

Research designs starting from effects

Los diseños de investigación a partir de los efectos

Virgilio Lima-Gómez

Academia Mexicana de Cirugía, Ciudad de México, México

In situations of contingency, prospective research projects may be interrupted, leading to a lower research productivity. When things come back to normal, one option is to develop retrospective studies focused on the experience gained. It is not unusual to have reports on the management of diseases under adverse conditions, whose primary value lies in sharing the lessons learned.

One strategy to optimize the information obtained in retrospective trials is to approach them from the events perspective, searching for variables associated with a particular outcome. These studies aim to identify a probable cause based on an observed outcome [these are known as case-control studies (or referential studies)]. Their objective is to identify associations and the strength of these associations. While they do not provide evidence of causality, they allow us to identify variables that should be evaluated in prospective designs.

Critics argue that these designs do not work with parametric variables and that their measurements are not standardized. However, they offer more valuable information than correlation among variables whose strength of association has not been measured. When this strength of association is consistent, it indicates variables with more chances of impacting the outcome, and their longitudinal evaluation will reveal the presence, or not, of causality.

The analysis of these studies reflects on the possible association between several variables through

simple tests (such as the chi-square test) and the strength of the association using odds ratios. When the latter indicates a clinically significant difference, 95% confidence intervals reveal whether the strength of the association is consistent, either for or vs the outcome. In the presence of multiple variables with a high and consistent strength of association, multivariate analysis helps identify those that contribute the most to the outcome.

A case-control design alone might not be enough to change the routine clinical practice. However, its results provide relevant information for planning cohort studies. In diseases with short-term outcomes, postoperative evaluation, or trauma contexts, the results of these designs add value, especially in repetitive cycles and with often unfavorable outcomes. There is still much to learn from variables associated with outcomes in various medical and surgical areas, especially when resources for care (and research) are scarce. In restricted scenarios, effect-based studies can improve proposals for therapeutic intervention and their availability can strengthen decision-making in all specialties.

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Conflicts of interest

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Correspondence:

Virgilio Lima-Gómez

E-mail: forscher7@gmail.com

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