A Multi-dimensional Approach to Diabetes Control
Effects of participation in Comprehensive Diabetes Group Clinic on HBA1C in Type 2 Diabetes Mellitus

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Background

- Diabetes Mellitus (DM) is one of the most prevalent metabolic diseases in the world. In the US, 9.7% of the population have diabetes, which is associated with $327 million billion in direct medical costs and reduced productivity in 2017. SJ county has 11% prevalence of DM.
- Obtaining a euglycemic state and maintenance of an optimal Hb A1C in patients with type II diabetes mellitus is crucial in the prevention of diabetic complications.
- Approaches based on modern and innovative Chronic Care Models have been used in the management of chronic illnesses and have shown efficacy in attaining an optimal glycemic state in diabetic patients.

Hypothesis

- The comprehensive approach of Comprehensive Diabetes Group Clinic(CDGC), will increase compliance, and influence lifestyle changes that will have a positive effect on the health of the patient. It can lead to tighter glycemic control, which will substantially lower the Hb A1c of the patients.
- Therefore leading to a reduction of diabetes associated complications, and healthcare costs. The intent of this study is to validate that participation in CDGC will substantially reduce the Hb A1c, lipid profile and Body Mass Index (BMI) in all involved participants

Methods

- Retrospective chart review of patients who attended the CDGC between 06/1/2018 and 06/30/2019.
- Inclusion criteria: A1c greater than 7, Minimum of two visits, 109 participants
- Exclusion criteria: Type1 DM, less than 2 visits
- Primary endpoint: Reduction in HbA1C, Secondary endpoints: Change in HDL, LDL, TG and BMI
- Patients were in group sessions that included, pharmacist, physician, diabetes educator, dietitian, registered nurse and medical assistants
- Once Data was collected, it was analyzed using Analysis of Variance (ANOVA), Shapiro Wilk test and Wilcoxon test to test change between A1c and BMI

