Letter to the editor: topical debate, P -values should not be used for decision making in the practice of clinical medical physics

Parminder S. Basran¹

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Dear Editor,

I wish to address the definition of p -values, which I misstated in my piece [1]. I made an unfortunate editing error which risks perpetuation of an incorrect definition, and I wish to correct this on the record.

I wrote:

The p -value is the probability of an effect or association (hereafter collectively referred to as ‘effect’) and is most often computed through testing a (null) hypothesis like “the mean values from two samples have been obtained by random sampling from the same normal populations”. The p -value is the probability of this hypothesis.

I made an editing error, which every writer fears will happen sooner or later. Mine was to miss inclusion of the word “not.” The p -value is **not** the probability of this hypothesis. My goal was to try to define or identify a common misunderstanding of the value. Instead, the result was that the final sentence of my piece was false. Further, it effected the direct

opposite of my general goal as a scientist: It promulgated an incorrect definition, and for a subject where heated opinions can be held. A correct interpretation, as my debater suggests, is probability of getting a result equal to or more extreme than the observed result.

I hope that this erroneous statement does not distract from my point in this opinion piece: there is value in considering alternative statistical tools when practicing clinical medical physics. I apologize for any confusion or misunderstandings this might have caused.

Reference

1. Basran P, Palma G, Baldock C (2021) P -values should not be used for decision making in the practice of clinical medical physics. Phys Eng Sci Med. <https://doi.org/10.1007/s13246-021-01068-1>

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✉ Parminder S. Basran
psb92@cornell.edu

¹ Department of Clinical Sciences, College of Veterinary Medicine, Cornell University, Ithaca, NY 14853, USA