

Epidemiologic Methodology in Primary Health Care: the Constructive Imagination

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Abstract

Primary care care has its own characteristics that lend specific nuances to the epidemiological experience. Family doctors/general practitioners are in a unique position that allows them to develop epidemiological intelligence for characterizing actors at the local level, combining individual, family, and community care, and utilizing both quantitative and qualitative data

Keywords: research methodology; research design; general practice

Introduction

Primary care care has its own characteristics that lend specific nuances to the epidemiological experience. Family doctors/general practitioners are in a unique position that allows them to develop epidemiological intelligence for characterizing actors at the local level, combining individual, family, and community care, and utilizing both quantitative and qualitative data (1). The fundamental aim of research is to generate new knowledge that is sufficiently robust to have a fundamental impact on the nature of daily practice (2). However, there is a lack of contributions that offer imaginative and relevant practical elements for the novice researcher, especially in primary health care. Some of these elements that researchers should consider are:

Methods serve the question, not the other way around

The true starting point of an epidemiological research study is "What do I need to know?" The research question (what?, why?) determines the best method, not the other way around, to ensure that your study has a clear purpose and relevance. Research methods and designs can be superfluous if we don't know what we want to investigate, because they only regain their true meaning when we have clarity about our research objectives. The initial question of "What method or design should I use in the study?" is incorrect. The initial question should be, "What do I need to know and why?" Only when we have answers to "What is the best way to collect that information?" and "Once I have that information, what will I do with it?" can we decide on the method or design. Methods are selected because they provide the data needed to complete the study. That is, the method that best suits the particular purpose of the study (and that is feasible) is chosen (3).

It must be acknowledged that there are diverse forms of evidence

Preliminary work is required before any research to identify the most appropriate methods for generating it. This is particularly important in

primary health care. The current tendency to consider quantitative and objective procedures superior to subjective and qualitative ones is erroneous. It overlooks the fact that the subject and form of research are based on the scientist's philosophical assumptions, and that theories and methods create the data. Every research approach is inherently qualitative and subjective. Decisions regarding the line of research, the definition of the problem, the selection of instruments, the choice of data collection methods, and the interpretation of these are a subjective process determined by the researcher's context (4).

Conventional quantitative-objective medical research only has methods for measuring separate parts of the whole; however, the study of the body is the study of the individual's wholeness in relation to their context, which is what defines primary health care (5). It is necessary to develop certain technical and pragmatic aspects of the Biopsychosocial model to facilitate the integration of comprehensive data within the medical framework. This requires considering qualitative research and observational techniques (4).

Both qualitative and quantitative research are useful sources of evidence. In clinical practice, qualitative research is particularly useful for providing relevant and contextualized evidence that allows for understanding information in complex situations with patients who are not suitable for randomized clinical trials, or where there is no prior systematic knowledge, and it is necessary to understand the phenomenon within its context and with the implications of that context (something that quantitative research does not consider).

Qualitative research is a viable form of evidence and also illustrates how our traditional assumptions about evidence fail to consider the implications of context, meanings, and clinical practice. Research arises from or is initiated by situations observed in daily healthcare practice. We must focus on

concrete facts and learn to interpret them in their interactions and different dimensions, not simply apply a pre-established theory.

It is worth remembering that the "research question," while stemming from the real human context, cannot be investigated in isolation. Therefore, its answer requires both quantitative and qualitative methodologies, but these are not applied sequentially; rather, they are applied interactively and iteratively. The same could be said of information gathering and knowledge interpretation (6).

Focusing on unresolved problems

Identifying gaps or outstanding issues provides inherent value, transforming research into a practical contribution and a stimulating challenge for the researcher. An important aspect of choosing research is focusing on problems that remain unresolved. Great research is not just the delivery of data; it is a catalyst that generates new thoughts, challenges assumptions, and urges readers to connect the concepts of the study with their own knowledge, making science a dynamic interaction rather than a passive reception of facts, effectively "activating" our brains. The function of "intellectual catalyst" is emphasized, where the reader's interpretation meets the researcher's intention, giving rise to emergent knowledge beyond the original scope, making science a source of personal intellectual growth. Good science is not just information; it is a reaction that mobilizes our own cognitive resources, forcing us to think, question, and build new connections (7).

