

Austin Peña¹, Gina Dumkrieger, PhD¹, Deborah Yang², Tanya Alderete³, Gabriela Barraza⁴, Maurice Lee MD, MPH, FAAFP⁴
¹Mayo Clinic Arizona, ²University of Arizona School of Medicine, ³Universidad Autónoma de Guadalajara, ⁴St. Vincent de Paul Medical Clinic

Background

The diabetes prevention program (DPP) is a nationally recognized program that aims to decrease the conversion of prediabetes to type 2 diabetes (T2DM).(1) The DPP is a twelve month program during which individuals with prediabetes participate in classes targeting exercise and dietary behaviors to reduce weight and promote self-monitoring. Tracked outcomes include HgbA1c, BMI, duration of exercise/week, and blood pressure. Previous research indicates that the DPP does not reduce diabetes incidence in the long-term nor have any benefit on microvascular and cardiovascular outcomes.(2,3,4,5) The objective of this study is to evaluate the efficacy of the DPP delivered at the Virginia G. Piper Saint Vincent de Paul Medical Clinic, a community setting targeting high risk Hispanic patients, compared to the well-known NIH study.

Methods

DPP:

- Participants: those with prediabetes or those at risk for T2DM
- Two-part, year-long program
- Multiple sessions w/ various themes

The study:

- Control group: completed <12 DPP classes
- Intervention group: completed ≥12 DPP classes
- Follow-up time varied (3-53 months)
- Post-DPP biometric data collection (HgbA1c, height, weight, BP)
- Post-DPP health behaviors and attitudes survey (exercise/diet)

Analysis:

- T-test: biometrics between groups
- ANOVA: survey answers between groups



Table 1. Baseline Characteristics

	Control Group	Intervention Group
Participants (n)	16	19
Age	42.7	46.1
Ethnicity		
Hispanic	11 (68.8%)	13 (68.4%)
Not Reported	5 (31.2%)	6 (31.6%)
Sex		
M	4 (25.0%)	3 (15.8%)
F	12 (75.0%)	16 (84.2%)
Baseline Avg BMI	37.96	34.20
Baseline Avg HgbA1c	5.74	5.74

