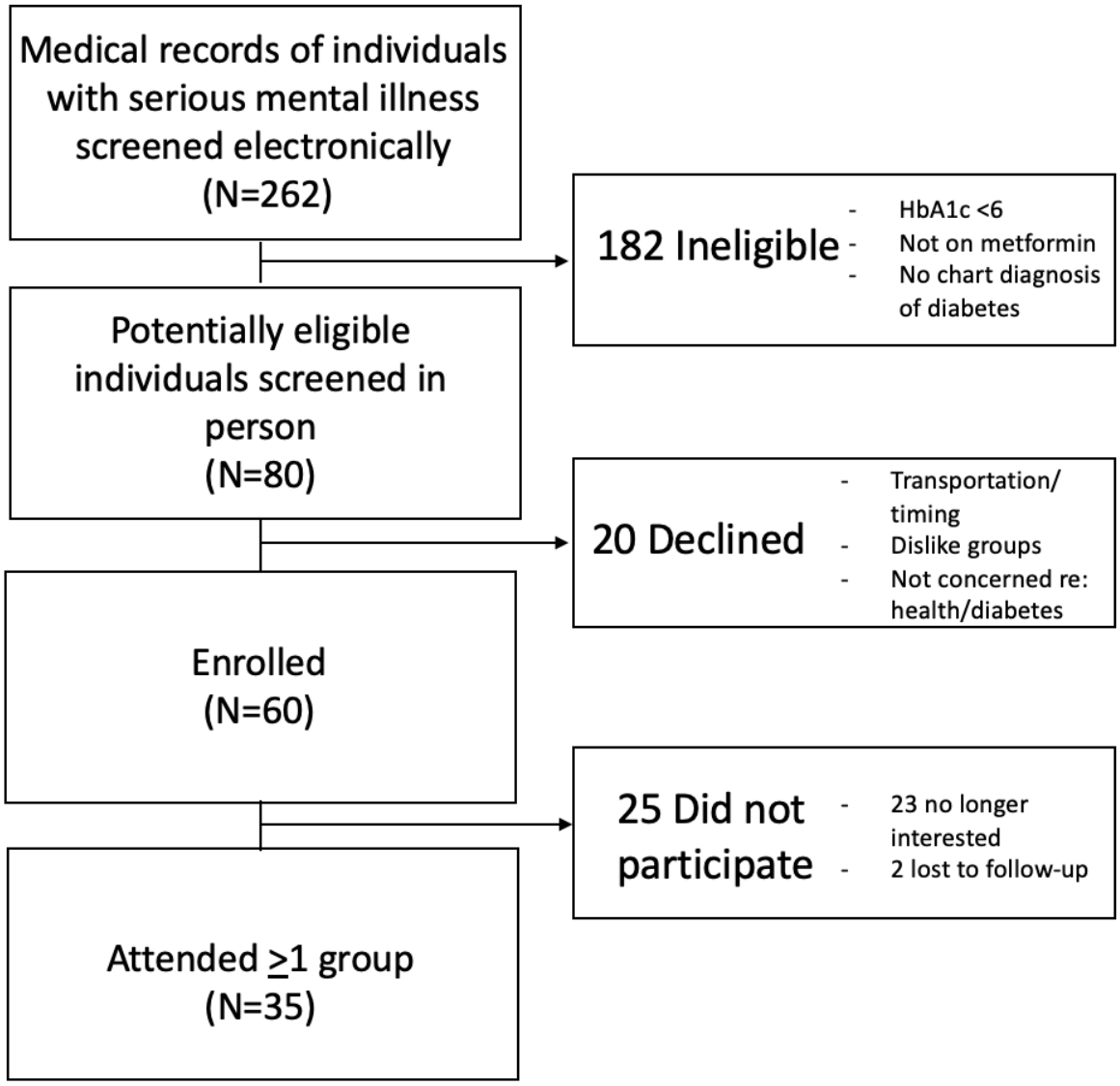
Intervention
The intervention was modeled after the Diabetes Prevention Program (1).
Online Curriculum - https://www.cdc.gov/diabetes/prevention/resources/curriculum.html

Consort Diagram



Assessments
Assessed at baseline:
- Clinical Global Impressions Scale (CGI) (2)

Measured weekly:
- Weight

- Systolic and diastolic blood pressure
- Step count

Measured at baseline and week 16:
- Lipid panel
- A1C

Assessed at weeks 1, 4, 8, 12, 16:
- Short Diabetes Knowledge Instrument (SDKI) (3)
- Summary of Diabetes Self-Care Activities (SDSCA) (4)
- Problem Areas in Diabetes (PAID) (5)

Results

There were no significant differences between participants who enrolled and attended at least one group versus those who enrolled but attended no groups (p's>0.05). However, we have low power to detect between group differences. Those who attended any groups were more likely to be non-white, more likely to be treated with an antipsychotic medication, more likely to be treated with olanzapine, and more likely to be treated with metformin and insulin and have a greater HbA1c than those who enrolled and attend none of the intervention.

