

Letter to the Editor

Methodological review: association study in gastroenterological surgery

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Dear editor:

In an article published recently in your review, Vargas et al. conducted an investigation into factors associated with the conversion of laparoscopic cholecystectomy (LC) into an open procedure. (1) The research contributed important information about factors such as age and leukocytosis that contribute to failure of procedures such as cholecystectomies to that they become open surgeries. This research was conducted with the intention of contributing to reports on factors that contribute to taking measures during performance of elective surgery such as laparoscopic cholecystectomies.

However, the article's, materials and methods section mentioned a descriptive study and in the statistical analysis performed it was indicated that bivariate relative risk (RR) tests were applied. These tests aimed to determine risk factors for conversion of laparoscopic surgery to open surgery. These details of the investigation deserve to be discussed.

First, when a descriptive study is mentioned, the use of bivariate RR should not be included since the RR is defined as a ratio between two probabilities or two risks so that the concept of risk is equivalent to the concept of epidemiological incidence which is feasible only for prospective studies (which differ from the article in question). Its use is restricted to randomized controlled trials and cohort studies (2).

In this way, it would connote an analysis that measures the prevalence ratio (PR) for this type of studies. In a cross-sectional study, the sample is selected without a priori knowledge of the condition of each subject regarding the exposure and the event of interest. For this reason, it does not measure causality. Therefore, once the sample is selected, the study proceeds to determine whether the condition of each subject is exposed or not exposed to the presence or absence of the event of interest, measuring both variables simultaneously. (2, 3) Cross-sectional studies do not allow calculation of incidence rates since they lack a sense of prospective observation, therefore it is methodologically incorrect to try to calculate RR as a measure of effect. (2)

Second, the article also said, "... patients with ages over 50 years have a 55% higher risk of having LC converted into open surgery (odds ratio [OR] = 0.55)." (1) In addition, it has been observed that the aforementioned research has a random convenience sample of 59 clinical histories. However, the article indicates that the use of odds ratios (OR) is compatible for case and control studies which use a methodology that is different from

one presented in the article, as well as previously indicating that there was an analysis of bivariate RR. (2)

Another detail to highlight relates to interpretation of results by the authors of this study. Despite the fact that it is a descriptive study, they evaluate risk instead of only determining an association among factors without determining causality of those factors. This is why there are several sections within the results that emphasize, "... ages have 55% higher risk ... (odds ratio [OR] = 0.55) ..." and "... leukocytosis has a 40% higher risk of being converted (OR = 0.40) ...", but instead of signifying risk factors, these should be protective factors with respect to their research. The authors interpreted that those who are over 50 years old are 45% less likely to have a conversion from CL to open surgery and that those who have leukocytosis are 60% less likely to have a conversion from a laparoscopy to open surgery.

For interpretation of OR corresponding to division when presenting two interventions with equivalent risks, the odds should be the same and the OR should be equal to one. Therefore, the farther away the OR is from one, the greater or smaller its magnitude will be, and the magnitude of the effect will be greater than its value. (4) OR has been used in the medical literature due to its usefulness for estimating the relationship between two binary variables and because of the fact that it allows evaluation of the effects

that other variables have in that relation by means of logistic regression methods. (5)

For the above, an inadequate interpretation could lead the reader to an erroneous view. Since there is no clear support to establish adequate methodology, it is recommended that these statistical and methodological considerations be taken into account.

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Response to the letter to the Editor

Methodological review: association study in gastroenterological surgery

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Respected editor:

In response to the letter to the editor entitled “Methodological Review: Association Study in Gastroenterological Surgery” in which several appreciations and corrections were made with respect to the article entitled “Factors Associated with Conversion of Laparoscopic Cholecystectomy to Open Cholecystectomy” which we authored and which was published in Volume 32 Issue No. 1 of 2017, we would like to explain each point mentioned in the letter.

As mentioned in the letter to the editor, relative risk (RR) is found among measures of association. It is defined as the quotient of two probabilities or two risks, so the concept of risk is equivalent to the epidemiological concept of *incidence* which is feasible only for prospective studies (which differ from the article in question). This is the reason it is restricted from use in randomized controlled trials and cohort studies. (1, 2) However, this concept was used in our study since we had two groups: one group which had been exposed to the aforementioned risk factor and the other group which had not been exposed. It should be mentioned that the association measure that best fits in this case, and whose use might have avoided the error, is a prevalence ratio (PR). This is defined as the ratio of the proportion of the persons with disease over the proportion with the exposure. (3)

As mentioned in the article, the odds ratio (OR) is improperly analyzed since, when a value is less than 1, it should be considered not as a risk factor but, to the contrary, as a protective factor. (4) This is in addition to the fact that this association measure should not have been used in our study (5).

For these reason, we apologize for the errors, accept the suggested corrections, and will take them into account in further development of our study. In addition, if the editor considers it convenient, we can send a revised version of the text originally sent.

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