

Reconsidering the Use of "Cross-Sectional Retrospective Study"

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Abstract

Precise methodological terminology is essential for the validity, interpretation, and reproducibility of scientific research. The term "cross-sectional retrospective study" has increasingly appeared in the medical literature, although its interpretation remains inconsistent and may introduce conceptual ambiguity. A PubMed search identified more than 13,000 publications using the terms "cross-sectional retrospective study" or "retrospective cross-sectional study". Cross-sectional studies are designed to estimate prevalence or assess exposures and outcomes at a single point in time without temporal follow-up, whereas retrospective approaches generally involve backward temporal inquiry or the use of pre-existing data. Although this issue has previously been discussed in the methodological literature, the terminology continues to appear frequently in published studies. This commentary further examines the conceptual distinction, discusses possible sources of ambiguity, provides additional clarification, highlights the potential consequences of imprecise terminology, and encourages the use of clearer alternative expressions.

1. Introduction

Clear research methodology is an integral component of scientific validity. Accurate classification of study designs is essential for appropriate interpretation, comparison, and critical appraisal of research findings [1,2]. Despite established definitions in epidemiology, the terms "retrospective cross-sectional study" and "cross-sectional retrospective study" continue to appear in published literature. PubMed searches identified 13,607 publications using these expressions up to late 2025, including 2,421 publications during 2025 alone, despite prior methodological discussions critiquing this terminology [3]. This persistent usage suggests continuing ambiguity in methodological reporting.

Closer examination indicates that the terminology may confuse study design with data source or temporal orientation. In this commentary, the conceptual issues surrounding this terminology are examined, potential sources of confusion are discussed, and clearer alternative terminology is proposed.

Cross-sectional studies are primarily used to estimate prevalence and assess associations between exposures and outcomes measured at a single point in time [4]. In this design, associations may be identified, although causal relationships generally cannot be inferred [5]. Cross-sectional studies are observational in character

and may be either descriptive or analytical. A cross-sectional study is an observational research design that does not involve either prospective or retrospective follow-up of participants [6].

Studies are often categorized as prospective or retrospective, although these terms have been defined in several different ways in epidemiologic literature. According to one definition, retrospective studies are characterized by the use of existing data collected for purposes other than the current research question a concept closely related to secondary data use. Whereas retrospective studies have also been defined as involving backward temporal inquiry into prior exposures or events to evaluate their association with an outcome that has already occurred [7-9]. Multiple definitions exist, and this multiplicity itself causes ambiguity. Thus, the term "retrospective" lacks conceptual uniformity and has been applied to different methodological dimensions, including the timing of data collection, the temporal direction of inquiry, and the source of data. As a result, the term may be interpreted inconsistently across methodological traditions and therefore may introduce ambiguity when combined with other study design classifications.

This variability in terminology likely causes the frequent use of the term "cross-sectional retrospective study," particularly when investigators analyze hospital records, national surveys, or other

previously collected data.

In such situations, the historical nature of the data source may be interpreted as implying a retrospective design, even when the methodological structure remains cross-sectional.

Some researchers may use the term to communicate both the cross-sectional nature of the measurements and the historical origin of the data source. The concern is not that all uses of the term are necessarily incorrect; rather, the term has been interpreted differently across methodological traditions, which may contribute to ambiguity in study classification and reporting. Although some researchers use the term “retrospective cross-sectional study” to indicate the use of pre-existing data, this terminology may introduce ambiguity regarding the temporal structure of the investigation. Longitudinal studies generally involve repeated measurements over time, whereas cross-sectional studies assess variables at a single point in time without evaluating changes over time [10].

For greater conceptual clarity, it may be useful to distinguish among separate methodological dimensions of study classification. Categories within a given framework are generally mutually exclusive, although a single study may simultaneously belong to categories derived from different frameworks. This is analogous to clinical classifications in which an individual cannot simultaneously be hypertensive and normotensive, although the same individual may be both hypertensive and diabetic. Similarly, a study may be cross-sectional and use either primary or secondary data; though, it cannot be classified as both cross-sectional and retrospective within the same temporal framework.

The misuse or inconsistent use of study design terminology may complicate peer review, literature searching, and critical appraisal, particularly for readers attempting to evaluate methodological validity. When authors combine conflicting terms, their papers risk being misclassified, making them functionally invisible to systematic reviewers conducting formal evidence synthesis. Furthermore, repeated use of ambiguous terminology may contribute to misunderstanding among students and early-career researchers and may hinder reproducibility, replication, and comparison across studies.

2. Recommendations

To improve methodological clarity and consistency in the medical literature, several measures should be adopted by authors, reviewers, editors, and educators. Researchers should clearly distinguish among study design, temporal direction of inquiry, and data source when describing observational studies. The use of pre-existing databases, medical records, or electronic health records should not automatically justify labeling a study as “retrospective” when its methodological structure is fundamentally cross-sectional.

Additionally, “retrospective” lacks conceptual uniformity in epidemiology. The term is variously applied to the timing of data

collection, the source of the data, or the direction of inquiry. Yet, the age of a dataset does not alter the fundamental structure of a study design. A cross-sectional study remains cross-sectional regardless of when the data were collected. This ambiguity underscores the need for a classification framework based on independent, clearly defined features rather than a single composite label.

Replacing the term “cross-sectional retrospective study” with terminology that explicitly reflects both the cross-sectional design and the source of the data may be more appropriate. Alternative expressions such as “cross-sectional study using secondary data,” “cross-sectional study based on existing records,” and “secondary-data cross-sectional study” have already appeared in the literature and may provide a more precise description of the study methodology.

Journal editors and peer reviewers should promote methodological clarity by encouraging consistent epidemiologic terminology. In addition, training programs in epidemiology and research methodology should emphasize the distinction among study design, data source, and temporal direction of inquiry to reduce persistent ambiguity among future researchers. Further methodological research is also needed to evaluate how ambiguous terminology affects database indexing, literature retrieval accuracy, and evidence synthesis.

3. Conclusion

The term “cross-sectional retrospective study” may introduce conceptual ambiguity because it combines terminology derived from different methodological dimensions. Cross-sectional studies are defined primarily by the simultaneous assessment of variables at a single point in time, whereas the term “retrospective” refers to backward temporal inquiry or the use of previously collected data. Adopting more explicit terminology such as “cross-sectional study using secondary data” may improve methodological clarity, enhance reporting transparency, facilitate accurate indexing, and strengthen the overall quality of published medical research.

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