Dear Colleagues!

We've decided to raise up this issue in the editorial for a one simple reason. After reviewing several fairly relevant and interesting papers we provided objective comments to the authors in respect of the methodology of statistical processing of submitted materials. Colleagues demonstrated rather negative response considering our comments only as faultfinding and argued that absence of clear description of statistical methods and their correctness in no way impacts scientific significance of the research. Not so much the authors' reaction was surprising to us, but the profound confidence that they do not need to validate study results by appropriate mathematical methods. Authors believe that "magic" $p<0.05$ is sufficient for any evidence.

The issue of statistical analysis in clinical and experimental studies is nothing new and was brilliantly outlined in the paper of V.P. Leonov back in 2002*. The essence of presented issue lies in the extremely simplified approach of national researchers to the methods of statistical data processing, and many of the methods are frankly camouflaging in nature. Among the reasons for this widespread phenomenon, the author highlights weak statistical culture of researchers (so far practically no educational institutions train research specialists), lack of specialized biostatistics labs in the organizational structure of scientific research or medical education institutions, absence of industry regulatory framework which would determine stages of statistical analysis, and lack (again until recently) of qualified statistical expertise in the editorial offices of journals and dissertation councils.

Definitely, the scientific significance of a publication and a research itself is determined by its relevance, novelty, comparability of the studied phenomena, precision of patient selection, their representativeness, clear inclusion and exclusion criteria, as well as the pattern of the research — prospective or retrospective, etc. All of the above mentioned is true, but the results and conclusions obtained during a study should be based on adequate methods of statistical analysis. Otherwise any conclusion becomes merely an unproven expert opinion what many publications are blamed for.

How much has changed since the moment when the paper of V.P. Leonov on research analysis was published?

Examination of abstracts to 69 dissertations defended in 2017 (90 candidate's theses and 10 doctor's theses) in traumatology and orthopaedics speciality demonstrated that majority of works lack description of statistical methods used for data processing, only descriptive statistics was applied in 6 doctor's and 13 candidate's theses. A number of studies emphasize the statistical significance of variances but its evaluation was performed without adjustment for multiple comparisons. Correct description of applied

* Leonov V.P. [Scientometrics of the statistical paradigm of experimental biomedicine]. [Tomsk State University Journal]. 2002; (275): 17-24. (In Russian). URL: https://cyberleninka.ru/article/n/naukometrika-statisticheskoyparadigmy-eksperimentalnoy-biomeditsiny. (appeal date: 06.25.2019).

statistics was observed only in abstracts of 18 candidate's theses and not in a single doctor's thesis**.

All efforts of editorial board and reviewers are aimed at enhancement of scientific level of publications, and with this purpose at the preliminary review stage we engage a qualified biomedical statistics specialist to evaluate correctness of methods used and the results.

Of course, there are many formats of scientific publications, and not all of them require in-depth statistical analysis. These include literature reviews, presentations of clinical cases, description of new techniques, debating papers, etc. However, any scientific hypothesis put forward by an author demands validation and justification, including statistical methods. When selecting statistical criteria one should consider not only the type of data (quantitative / ordinal/qualitative) but also distribution normalcy as well as conditions of criteria applicability, coherence of analyzed samples, study design.

At the same time, the authors are expected to not only have a clear understanding of the purpose and method of statistical analysis, but also its competent interpretation and presentation.

We hope that the issue brought forward will be perceived by the authors with understanding, and the papers published going further will have a higher degree of scientific evidence.

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** Reshetov I.V., Tikhilov R.M., Kochish A.Y., Shubnyakov I.I. [Traumatology and orthopedics research speciality in 2017: dissertations analysis]. [Traumatology and Orthopedics of Russia]. 2018;24(3):9-18. (In Russian). URL: https://doi.org/10.21823/2311-2905-2018-24-3-9-18.