Results

- 78 were included in the study, 31 were excluded due to not completing 2 visits or lost to follow up
- There were 37 male and 41 female
- Average age for male was 53.41, female were 54.90
- 56.41% Hispanic, White 7.79%, Asian 8.97%, African American 11.54%, American Indian 1.28%, other 14.10%
- Using ANOVA to analyze the data, it was found that there was a significant reduction in HbA1c from pre-CDGC and post CDGC of **2.47**, with a p value of 0.00
- Shapiro Wilk test and Wilcoxon test were both used to confirm the statistical significance of the decrease, p value of 0.00
- There was also a statistically significant reduction in BMI of 4.7
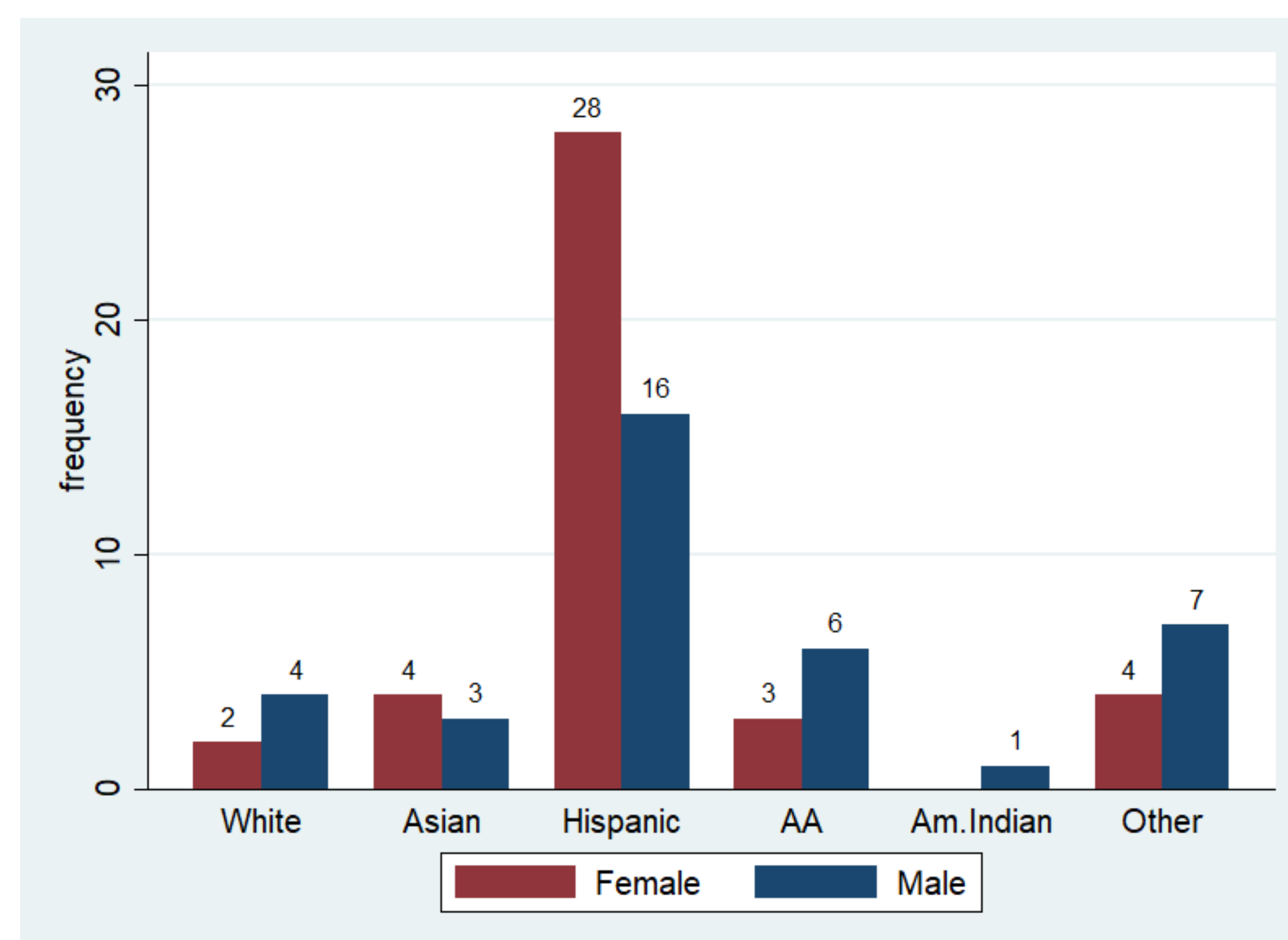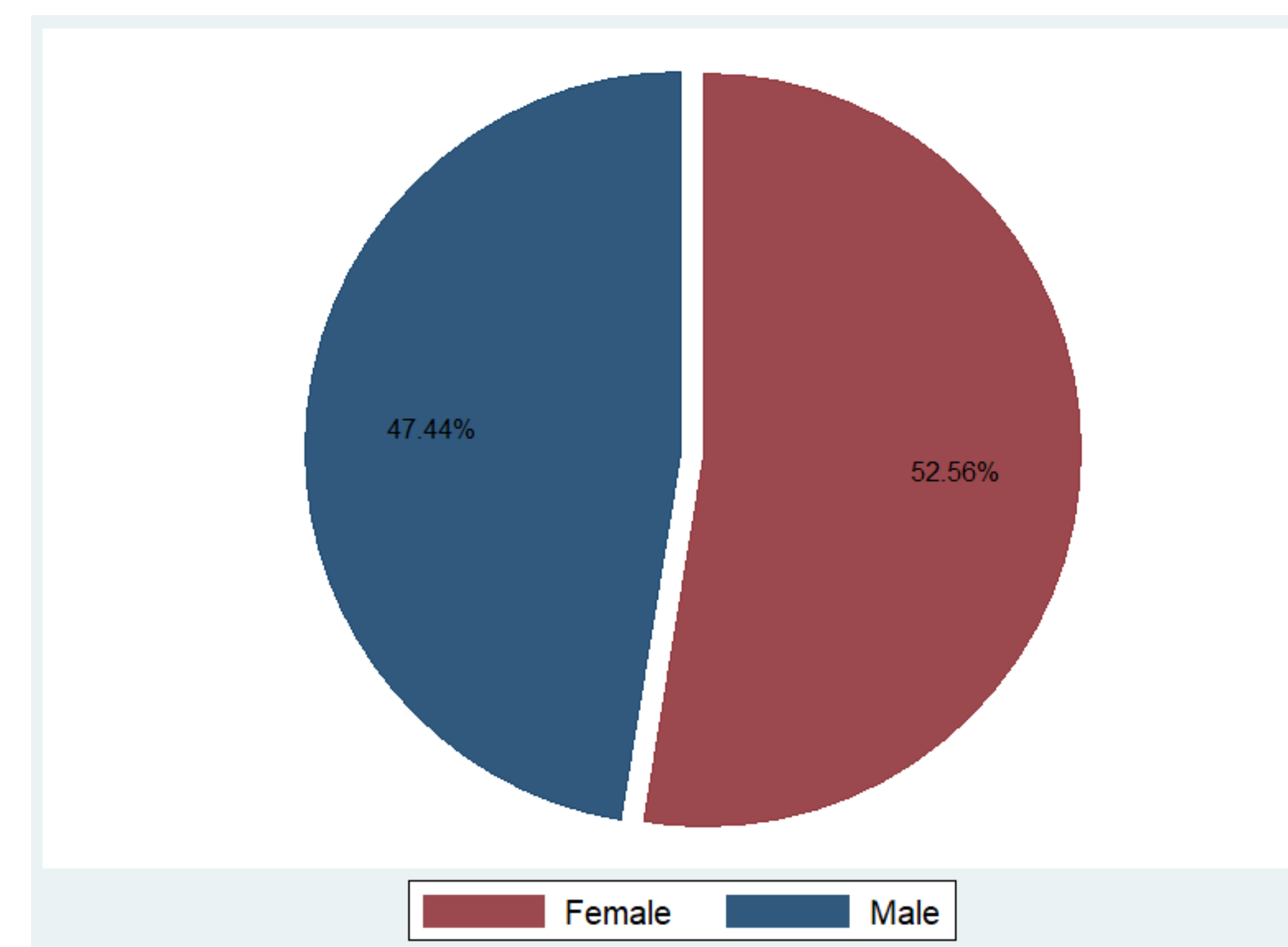
Fig 1. Demographics by race and gender

