – NIH Terminology for Clinical Research Glossary of Terms and Definitions." Draft. https://osp.od.nih.gov/wp-content/uploads/2024/05/Glossary-Terms-for-RFI_Final_Draft.pdf.

CPD Research/Peer-Reviewed Publications

JOURNAL RESEARCH ARTICLES

Includes research questions, methodology, original data, findings and implications from study and meet the criteria for empirical research.

1. O'Brien BC, Collins S, Haddock LM, Sani S, Rivera JA. More Than Maintaining Competence: A Qualitative Study of How Physicians Conceptualize and Engage in Lifelong Learning. *Perspectives on Medical Education*. 2024;13(1):380-391. DOI: 10.5334/pme.1327
2. Nyiringango G, Byungura JC, Fors U, Forsberg E, Tumusiime D. Online Learning Needs, Facilitators, and Barriers for Continuous Professional Development Among Nurses, Midwives, and Physicians in Rwanda. *International Journal of Africa Nursing Sciences*. 2023;18:100574. DOI: 10.1016/j.ijans.2023.100574
3. Al-Sheikhly D, Ali S, Navti PSM, Mahfoud ZR, Mattar L, Aboulsoud S, Khandakji M, Al Hakim L, Arayssi T. Self-Reported Preferences and Barriers to Continued Professional Development in Primary Care Physicians: A Cross-Sectional Web-Based Survey in Qatar. *BMC Primary Care*. 2023;24(1):273. DOI: 10.1186/s12875-023-02235-x.
4. Sandrone S, Stenfors T. Physician-Scientists' Perspectives on Key Factors, Emotions, and Feelings About Selecting and Attending Continuous Professional Development Events: A Mixed-Method Study. *BMC Medical Education*. 2024;24(1). DOI: 10.1186/s12909-024-06015-8.
5. Exploring Factors of Physicians' Preferences for Continuing Medical Education
   Authors: Goran Belojevic, Milica Jovanovic, and Jelena Milic
   Published: 2024
   DOI: 10.1186/s12909-024-06374-2
6. Does Continuing Professional Development Enhance Patient Care? A Survey of Irish General Practitioners
   Authors: Lisa Hynes, Carmel M. Hughes, and Tom Fahey
   Published: 2022
   DOI: 10.1186/s12909-022-03292-z

7. Cassidy D, Edwards M, Bruen C, Kelly M. Are We Ever Going Back? Exploring the Views of Health Professionals on Postpandemic Continuing Professional Development Modalities. *J Contin Educ Health Prof*. 2023;43(3):172–180.doi:10.1097/CEH.0000000000000482. https://pubmed.ncbi.nlm.nih.gov/36877815/
8. Sherman L, Aboulsoud SH, Leon-Borquez R, Ming K, Yang DYD, Chappell K. An overview of global CME/CPD systems. *Med Teach*. 2024;46(1):1-8. doi:10.1080/0142159X.2024.2373879. https://pubmed.ncbi.nlm.nih.gov/39012047/
9. Cheng C, Papadakos J, Umakanthan B, Fazelzad R, Martimianakis MAT, Ugas M, Giuliani ME. On the advantages and disadvantages of virtual continuing medical education: a scoping review. *Can Med Educ J*. 2023 Jun;14(3):41-74. https://doi.org/10.36834/cmej.75681
10. Cullen MW, Geske JB, Anavekar NS, McAdams JA, Beliveau ME, Ommen SR, Nishimura RA. Reinvigorating continuing medical education: Meeting the challenges of the digital age. *Mayo Clin Proc*. 2019 Dec;94(12):2501-9. https://doi.org/10.1016/j.mayocp.2019.07.004
11. Curtis MT, Diazgranados D, Feldman M. Judicious use of simulation technology in continuing medical education. *J Contin Educ Health Prof*. 2012 Sep;32(4):255-60. https://doi.org/10.1002/chp.21153
12. Davis DA, Thomson MA, Oxman AD, Haynes RB. Changing physician performance. A systematic review of the effect of continuing medical education strategies. *JAMA* 1995; 274(9): 700-5. https://doi.org/10.1001/jama.274.9.700
13. Davis D, O'Brien MA, Freemantle N, Wolf FM, Mazmanian P, Taylor-Vaisey A. Impact of formal continuing medical education: do conferences, workshops, rounds, and other traditional continuing education activities change physician behavior or health care outcomes? *JAMA*. 1999 Sep 1;282(9):867-74. https://doi.org/10.1001/jama.282.9.867
14. Mohd Tambeh SN, Yaman MN. Clinical reasoning training sessions for health educators: A scoping review. *J Taibah Univ Med Sci*. 2023 Jun 20;18(6):1480-92. https://doi.org/10.1016/j.jtumed.2023.06.002
15. VanNieuwenborg L, Goossens M, De Lepeleire J, Schoenmakers B. Continuing medical education for general practitioners: a practice format. *Postgrad Med J*. 2016 Apr;92(1086):217-22. https://doi.org/10.1136/postgradmedj-2015-133662

16. Voirol C, Pelland MF, Lajeunesse J, Pelletier J, Duplain R, Dubois J, Lachance S, Lambert C, Sader J, Audetat MC. How can we raise awareness of physician's needs in order to increase adherence to management and leadership training? *J Healthc Leadersh*. 2021 Apr 28;13:109-17. https://doi.org/10.2147/jhl.S288199

SCOPING OR SYSTEMATIC REVIEWS

1) Systematic reviews use a rigorous, structured pre-defined research method used to identify, evaluate, and synthesize all available evidence on a particular research question.