Survey Subscores

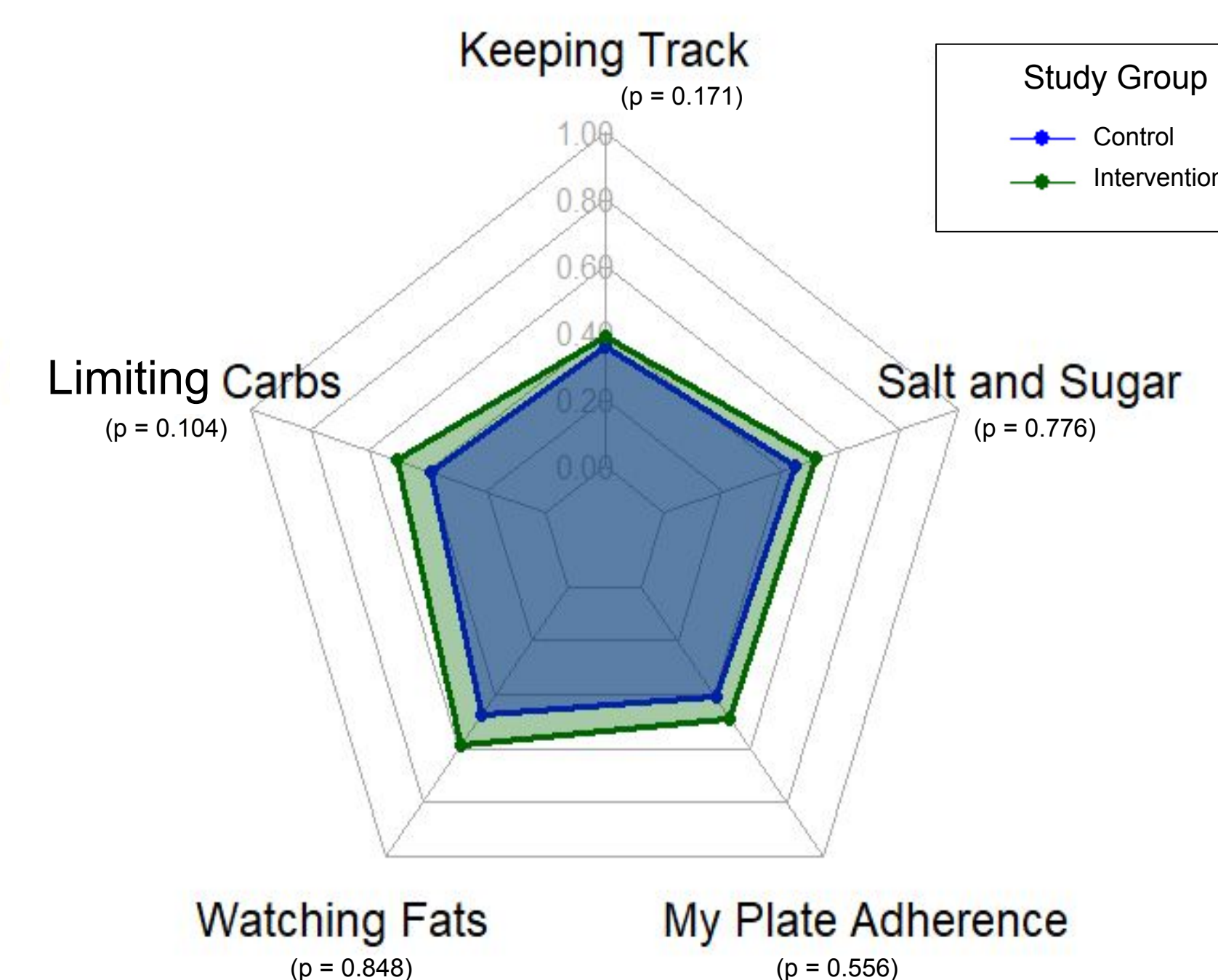


Figure 1. One-way ANOVA on ranks of the average thematic subscore from post-DPP health behaviors and attitudes survey demonstrated no significant differences in answers between groups. N = 32.

