

The (mis)use of statistics: Which test where?

Sir,

I read with interest the original paper by Akhavanakbari *et al.* titled “Evaluation the effects of adding ketamine to morphine in intravenous patient-controlled analgesia after orthopedic surgery”.^[1] The authors have looked at three groups of 20 patients each and have compared pain outcomes measured by a visual analog scale (VAS) using the analysis of variance (ANOVA) for repeated measures.

Pain scores measured on the VAS are considered as ordinal data.^[2] Furthermore, data in this study relates to independent, parallel groups and is not paired data. It is therefore, incorrect to use the ANOVA for repeated measures for analysis of these results. The authors should have used the Kruskal-Wallis test, which is the non-parametric equivalent of the one-way ANOVA. Parametric tests are less conservative and tend to give significant results in comparison to their non-parametric alternatives.^[2] Inappropriate application of these tests for data, which is not normally distributed will lead to erroneously significant results.

Priya Ranganathan

*Department of Anaesthesiology, Critical Care and Pain,
Tata Memorial Hospital, Parel,
Mumbai, Maharashtra, India*

Address for correspondence:

Dr. Priya Ranganathan,
Department of Anaesthesiology, Critical Care and Pain,
Tata Memorial Hospital, Parel,
Mumbai - 400 012, Maharashtra, India.
E-mail: drpriyaranganathan@gmail.com

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