Baseline Characteristics of Study Participants

	Attended no groups N = 25	Attended 1 or more groups N = 35
Age, years - M (SD)	56.9 (12.2)	52.9 (10.9)
Female - N (%)	10 (40)	8 (22.9)
Race/Ethnicity		
White	16 (64)	16 (45.7)
African American	5 (20)	12 (34.3)
Other race	3 (12)	7 (20)
Hispanic	1 (4)	3 (8.6)
Clinical Global Impression-Severity M (SD)	4.9 (1)	4.8 (0.9)
Treatment - N (%)		
Any antipsychotic	12 (75)	34 (97.1)
Clozapine	8 (50)	14 (40)
Olanzapine	1 (6.2)	8 (22.9)
Mood stabilizer	4 (25)	12 (34.3)
Antidepressant	6 (37.5)	10 (28.6)
Metformin	6 (37.5)	23 (65.7)
Other oral diabetes medication	3 (18.8)	12 (34.3)
Insulin	2 (12.5)	9 (25.7)
Disease status - M(SD)		
BMI		33.3 (3.8)
Systolic blood pressure, mmHg		127 (13)

	Attended no groups N = 25	Attended 1 or more groups N = 35
Diastolic blood pressure, mmHg		81 (11)
HbA1c, %	6.5 (1.1)	7.5 (1.6)
Total cholesterol, mg/dL	168 (41)	160 (39)
HDL, mg/dL	41 (14)	38 (15)
Average steps		5028 (4467)
Diabetes Self Care (SDSCA)[a] – M (SD)		
General diet		3.5 (2.5)
Specific diet		3.2 (2.1)
Exercise		2.7 (2.5)
Foot care		4 (1.4)
Diabetes distress (PAID)[b] – M (SD)		41.8 (21.1)
Diabetes knowledge (SDKI)[c] – M (SD)		7.2 (2.7)

[a] Summary of Diabetes Self-Care Activities Measure: multidimensional assessment of diabetes self-management, number corresponding to days per week activity is performed, range 0-7

[b] Problem Areas in Diabetes: 20-item questionnaire to query diabetes-related psychosocial distress, items rated from 1 ("no problem") to 6 ("serious problem"), score range 20-120

c Short Diabetes Knowledge Instrument: score range 0-13 with higher scores indicating greater knowledge