HgbA1c at Follow Up

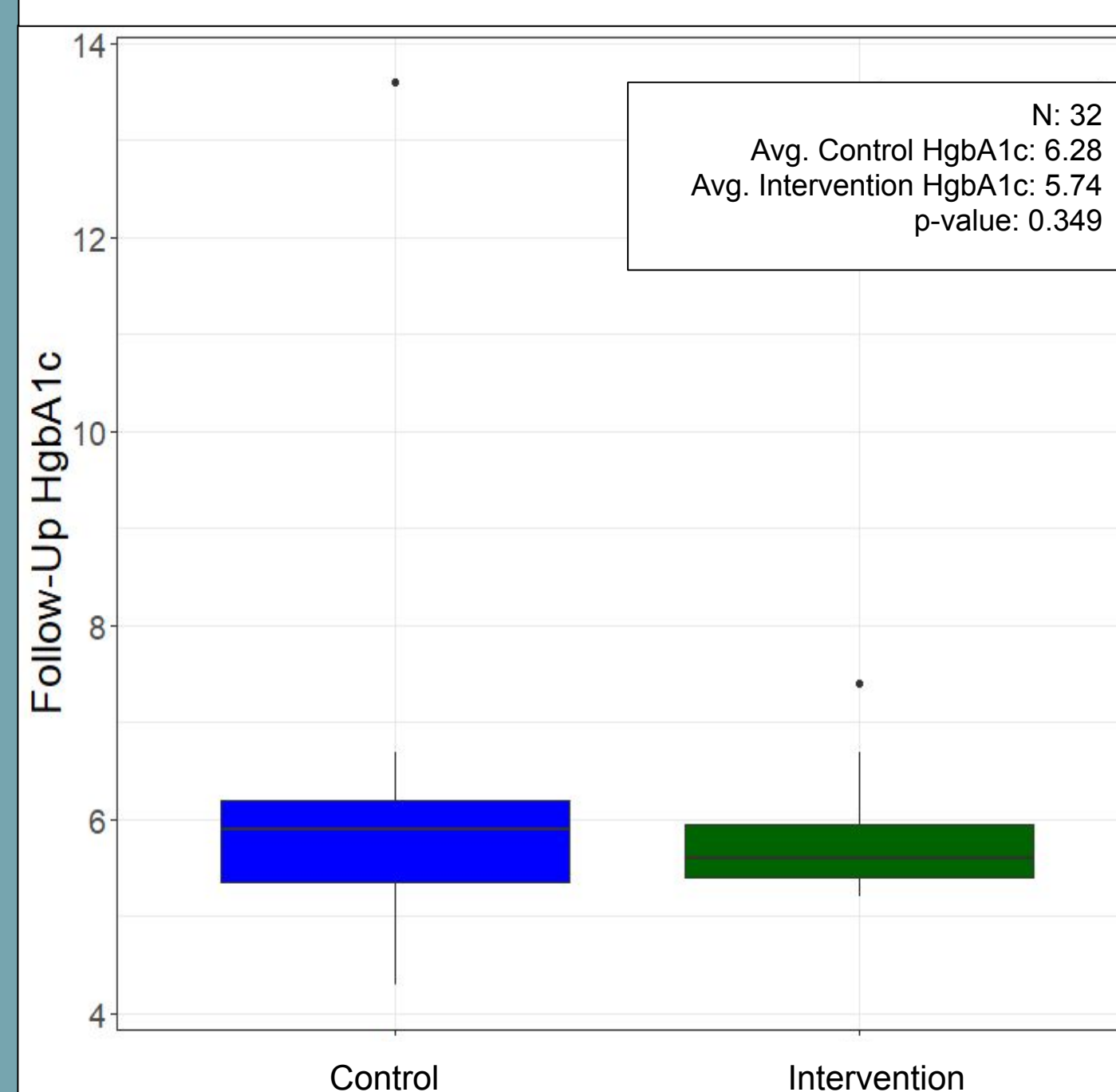


Figure 2. T-test demonstrated no significant difference between groups. Three participants converted to T2DM in the control group, two converted in the intervention group.