2) Scoping reviews use systematic rigorous mapping and summarizing of published research existing literature.

1. Davis DA, Thomson MA, Oxman AD, Haynes RB. Evidence for the Effectiveness of CME: A Review of 50 Randomized Controlled Trials. *JAMA*. 1992;268(9):1111–1117. doi:10.1001/jama.1992.03490090053016. https://pubmed.ncbi.nlm.nih.gov/1501333/
2. Cervero RM, Gaines JK. The Impact of CME on Physician Performance and Patient Health Outcomes: An Updated Synthesis of Systematic Reviews. *J Contin Educ Health Prof.* 2015;35(2):131–138. doi:10.1002/chp.21290. Wiley Online Library+1Lippincott Journals+1
3. Bloom BS. Effects of Continuing Medical Education on Improving Physician Clinical Care and Patient Health: A Review of Systematic Reviews. *Int J Technol Assess Health Care*. 2005;21(3):380–385. doi:10.1017/S0266462305050162.
4. Orlik W, Aleo G, Kearns T. Economic evaluation of CPD activities for healthcare professionals: A scoping review of published literature. *Med Educ*. 2022;56(12):1127-1135. doi:10.1111/medu.14815.
5. Boud D, Molloy E. Continuing professional development in the last decade – A scoping review. *J Interprof Care*. 2022;36(2):149-156. doi:10.1177/14779714221147297.

OPINION PIECES/COMMENTARY ARTICLES

Offer perspective discussing concept implications and philosophy, but not original data, methods, or findings from a study. Still valuable for valuable for context and professional reflection.

1. From CME to CPD: Getting Better at Getting Better?
   Author: C. du Boulay
   Published: 2000
   DOI: 10.1136/bmj.320.7232.393
   BMJ+3PubMed+3PubMed+3PubMed+13PubMed+13BioMed Central+13
2. Levinson W, Wong BM. Aligning Continuing Professional Development with Quality Improvement: A Model for Clinician Engagement. *CMAJ*. 2021;193(18):E647–E648. doi:10.1503/cmaj.202797. PubMed.
3. Continuing Medical Education and Continuing Professional Development: International Comparisons
   Authors: C. Peck, M. McCall, B. McLaren, and T. Rotem
   Published: 2000
   DOI: 10.1136/bmj.320.7232.432PubMed+1BioMed Central+1
4. Pott MO, Blanshan AS, Huneke KM, Baasch Thomas BL, Cook DA. Barriers to identifying and obtaining CME: a national survey of emergency medicine physicians. *BMC Med Educ*. 2021;21(1):491. doi:10.1186/s12909-021-02595-x
5. Marinopoulos SS, Dorman T, Ratanawongsa N, et al.Effectiveness of continuing medical education.
   Evid Rep Technol Assess (Full Rep). 2007;(149):1-69
   https://pubmed.ncbi.nlm.nih.gov/17764217/

CONFERENCE POSTERS/PRESENTATIONS

Concise, visual summaries of preliminary research, program evaluations, or ongoing work presented at events to encourage feedback and discussion.

1. Lorenzetti D, Navti P, Al-Sheikhly D, Mattar L. Developing a team-based learning CPD program in Qatar: key learnings from a pilot workshop. Presented at: ACCME 2023 Meeting: Learn to Thrive; 2023; Chicago, IL.
2. Lamri Z, Al-Sheikhly D, Navti P. Optimizing CPD format and reach for healthcare practitioners in Qatar: key learnings from our participant survey. Presented at: ACCME 2023 Meeting: Learn to Thrive; 2023; Chicago, IL.

3. Navti P, Hamad A, Al Zaidan M, Al-Sheikhly D, Mattar M. Utilizing an interprofessional CPD approach to optimize medication safety in outpatient and primary care settings. Presented at: ACCME 2022 Meeting: Learn to Thrive; 2022; Chicago, IL.
4. Mahfoud Z, Al-Sheikhly D, Navti P, Mattar L, Healy M. Establishing a certificate in the analysis of medical data: process, results and feedback. Presented at: ACCME 2021 Online Conference; 2021.
5. Rueb M. Developing a conceptual framework on learning in the cinemeducation course M23 cinema: a mixed-methods study. Presented at: AMEE 2024 Conference; August 2024; Basel, Switzerland
6. Chan P, Yam J, Brelén M, et al. Evaluating medical students' acceptance and knowledge retention of a flipped-classroom case-learning module in ophthalmology education – a randomised trial. Presented at: AMEE 2024 Conference; August 2024; Basel, Switzerland
7. Buxton N, Metters E.Using humanities to foster insight, understanding and meaningful reflection within a classroom-based Primary Care module. Presented at: AMEE 2024 Conference; August 2024; Basel, Switzerland