Data from baseline to end of treatment (week 16), n=35

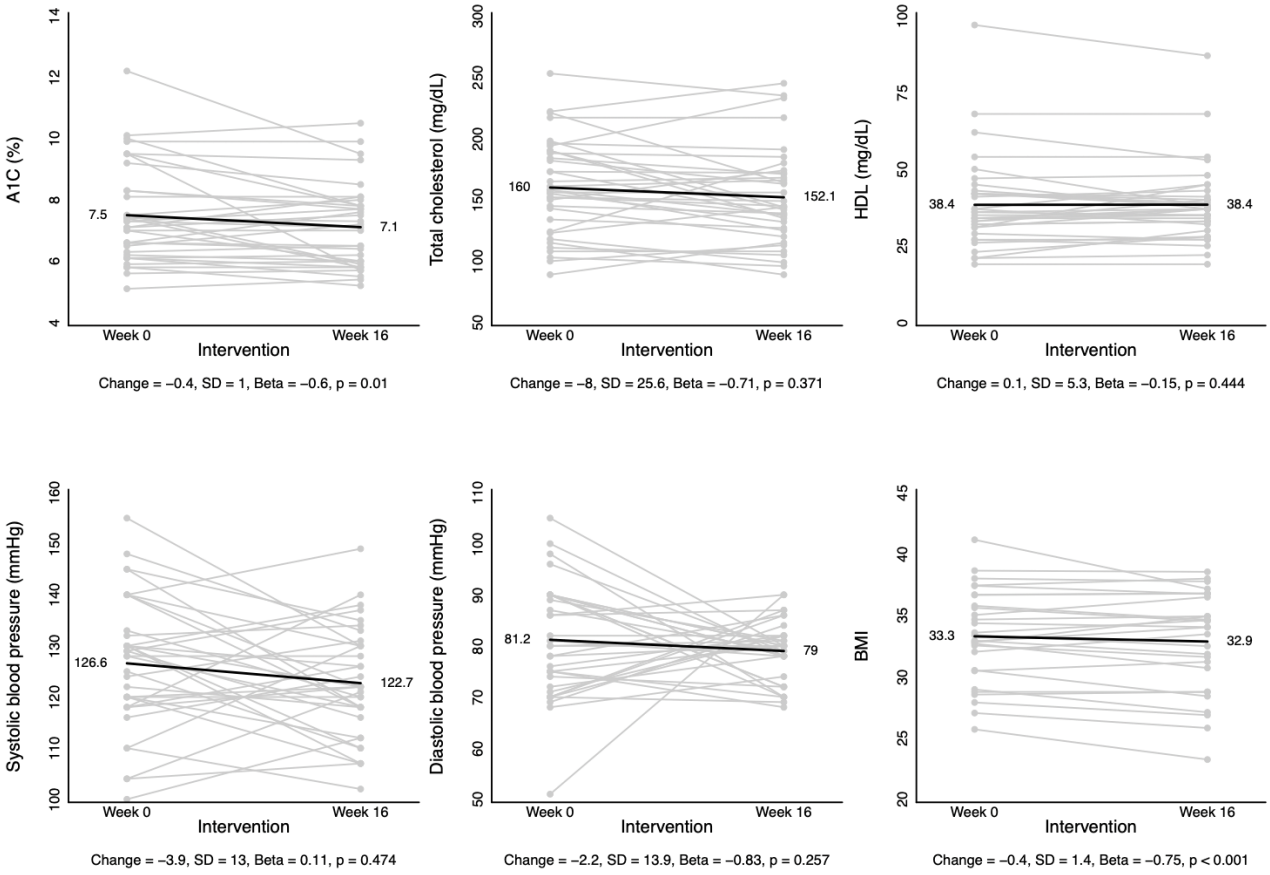
Variables	Baseline (SD)	End of Treatment (SD)	Change	Estimated population effect β (SD)	p-value
Physiologic measures					
HbA1c, %	7.5 (1.6)	7.1 (1.4)	-0.4	-0.6 (0.26)	0.01*
HbA1c, % (baseline ≥6.5%, n=24)	8.2 (1.5)	7.6 (1.3)	-0.6	-0.63 (0.25)	0.008*
Weight, lbs	220.3 (40.9)	217.7 (42.6)	-2.6	-4.11 (0.91)	0.001*
BMI, kg/m^2	33.3 (3.8)	32.9 (4.1)	-0.4	-0.75 (0.17)	<0.001*
Total cholesterol, mg/dL	160 (39.2)	152.1 (39.3)	-7.9	-0.71 (2.17)	0.371
HDL, mg/dL	38.4 (14.9)	38.4 (12.7)	0	-0.15 (1.07)	0.444
HDL, mg/dL (baseline ≤40 mg/dL, n=22)	30.4 (5.5)	32.8 (6.6)	2.4	1.94 (0.89)	0.013*
Systolic blood pressure, mmHg	126.6 (12.9)	122.7 (10.8)	-3.9	0.11 (1.73)	0.474
Systolic blood pressure, mmHg (baseline ≥130mmHg, n=10)	141.8 (6.8)	128.9 (9.7)	-12.9	-3.43 (2.42)	0.081
Diastolic blood pressure, mmHg	81.2 (11.2)	79 (5.9)	-2.2	-0.83 (1.26)	0.257
Diastolic blood pressure, mmHg (baseline ≥80mmHg, n=17)	90.6 (6.2)	78.5 (5.4)	-12.1	-7.82 (1.66)	<0.001*

