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The inclusive use of effect size conversion and Bayes factor in digestive disease research

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Conflict of interest: the authors declare no conflict of interest.

Dear Editor,

In number 1 of volume 113 of this journal, one important article was published that evaluated statistically significant association ($p < 0.05$) using the Odds Ratio (OR). The research evaluated a relationship between the of the C-reactive protein (CRP > 100) and the histological diagnosis of gangrenous acute cholecystitis in patients with who underwent cholecystectomy (OR = 3,1). (1)

The replication of clinical investigations based on tests of significance is recommended to generate more credible evidence in the area of health sciences. The Bayes factor is the ideal method to evaluate beyond the dichotomous interpretation of the rejection or acceptance of the null hypothesis, since it quantifies the value of evidence or certainty in which the data support the alternative hypothesis in relation to the null hypothesis (alternative hypothesis vs null hypothesis) (2, 3). Their utility is essential for statistical inference in frequent estimation tests (for example, correlation analysis or statistical test of comparison of student t means). In addition, when significant findings are available, the Bayesian model is considered a methodological alternative for statistical replication (2, 3) based on the Jeffreys classification scheme (4): weak, moderate, strong, very strong and extreme (table 1).

The objective of this letter was to report example of Bayesian reanalysis, based on the significance values, the OR estimates were converted to correlation coefficients (r = 0,298) using an online calculator (5), in turn the sample data of both were considered.

The Bayes factor consists of two interpretations: BF_{10} (in favor of the alternative hypothesis) and BF_{01} (in favor of the null hypothesis) and the credibility interval given the data. The results obtained using the Bayes factor are BF_{10} = 7,216 and BF_{01} = 0,139 and IC [0,095 to 0,470], with regarding the finding significant (evidence moderate), which was reported by Díez et al. (1).

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Table 1. Quantifiable interpretation values of the Bayes factor

>30	Very strong	Alternative hypothesis
10-30	Strong	Alternative hypothesis
3,1-10	Moderate	Alternative hypothesis
1,1-3	Weak	Alternative hypothesis
1	0	No evidencia
0,3-0,99	Weak	Null hypothesis
0,3-0,1	Moderate	Null hypothesis
0.1-0,03	Strong	Null hypothesis
<0,03	Very strong	Null hypothesis

Note: Own creation according to the Jeffreys classification scale

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