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# Ensuring adequate power: the importance of statistically significant results in osteopathic research

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To the Editor,

In “Effect of visceral manipulation on menstrual complaints in women with polycystic ovarian syndrome,” Yosri et al. [1] found that visceral manipulation with a low-calorie diet improved menstrual pain, menstrual irregularities, and premenstrual symptoms compared to a low-calorie diet alone. However, the authors did not perform an *a priori* power analysis to inform their sample size. With a sample size of only 30 patients, the internal validity of this study is questionable. The internal validity of a randomized trial depends largely on an appropriate sample size, which must be determined with an *a priori* sample size calculation to ensure adequate power [2]. The authors stated that they utilized a convenience sample, which is presumably why they did not include an *a priori* analysis. A convenience sample can be appropriate in the early stages of hypothesis generation; an encouraging result from a convenience sample can then prompt further study to more definitively answer the research question. The use of a convenience sample, however, only permits a study's results to be described as preliminary and as a call to further research. Yosri et al. [1] did not acknowledge their use of a convenience sample in their limitations and presented their data as

providing a definitive answer to this research question. Without an *a priori* power analysis, it is impossible to know whether this study was adequately powered to identify a meaningful result. Historically, many people have dismissed osteopathic literature as not evidence-based [3]. This dismissal has resulted in osteopathic practices and principles being undervalued by osteopaths and non-osteopaths alike. Within this context, it is of vital importance to ensure that osteopathic research include methodologic rigor that is as pristine as possible.

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