Variables	Baseline (SD)	End of Treatment (SD)	Change	Estimated population effect β (SD)	p-value
Steps per day	5028 (4467)	5787 (4976)	759	0.12 (3.83)	0.488
Diabetes knowledge & self-care					
Diabetes knowledge (SDKI)	7.2 (2.7)	8.5 (2.7)	1.3	1.75 (0.42)	<0.001*
General diet self-care, days	3.5 (2.5)	4.6 (1.9)	1.1	1.21 (1.21)	0.003*
Specific diet self-care, days	3.2 (2.1)	4 (1.4)	0.8	0.96 (0.32)	0.001*
Exercise self-care, days	2.7 (2.5)	4.1 (2.4)	1.4	1.09 (0.5)	0.015*
Foot self-care, days	4 (1.4)	4.2 (1.4)	0.2	0.28 (0.25)	0.129
Diabetes distress (PAID)	42 (21)	37 (18)	-5	-1.76	0.223

Note: A1C for participants who enrolled but attended no groups did not significantly change after four months: 6.5 (1.1) at baseline to 6.4 (0.8) at 16 weeks, β = -0.46 (0.47), p = 0.156.

*Comparisons considered significant at p<0.022

Physiologic measures from baseline to week 16, n=35



Diagnostic results for mixed effects models (Kolmogorov-Sminorv test for normality of residuals and R^2)

Outcome	Distribution of residuals	R^2
Diabetes knowledge	D = 0.06, p = 0.852	0.63
Summed likert scores for stress due to diabetes	D = 0.11, p = 0.595	0.20
Average days spent on general diet self-care	D = 0.07, p = 0.852	0.42
Average days spent on specific diet self-care	D = 0.05, p = 0.852	0.50
Average days spent on exercise self-care	D = 0.07, p = 0.852	0.39
Average days spent on foot self-care	D = 0.06, p = 0.852	0.59
HDL	D = 0.09, p = 0.497	0.84
LDL	D = 0.07, p = 0.852	0.58
Total cholesterol	D = 0.08, p = 0.709	0.45
Triglycerides	D = 0.15, p = 0.013*	0.50
Systolic blood pressure	D = 0.03, p = 0.852	0.31
Diastolic blood pressure	D = 0.05, p = 0.709	0.24
Weight	D = 0.11, p < 0.001*	0.98
A1C	D = 0.12, p = 0.094	0.40
Average steps per day	D = 0.14, p < 0.001*	0.83
BMI	D = 0.12, p < 0.001*	0.95

* Significant at p < .05 following Benjamini & Hochberg (1995) correction.

Four outcomes had tests indicating unusual distributions for residuals (see summary below of these flagged residuals and whether these represented over- or under-estimations). In these cases, we examined the distribution of residuals and flagged residuals that exceeded ± 2 standard deviations. We then refit the data using a variant of the mixed effects model robust to outliers, in which data are assumed to follow a student t distribution rather than a normal distribution (6). In all cases the significance and direction of effects did not change even when using the robust statistical approach, suggesting results were not affected by outliers/excessive variability.

- Triglycerides: 4 subjects had flagged residuals (1 was underestimated, 3 were overestimated), at 0, 8, 16, and 32 weeks.

- Weight: 8 subjects had flagged residuals (4 were underestimated, 4 were overestimated), at pre-intervention, and 1, 3, 13, and 32 weeks. Notably, one subject was consistently underestimated at all time points.
- Average steps per day: 2 subjects had flagged residuals (1 was underestimated, 1 was overestimated), over weeks 2, 4, 5, 6, and 16.
- BMI: 7 subjects had flagged residuals (3 were underestimated, 4 were overestimated), at pre-intervention and weeks 1, 3, 4, and 32. Notably, one subject was initially underestimated but his/her improvement was also underestimated.

Citations

1. Diabetes Prevention Program Research G: The Diabetes Prevention Program (DPP): description of lifestyle intervention. Diabetes Care 25:2165-71, 2002
2. Busner J, Targum SDJP: The clinical global impressions scale: applying a research tool in clinical practice. 4:28, 2007
3. Quandt SA, Ip EH, Kirk JK, et al.: Assessment of a Short Diabetes Knowledge Instrument for Older and Minority Adults. The Diabetes Educator 40:68-76, 2014
4. Toobert DJ, Hampson SE, Glasgow RE: The summary of diabetes self-care activities measure: results from 7 studies and a revised scale. Diabetes Care 23:943-50, 2000
5. Polonsky WH, Anderson BJ, Lohrer PA, et al.: Assessment of Diabetes-Related Distress. Diabetes Care 18:754-60, 1995
6. Geweke, J: Bayesian Treatment of the Independent Student-t Linear Model. Applied Econometrics 8:S19-40, 1993