DOI: 10.1002/oby.23236

Obesity A Research Journal THE OBESITY SOCIETY WILEY

CORRIGENDUM

Selection of antiobesity medications based on phenotypes enhances weight loss: A pragmatic trial in an obesity clinic

Andres Acosta, Michael Camilleri, Barham Abu Dayyeh, Gerardo Calderon, Daniel Gonzalez, Alison McRae, William Rossini, Sneha Singh, Duane Burton, Matthew M. Clark

We want to apologize to the readers of our recent article published in *Obesity* (1) for the error in the information regarding clinical trial registration and the lack of clarity in describing the study design. Both issues are addressed in this corrigendum.

First, the clinical trial registration information should have read, "Baseline characteristics of patients enrolled in an independent clinical trial (NCT03374956) were part of the cohort used to describe the obesity phenotypes in this manuscript." Second, the abstract should be corrected as follows:

Objective: Little is known about the predictors of response to obesity interventions.

Methods: In 450 participants with obesity, body composition, resting energy expenditure, satiety, satiation, eating behavior, affect, and physical activity were measured by validated methods and questionnaires. These variables were used to classify obesity phenotypes. Subsequently, in a 12-month real-world observational follow-up performed in a weight management center, 312 patients who requested weight management treatment were given appointments to receive standard medical weight management (n = 228) or phenotyping and phenotype-guided weight management (n = 84) with antiobesity medications: phentermine, phentermine/topiramate, bupropion/naltrexone, lorcaserin, and liraglutide. The primary outcome was weight loss at 12 months.

Results: Four phenotypes of obesity were identified in 382 of 450 participants (85%): hungry brain (abnormal satiation), emotional hunger (hedonic eating), hungry gut (abnormal satiety), and slow burn (decreased metabolic rate). In 15% of participants, no phenotype was identified. Two or more phenotypes were identified in 27% of patients. In the real-world study, the phenotype-guided approach was associated with 1.75-fold greater weight loss after 12 months with mean weight loss of 15.9% compared with 9.0% in the non-phenotype-guided group (difference −6.9% [95% CI −9.4% to −4.5%], $p < 0.001$), and the proportion of patients who lost >10% at 12 months was 79% in the phenotype-guided group compared with 34% in the non-phenotype-guided group.

Conclusions: Biological and behavioral phenotypes elucidate human obesity heterogeneity and can be targeted pharmacologically to enhance weight loss.

Here, we want to clarify that 1) the trial was not registered in ClinicalTrials.gov; and 2) the allocation was not randomized. It is worth noting that the details of the study design are in the online Supporting Information (available at https://onlinelibrary.wiley.com/doi/10.1002/oby.23120). Thus, the study would be best described as an observational comparison of two convenience samples of clinical patients from whom data were prospectively collected. The study we published is a real-world experience of a clinical cohort, where most patients received standard obesity care at our obesity clinic and some received phenotype testing and individualized obesity treatment. Those who received the phenotype-guided obesity treatment showed enhanced weight loss.

Since patients were not randomized to treatment type, allocation and investigators were not blinded, some of the treating clinicians were investigators, and the sample is small and not diverse, there are numerous factors that could have influenced the findings. We published the results from this clinical cohort study to encourage others to further explore these initial trends using a rigorous study design, such as a randomized clinical trial examining the efficacy of using phenotyping to guide obesity treatment directed to those phenotypes or biomarkers.

The *Discussion* section of the publication (1) clearly stated several limitations, as illustrated by these statements:

a. "These outcomes require replication and validation in larger, more racially and metabolically diverse cohorts, preferably in multicenter, randomized studies."
b. "The outcome with phenotype-guided pharmacotherapy has limitations that deserve further studies in the future, including appraising a 'testing' bias such that participants who underwent additional testing may be conditioned to greater responsiveness based on clinical education and consent, lack of blinded randomization, and potential group-difference confounders such as age and comorbidities."

It is clear that the *Discussion* advocated that our findings need to be validated in a randomized, placebo-controlled trial, as the gold standard study design.

Finally, we regret this error and not making these points clearer in our manuscript, but we hope that this does not dissuade readers from considering the potential of a pathophysiological and behavioral classification of obesity phenotypes. We also hope that our observations will encourage randomized controlled trials of phenotype-guided antiobesity medication approaches.

REFERENCE

1. Acosta A, Camilleri M, Abu Dayyeh B, et al. Selection of antiobesity medications based on phenotypes enhances weight loss: a pragmatic trial in an obesity clinic. *Obesity*. 2021;29:662-671.