



## COMMENTARY

## Paradigms of approaches to research

Tanvir C Turin<sup>1</sup> | Mohammad M H Raihan<sup>2</sup> | Nashit A Chowdhury<sup>3</sup> <sup>1</sup>Department of Family Medicine, Cumming School of Medicine, University of Calgary, Calgary, Alberta, Canada.<sup>2</sup>Department of Community Health Science, Cumming School of Medicine, University of Calgary, Calgary, Alberta, Canada.<sup>3</sup>O'Brien Institute of Public Health, Cumming School of Medicine, University of Calgary, Calgary, Alberta, Canada.

A paradigm is a set of assumptions, theories, or beliefs that serve as the foundation of concepts (like identity) or institutions (like religion). It is a way of looking at something, a standard, perspective, or set of ideas that shapes how we think about and understand the world around us. The term "paradigm" was first formalized by Thomas Kuhn in his 1962 book "The Structure of Scientific Revolutions."<sup>1</sup> Paradigms can be found in many areas of life, including our everyday life. For example, the paradigm of a "good citizen" is a set of assumptions and expectations that help us understand what it means to be a good citizen and how to behave in that role.

**What is a research paradigm?**

Research paradigm comprises fundamental beliefs, assumptions, and ways of thinking that guide researchers in their work and studies.<sup>2</sup> Acting as a lens or framework, a research paradigm enables researchers to understand and interpret the world around them. This encompasses the worldview or philosophical stance guiding the research process, including hypothesis formulation, research design, data collection, and analysis. Ultimately, a research paradigm shapes research processes from problem identification and formulating the research questions to the methods employed to find answers and interpret results.

**Overview of major research paradigms**

Common research paradigms include positivism<sup>3</sup> (focuses on objective, quantitative methods), interpretivism<sup>4</sup> and constructivism<sup>5</sup> (focuses on subjective, qualitative methods), pragmatism<sup>6</sup> (using

**HIGHLIGHTS**

1. A research paradigm is a framework that guides how research is conducted, based on assumptions about reality (ontology), knowledge (epistemology), and methodology.
2. Major paradigms include positivist paradigm (objective, quantitative), interpretivist or constructivist paradigm (subjective, qualitative), pragmatist paradigm (mixed methods), and critical paradigm (challenging status quo).
3. Knowing these paradigms is crucial as they shape the entire research process - from formulating questions and selecting methods to interpreting findings.

mixed methods to best address the research problem), as well as critical theory<sup>2</sup> (aims at critiquing and changing societal structures through the identification of power dynamics and inequalities) (FIGURE 1). Each of these paradigms offers a different perspective on research and is characterized by philosophical assumptions<sup>3</sup> about the nature of reality (ontology), the nature of knowledge (epistemology), and the appropriate methods for acquiring knowledge (methodology).

**Positivist paradigm**

Positivism is a paradigm that assumes an objective, singular reality that can be measured and observed empirically.<sup>3</sup> According to positivist paradigm, reality is independent and exists separately from human perception. It is also believed that knowledge is derived from direct observations and experiences, and which can be done applying quantitative methods including testing hypotheses and determining cause-and-effect or dose-response relationships.

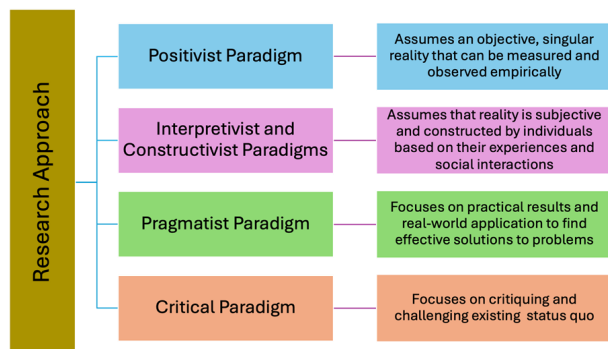


FIGURE 1 Overview of major research paradigms

For example, researchers may plan a study to investigate the effectiveness of a new drug in lowering blood pressure levels. The researchers would adopt a positivist paradigm, assuming that there is an objective reality regarding the drug's efficacy that can be measured through quantitative methods, such as a randomized controlled trial. The study would involve collecting numerical data (e.g., blood pressure readings) and analyzing it using statistical techniques to determine if the drug has a significant effect on lowering blood pressure compared to a placebo or existing treatment.

### ***Interpretivist and constructivist paradigm***

Interpretivist and constructivist paradigms assume that reality is subjective and socially constructed by individuals based on their experiences and social interactions.<sup>4, 5</sup> Researchers operating within these paradigms seek to understand the complex and multiple perspectives of individuals or groups, often using qualitative methods. Constructivism and interpretivism share the same ontology - they both believe that there are multiple realities that are socially constructed by individuals through their experiences and interactions.<sup>9</sup> However, they differ in their epistemology - interpretivism focus on understanding how individuals experience and interpret their reality, while constructivism focus on how individuals construct their own realities through interactions with others.<sup>4, 5, 9</sup> Additionally, both interpretivism and constructivism are qualitative research paradigms in terms of their research methodology.<sup>9</sup>

For example, a study will be exploring the “experiences of patients” living with chronic pain. The researchers would adopt an interpretivist paradigm, acknowledging that the experience of chronic pain is subjective and shaped by individual perceptions, beliefs, and social contexts of the patients from whom data are being collected. The study might involve conducting in-depth interviews or focus groups with patients to gain a rich understanding of their lived experiences, coping strategies, and the meanings they attribute to their condition. The researchers would aim to interpret and construct knowledge based on the participants' perspectives and narratives.

