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## Differences in Nominal Significance (DINS) Error leads to invalid conclusions: Letter regarding, “Diet enriched with fresh coconut decreases blood glucose levels and body weight in normal adults”

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### Keywords

DINS error; research rigor; nutrition; obesity; Type I error

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Vijayakumar et al. (1) conducted a parallel-arm, randomized, controlled trial to test the effects of fresh coconut versus groundnut and groundnut oil on differences in anthropometric and cardiometabolic outcomes. The parallel-arm, randomized, controlled design is well-suited to test for effects between groups, and the authors conducted between-group statistical tests (independent t tests). The data reported in Table 2 indicate that no statistically significant differences were observed among the coconut or groundnut groups for any outcome measures. However, the authors concluded that, “Daily consumption of 100 g of fresh coconut ... is found to be beneficial in reducing body weight and blood glucose levels” and that “[r]esults of this study suggest that fresh coconut-added diet helps reduce blood glucose levels and body weight in normal healthy individuals.” These conclusions are based on within-group analyses, which has been well-described in the literature as invalid for between-group comparisons and tests of treatment effects in randomized, controlled trials (2, 3).

The error of drawing conclusions based on within-group analyses is known as the Differences in Nominal Significance (DINS) error (4). DINS errors are common within nutrition and obesity research (5) and have led to the correction (6) or retraction (7) of other papers in the field. DINS errors can distort the scientific record by inflating Type I error

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Competing Interests

None pertinent.

rates from the expected 5% (i.e., when alpha has been deemed 0.05) to rates as high as 50% when comparing two groups of equal sample sizes (3, 5, 8).

Because the data refute the conclusions drawn by Vijayakumar et al. as stated within the study abstract and full text, we believe the publication should be corrected or retracted. Such action is consistent with the Committee on Publication Ethics (COPE) guidelines (9). A valid conclusion would communicate the non-significant results of the between-groups tests, consistent with the randomized design.

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