A methodological limitation refers to a flaw, constraint, or shortcoming in the design, implementation, or analysis of a study that may affect the validity, reliability, or generalizability of its results. These limitations can arise from various sources and may impact how confidently the findings can be interpreted or applied.

Common Types of Methodological Limitations: Sample-related

Small sample size

Non-representative sample

Selection bias

Measurement-related

Use of unvalidated or unreliable instruments

Subjective measurements or self-report bias

Inconsistent data collection

Design-related

Lack of control group or randomization

Inadequate blinding

Cross-sectional design (limits causal inference)

Statistical limitations

Insufficient power

Multiple comparisons without correction

Inappropriate statistical tests

Temporal limitations

Short follow-up period

Timing of data collection may not capture the relevant effects

External validity issues

Context-specific findings that may not generalize to other populations, settings, or times

Confounding and bias

Uncontrolled confounding variables

Observer or confirmation bias

Example in a sentence: "A key methodological limitation of the study is the lack of a control group, which hinders the ability to attribute observed changes solely to the intervention."

Let me know if you'd like a list tailored to a specific study or field (e.g., neurosurgery, psychology, AI).

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