The same topic can be studied from a different angle such as the study will be exploring “how individuals construct their understanding of chronic pain”. The researchers would adopt a constructivist paradigm, acknowledging that individuals construct their own understanding of chronic pain through their experiences, interactions, and social contexts. The study might involve conducting in-depth interviews or focus groups with individuals who have experienced chronic pain, asking open-ended questions about their experiences, coping strategies, and the meanings they attribute to their condition. The researchers would aim to understand how individuals construct their own knowledge and meaning about chronic pain, and how these constructions are shaped by their social and cultural contexts.

It's important to comprehend that the ontological assumptions underlying the examples provided above are subjective in nature. Both the interpretivist and constructivist paradigms acknowledge that the experience of chronic pain is shaped by individual perceptions, beliefs, and social contexts. The researchers are interested in understanding both the subjective experiences of patients living with chronic pain (interpretivist paradigm) and how individuals construct their own understanding of chronic pain (constructivist paradigm). Also, both the examples are well-suited to the qualitative methodology for in-depth exploration of chronic pain as a complex and multifaceted phenomenon.

**Pragmatist paradigm**

Pragmatist paradigm focuses on practical results and real-world application of research to find effective solutions to problems.<sup>6</sup> Pragmatism is not bound by a single philosophical stance but adopt a flexible approach, using a combination of quantitative and qualitative methods to address the research problem most effectively.

For example, a study evaluating the implementation and effectiveness of a community-based intervention program for promoting healthy lifestyles is being planned. The researchers would adopt a pragmatic paradigm, acknowledging that the success of the intervention depends on both objective outcomes (e.g., changes in health indicators) and subjective experiences (e.g., participant engagement, cultural relevance). The study might involve collecting quantitative data (e.g., biometric measurements, survey responses) and qualitative data (e.g., focus groups, observations) to assess the program's impact and identify areas for improvement. The researchers would prioritize practical solutions and recommendations for enhancing the intervention's effectiveness in real-world settings.

**Critical paradigm**

Critical paradigm focuses on critiquing and challenging existing power structures, inequalities, and social injustices.<sup>7</sup> Researchers operating within this paradigm seek to uncover and address issues of oppression, marginalization, and domination, often using a combination of qualitative and quantitative methods.

For example: a study will be examining the disparities in access to healthcare services among marginalized communities. The researchers would adopt a critical theory paradigm, acknowledging that healthcare inequalities are rooted in broader social, political, and economic structures that perpetuate oppression and marginalization. The study might involve collecting both quantitative data (e.g., healthcare utilization rates, socioeconomic indicators) and qualitative data (e.g., interviews with community members, healthcare

providers, and policymakers) to understand the complex interplay of factors contributing to these disparities. The researchers would aim to critique and challenge the existing power dynamics and advocate for systemic changes to promote equitable access to healthcare.

**Why is understanding research paradigms so crucial?**

Research paradigms provide a framework for the research process, guiding data collection, analysis, and interpretation. They influence how researchers understand knowledge and how it can be acquired. For instance, a positivist paradigm emphasizes objective measurements and statistical analysis, while an interpretivist paradigm acknowledges multiple realities and focuses on qualitative measures. The choice of paradigm significantly impacts the conclusions drawn from the research and is crucial for reproducibility and evaluation. Being aware of the paradigm enhances the clarity and integrity of the work, allowing researchers to articulate their methodological choices and defend their findings effectively.

Additionally, being aware of the paradigm that guides one's research enhances the clarity and integrity of the work. It allows the researcher to articulate the rationale behind their methodological choices more effectively to their peers, which is essential for the reproducibility and evaluation of the research. For example, understanding whether the approach is grounded in positivism, with its emphasis on quantifiable data, or in constructivism, which embraces subjective interpretation, will affect how others interpret and value the findings. Lastly, the paradigm a researcher chooses can also reflect their personal beliefs and biases, which can significantly influence the research. Being conscious of these influences allows researchers to critically assess their own work and mitigate any biases that might skew the research outcomes. It also prepares researchers to defend their methodological choices and findings effectively, whether in academic discussions, grant applications, or publications.

## Conclusion

When researchers want to study something, they need to decide on their approach, perspective, or research paradigm upfront. As we can see there are different research paradigms to choose from, and the one researcher selects shapes everything about their study - the questions they ask, the methods they use to find answers, and how they interpret the results.

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## Conflict of interest

We do not have any conflict of interest.

## Ethical approval

Not applicable

## Data availability statement

Not applicable.

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