BMI Change

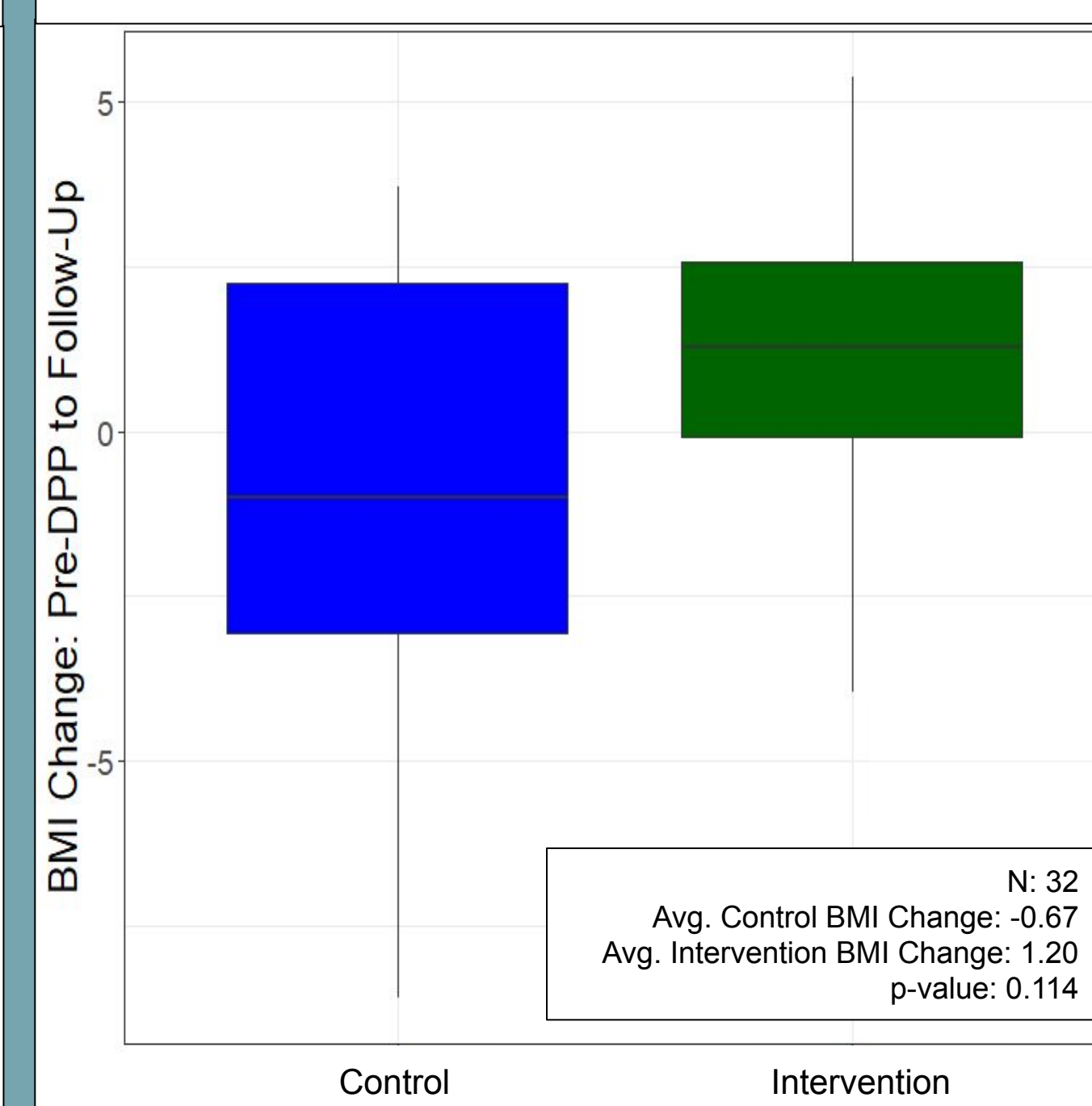


Figure 3. T-test demonstrated no significant difference between groups.

