

A 12-week Evidence-based Education Project to Reduce Cardio-metabolic Risk in Patients with Serious Mental Illness in the Integrated Care Setting

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Introduction

Individuals with serious mental illness (SMI) such as schizophrenia, schizoaffective disorder or major depressive disorder have a shorter life expectancy compared to those in the general population. This is related to higher rates of cardiometabolic conditions such as diabetes, obesity, hyperlipidemia and hypertension. While many of these conditions are often preventable, use of educational lifestyle interventions is not common practice in the clinical setting.

Aims

- Determine the effect of the project on:
- 1) Health indicators :weight, waist circumference, BMI, blood pressure, hemoglobin A1C and medication adherence.
 - 2) Health knowledge through the administration of the Diabetes Knowledge Test.
 - 3) Self-care through the administration of the Diabetes Self-Care Inventory.
 - 4) Feasibility through the measurement of group attendance rates and post feasibility and acceptability survey.

Methods

- Study design: Pretest posttest
Sample:
- Adults age 18 or older
 - Diagnosis of serious mental illness Diabetes or prediabetes documented in the medical record hemoglobin A1C >5.7
 - Overweight or obese as indicated by a body mass index >25
 - Current patient in the Department of Community Psychiatry Integrated Care Clinic
 - Convience sampling was used

Intervention

12-week educational 1hour group
Review of literature conducted using 17 studies:
-3 months -Tracking tools -Exercise demonstration
-Dietary and exercise focused -Medication education
-Behavioral strategies -Coping skills
CDC Diabetes Prevention Program used for framework

Measures

Weight: assessed in pounds using a digital scale.
BMI: calculated based on height and weight
Waist circumference: measured in inches around umbilicus
A1C: obtained from medical record
Blood pressure: measurement using a manual blood pressure cuff
Knowledge measure: Revised Michigan Diabetes Knowledge Scale T/F
Self-Care Measure: The Diabetes Self-Care Inventory Revised (SCI-R)
Participant attendance: Tracked weekly
Feasibility and acceptability Survey: participant satisfaction

Statistical Analysis

Data analysis was completed using SPSS version 25. To determine feasibility of the project individual attendance rates were tracked weekly at the group sessions and the average completion rate was obtained out of the total number of sessions. Descriptive statistics were used to analyze participant completed feasibility and acceptability surveys. Diabetes health knowledge and self care individual sum scores were calculated to determine a difference between the pre- and post-test scores. Health indicators including blood pressure, weight, waist circumference, hemoglobin A1C and medication adherence were collected at baseline and post group. The paired *t*-test was used to determine significance (at alpha=0.05).

Table 1: Demographics	Sample n=29
Age (average, SD)	53.24 (10.48)
Gender n(%)	
Male	17 (58.6)
Female	12(41.0)
Race n(%)	
African American/Black	23 (79.3)
Caucasian/White	6 (20.7)
Program n(%)	
Outpatient	18 (62.2)
Residential	11 (37.9)
Psychiatric Diagnosis n(%)	
Schizoaffective disorder	8 (27.6)
Schizophrenia	15 (51.7)
Bipolar disorder	3 (10.3)
Major depressive disorder	3 (10.3)
Antipsychotic use n(%)	26 (89.7)
Hypertension diagnosis n(%)	23(79.3)
Diabetes diagnosis n(%)	24(82.80)
Prediabetes diagnosis n(%)	5(17.2)

Results

A summary of demographics is shown in Table 1. The sample size for this project included 29 participants. A total of 18 (62.2%) participants were recruited from the outpatient clinic and 11 (37.9%) participants were from the residential program. The mean age for participants was 53 (10.48) years.
Health indicators were assessed at baseline and after completion of the intervention at 12 weeks, a summary of findings is displayed in Table 2. There was a mean change of -4.8lbs (p=.000) from pretest to post test for weight. There was a mean change of -.69 (p=.000) from baseline to post for body mass index. A mean difference of -.61 (p=.002) was noted for A1C and -1.0 (p=.000) for waist circumference. Diastolic blood pressure had a mean change of -7.1 (p=000) and systolic blood pressure had a mean change of -6.1 (p=.017). While medication adherence had a mean change of -.70 this was not statistically significant (p=.147).

At baseline the average knowledge score was 60.5% (11.4) and at posttest was 81.4 % (11.4). There was an average improvement of 21.0 (p=.000). The average self-care score at baseline was 52.6 (19.5) and 66.3 (11.1) posttest with a mean change of 13.7 (p=.002). A summary of health knowledge and self-care is displayed in table 3.
To determine feasibility and acceptability of the project, attendance rates were tracked throughout the project and the feasibility and acceptability survey was administered at posttest. The average number of sessions attended was 9, the minimum number of sessions attended was 3 and the most was 12. Table 4 provides a summary of findings. Results from the feasibility and acceptability survey showed that participants felt that the group was feasible and acceptable.

Table 2: Health Indicators	Pretest (mean, SD)	Posttest (mean, SD)	Change (mean)	P value
Weight (lbs.) n=29	229.3 (42.6)	224.5 (42.1)	-4.8	.000
BMI (kg/m2) n=29	34.5 (5.9)	33.8 (5.9)	-.69	.000
A1C (mmol/mol) n=23	6.9 (1.3)	6.2 (.95)	-.61	.002
Waist circumference(in) n=27	47.7 (5.2)	46.6 (4.9)	-1.0	.000
Systolic (mmHg) n=29	136.2 (12.3)	130.0(15.3)	-6.1	.017
Diastolic (mmHg) n=29	85.1 (7.1)	78.0 (8.0)	-7.1	.000
Medication adherence n=27	5.8 (2.1)	6.5 (1.5)	-.70	.147

Table 3: Health Knowledge and Diabetes Self-Care Score	Pretest (mean, s.d.)	Posttest (mean, s.d.)	Change (mean, s.d.)	P-value
Knowledge score n=27	60.5 (11.4)	81.4 (11.4)	21.0 (16.5)	.000
Self-Care Score n=21	52.6 (19.5)	66.3 (11.1)	13.7 (17.9)	.002

Table 4: Attendance	Mean	Median	Mode	Min	Max
Number of sessions attended n=29	9.24	10.0	11	3	12

Summary

These findings suggest that the project influenced BMI, A1C, waist circumference, blood pressure, health knowledge, and self-care but did not improve medication adherence. The data also indicate that the project is feasible and acceptable for continued implementation in this setting as indicated by a high attendance rate and participants responses to the survey. Further inquiry is needed to understand how to improve medication adherence through the group intervention. Additionally, it will be important to address the reasons that some individuals did not find all components of the program to be beneficial.