The Bibliography as a Foundation

Knowing the existing literature prevents reinventing the wheel, contextualizes the work, and reveals gaps, but it shouldn't paralyze us when starting. We must consider how much bibliography we need to know before beginning the research. Let's avoid being overwhelmed by what has already been written, so as not to lose the invaluable gift of independent judgment and be able to find something completely original. But, at the same time, we shouldn't begin any research without having all the relevant literature at hand, to avoid the painful disappointment of realizing we've wasted time rediscovering familiar things and neglecting the study of the true gaps in the topic.

Inspiration from Practice and Nature

Observing the real world, daily work, and nature provides rich and authentic sources of research ideas, grounding the study in tangible reality. Thinking about the topic of study is about searching for a new fact; it is often the fruit of patient and tenacious observation and experience with the chosen subject. It's about being open-minded and grounded in practice. Starting from observation, it provides us with surprise, enthusiasm, and emotion—the driving forces of constructive imagination. It's about practicing curiosity. (6, 8). And following our first thoughts, not our second. When there is no time for true deliberation, it is generally safer to act on our first ideas than on our second. For the former tend to focus on the greatest probabilities and the most important points of the case; the latter on some minor matter that qualifies and limits them (9).

To be humble

When we find ourselves faced with several equally favorable and fruitful topics, we will choose the one whose methodology is perfectly familiar to us and for which we feel the most affinity. Moreover, let us not be megalomaniacal. Let us be humble from the beginning; let us first address the small issues, and then, if success smiles and our strength grows, tackle the large ones (7).

Hypotheses should be tentative propositions that connect variables

The hypotheses of a research study are the central guide for focusing data collection and methodology. They must be clear, testable, measurable, and

grounded in theory, allowing for the discovery of new knowledge. Research hypotheses are not a "hunch," as they are based on prior knowledge (7).

Significance tests are more holistic, intuitive, and powerful than statistics

Data analysis should be transformed into a process of storytelling and theory building, not just a yes/no decision-making machine. It is important to highlight a shift from rigid null hypothesis significance tests towards richer and more integrated statistical approaches (process/data visualization, model comparison) to better guide research, especially when effects are clear (as in groundbreaking work like Jenner's (smallpox) or Lind's (scurvy), where the effect was clear, so detailed statistical testing wasn't necessary; visual data or a simple comparison was sufficient to convince, emphasizing that powerful imagery and simple designs can outperform complex statistics in obtaining obvious findings, going beyond p-values to understand how things work. Remember that when you want to think clearly, you must start by writing down your arguments for and against, as Robinson Crusoe did (10).

A key concept in qualitative and phenomenological research: the peak (or transcendent, exceptional) experience

This is that "out-of-the-ordinary" moment sought in studies, not only to describe facts, but to capture An "imaginative core or profound meaning" that goes beyond the average and reveals the essence of a human phenomenon or a process of understanding, giving meaning to the lived experience. What is interesting in research is not the average or most common result, but the unusual. There may be more to discover about that small 5% that falls outside the average than about the rest. This is the concept of peak experience. It's also important to consider that what research studies seek is "something that helps us understand something": an imaginative core.

Avoiding passivity and a lack of intellectual curiosity in professional practice: Routine vs. Innovation

Professionals who, despite years of experience and thousands of observations (clinical cases), do not add anything new to existing knowledge can be criticized. They simply replicate what they have learned from books without questioning or innovating. Truth and innovation arise not only from formal and structured experiments, but also from simple, attentive, and reflective observation of daily practice (11).

In short, epidemiological research in primary health care should be distinguished by its constructive imagination: the active and deliberate use of imagination to construct new ideas, solve problems, or understand complex issues, as distinct from the simple passive evocation of images or repetition of research (reproductive imagination). For example, constructing a novel hypothesis from different fragments of data. It involves the mental manipulation of concepts, the development of hypotheses and the exploration of possibilities, present in different scientific and artistic fields and the resolution of everyday problems, allowing one to visualize, rethink and build meaning beyond direct experience.

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