Weight Change

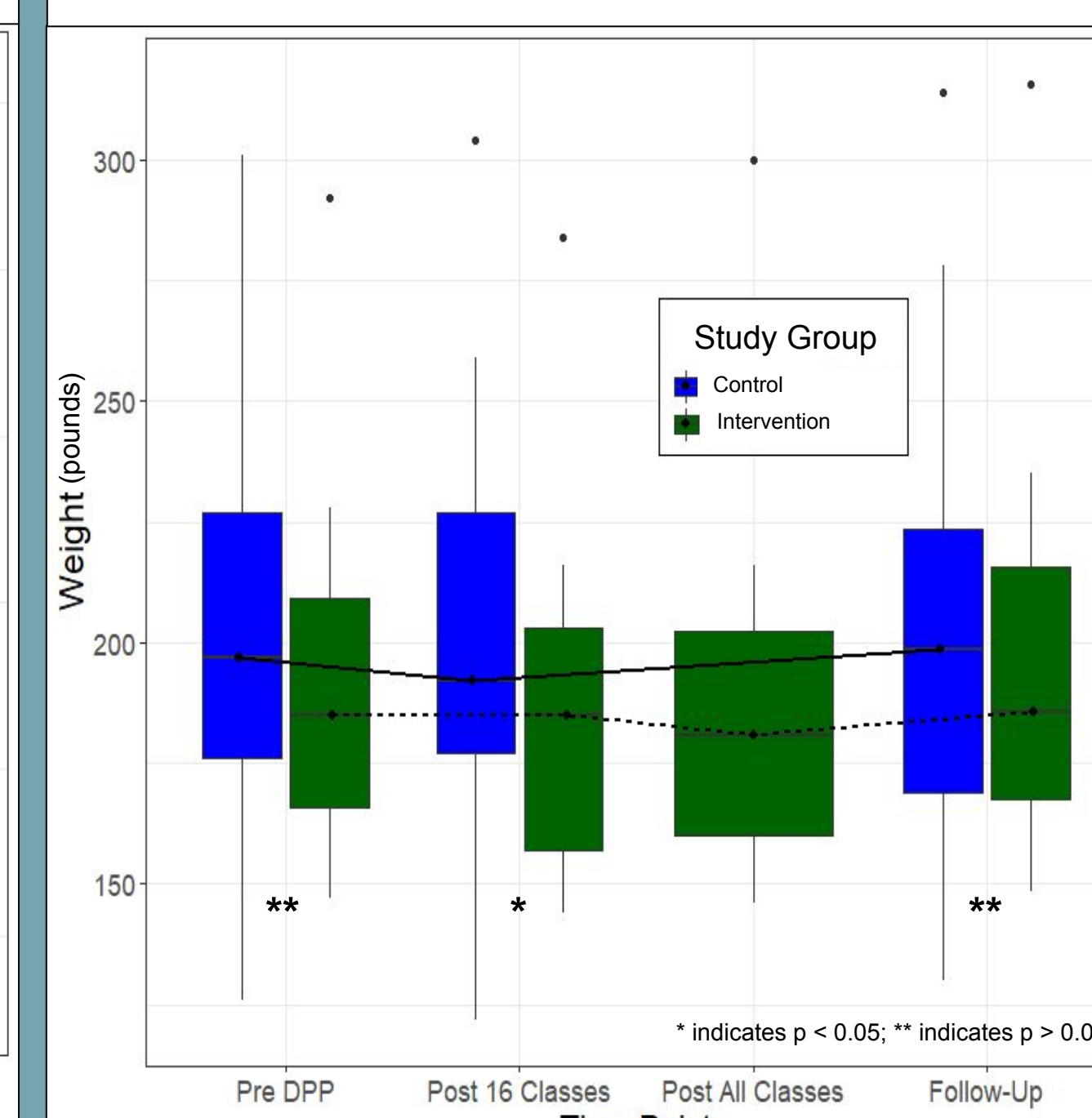


Figure 4. Weight was not significantly different at pre-DPP. Weight change from pre-DPP was significantly different at post-16 classes (p = 0.020), but was not significant at follow-up (p = 0.215). N = 32.

Conclusion

Belonging to the intervention group was not shown to affect T2DM incidence, hypertension incidence, BMI change, or participants' self-reported health behaviors and attitudes. Those in the intervention group experienced weight loss initially but gained more weight than was lost upon follow up.

Discussion

This analysis, in conjunction with the already existing literature, suggests that the DPP is not an economical or time-effective intervention. In conjunction with the follow up analyses from the DPP Outcomes Study, our study suggests a failure of the DPP to prevent diabetes. Furthermore, the NIH data suggests a failure of the DPP to prevent long-term micro- and macrovascular T2DM complications. Completion of the DPP may be an important factor influencing initial weight loss but not clinically significant sustained weight loss. The principle findings of the aforementioned literature is that the DPP may delay the diagnosis of T2DM by 4 years when compared to those solely taking metformin. Given the lack of evidence suggesting that the DPP truly prevents conversion of prediabetes to T2DM, we suggest renaming the Diabetes Prevention Program to a more descriptive name, such as the Diabetes Delaying Program. By renaming the program, funders, participants, and providers may approach the adoption of such a program from a more informed perspective.

Citations

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2. Diabetes Prevention Program Research Group, Knowler WC, Fowler SE, Hamman RF, Christophi CA, Hoffman HJ, Brenneman AT, Brown-Friday JO, Goldberg R, Venditti E, Nathan DM. 10-year follow-up of diabetes incidence and weight loss in the Diabetes Prevention Program Outcomes Study. *Lancet.* 2009 Nov 14;374(9702):1677-86. doi: 10.1016/S0140-6736(09)61457-4. Epub 2009 Oct 29. Erratum in: *Lancet.* 2009 Dec 19;374(9707):2054. PMID: 19878986; PMCID: PMC3135022.
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