Fig 2. Demographics by gender

Variable	Pre	Post	
A1C levels			
Mean (SD)	11.2 (2.6)	8.8 (1.9)	P < 0.05*
Min - Max	5.8 – 18.2	5.7 – 14.5	
BMI			
Mean (SD)	32.5 (7.4)	27.8 (4.9)	P < 0.05*
Min – Max	19.3 – 51.5	23.2 – 47.2	

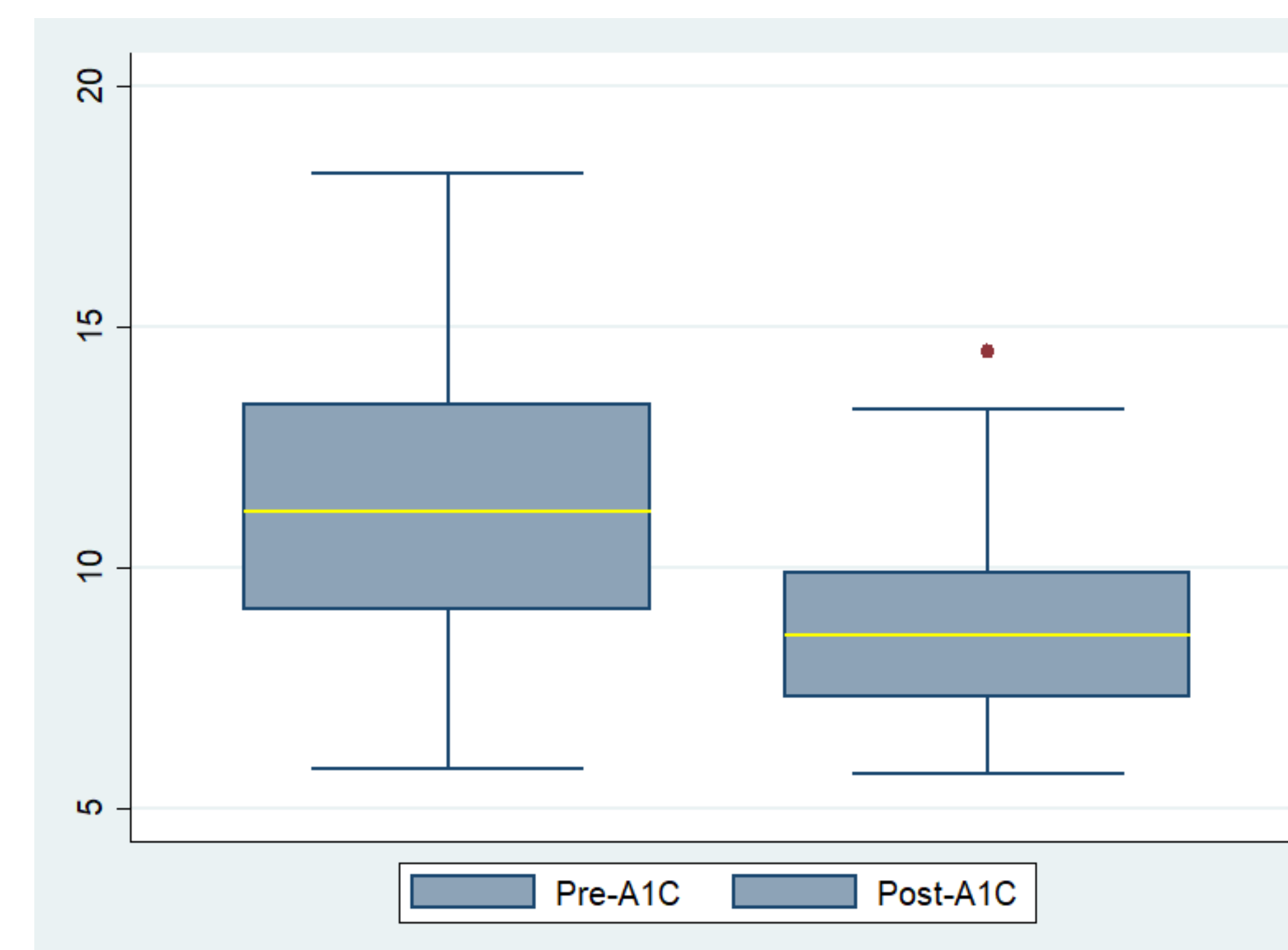Fig 3. Pre and Post A1c and BMI of participants

Fig 4. Plot of pre and post A1c

Discussion

- Diabetes Mellitus is one of the most prevalent diseases worldwide, with prevalence in San Joaquin County being 11%
- Managing this disease and its complications have been challenging
- Those enrolled in the study had a mean starting HbA1c of 11.24
- With a reduction of approximately 2.5, the group approach appears to be effective
- There was a reduction in BMI, as well, but it is unknown if there were other confounding factors
- Complications rate is yet to be seen, and will need to be continuously monitored

Conclusions

- Patients with lower SES, medically underserved, may have a propensity to default to their own understanding of treatment and pathogenesis of T2DM
- These challenges led to creation of different ways to improve clinical outcomes by implementing an effective care model
- There is a role for CDGC in reducing HBA1c and decreasing the rate of complications from T2DM
- Further studies need to be performed in order to evaluate improvement in LDL, HDL, and TG
- Next step is to compare patients who reached goal in our clinic to a similar diabetes clinic in our hospital
- Increasing the amount of patients enrolled in CDGC can greatly impact our patients health and reduce the overall cost burden on healthcare