

App engagement as a predictor for weight loss in blended-care interventions for people with obesity: observational study using real-world data from 9350 patients

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Conflict of interest:

Marco Lehmann and Felix Schirmann are employed at Oviva AG.

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Introduction

Early weight loss is an established predictor for treatment outcomes in weight management interventions for people with obesity. However, there is a paucity of additional, reliable, and clinically actionable early predictors in weight management interventions. Novel blended-care weight management interventions combine coach- and app-support and afford new means of structured, continuous data collection, informing research on treatment adherence and outcome prediction. Against this backdrop, we analyze app engagement as a predictor for weight loss in a real-world, blended-care intervention in Germany. We hypothesize that patients with higher app engagement lose more weight than patients with lower app engagement at three and six months of intervention.

Methods

Real-world data from 9350 patients (mean age: 49.77 years (SD: 12.53), 85% female) treated for obesity at a digital behavior change provider were analyzed retrospectively. The treatment was reimbursed within statutory health care (§43 SGB V) and consisted in a blended-care intervention, featuring five sessions with a dietitian and access to a specialized app for weight management. Principal component analysis identified an over-arching metric for app engagement based on app usage. A median split informed a distinction in higher and lower engagers. Both groups were matched via optimal propensity score matching for relevant characteristics (e.g., gender, age, weight at baseline). A linear regression model, combining patient characteristics and app-derived data, was applied to identify predictors for weight loss outcomes.

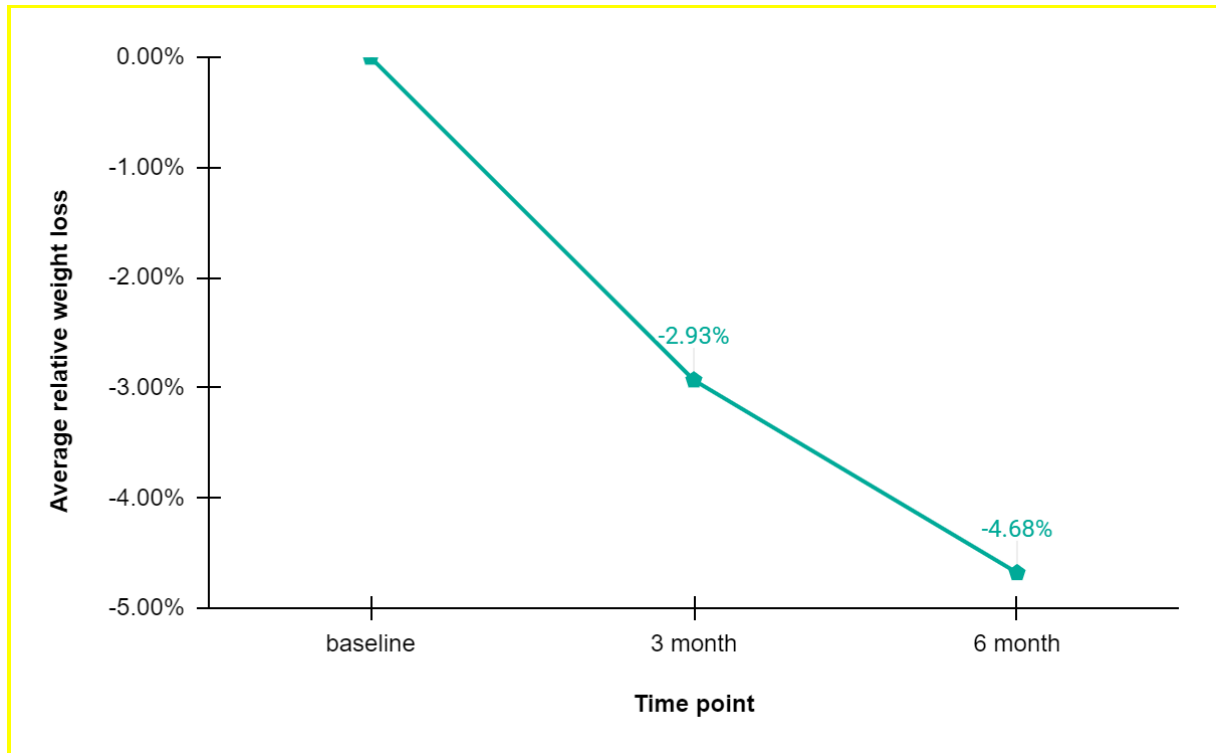
Figure 1. Oviva app user interface showing dietary logging and goal setting



Results

Average relative weight loss was -2.93 % (SD: 3.98) at 3 months and -4.68 % (SD: 6.11) at 6 months. Higher app engagement yielded more weight loss than lower engagement after three ($p = .005$), but not after six months of intervention ($p = .213$).

Figure 2. Weight loss over treatment period



Conclusions

Early app engagement is a predictor of weight loss - with a variation in the course of treatment. The positive association between engagement and weight loss at 3 months has been observed previously¹. In addition, earlier research identified a time-dependency of the impact of engagement², indicating a varying influence per treatment phase. Further research needs to establish the reliability of early app engagement as a predictor for therapeutic outcomes. For treatment, the results indicate that fostering engagement (per treatment phase) could be a viable therapeutic aim for care providers who support people with obesity.

¹ Gemesi K, Winkler S, Schmidt-Tesch S, Schederecker F, Hauner H, Holzapfel C. Efficacy of an app-based multimodal lifestyle intervention on body weight in persons with obesity: results from a randomized controlled trial. *Int J Obes*. Published online November 28, 2023:1-9. doi:[10.1038/s41366-023-01415-0](https://doi.org/10.1038/s41366-023-01415-0)

² Schirmann F, Kanehl P, Jones L. What Intervention Elements Drive Weight Loss in Blended-Care Behavior Change Interventions? A Real-World Data Analysis with 25,706 Patients. *Nutrients*. 2022;14(14):2999. doi:[10.3390/nu14142999](https://doi.org/10.3390/nu14142999)