

## Background

The rate of diabetes continues to grow exponentially, and currently more than 100 million Americans are living with type 2 diabetes or prediabetes. A report released in 2015 by the Center for Disease Control and Prevention (CDC) estimates that 1.5 million new cases of diabetes were diagnosed in adults and adolescents ages 18 years and older. Additionally, the American Diabetes Association (ADA) reported that diabetes was the 7<sup>th</sup> leading cause of disease on 2015. While diabetes does not always lead to fatality, if left untreated, diabetes could lead to nephropathy, retinopathy, neuropathy, and other serious health complications.

Treatment and management of diabetes comes in several forms, which includes oral medication, insulin injections, and counseling programs. Current methods of educational programs include individual or group sessions that are face-to-face or telehealth (virtual instruction) settings.

Research has shown that group-based diabetes management education improve glycemic measures of fasting plasma glucose (FPG) and hemoglobin A1c (hbA1c) in adults with type 2 diabetes (T2DM). Group-based programs for diabetes management education differ widely in session length, program duration, topic, instructor type, setting, and more. Curriculum alone varies widely throughout programs ranging from diet, exercise, and self-management in glucose monitoring and insulin dosing. Additional research is needed to examine the effective qualities of group-based programs.

## Objective

*The aim of this study was to conduct a systematic review of the literature to reveal the qualities of diabetes management education programs that are effective in improving glycemic measures (FPG and hbA1c) in adults (30-70 years) with T2DM.*

## Methods

Systematic search utilizing electronic databases  
PubMed and ProQuest Central

### Inclusion Criteria:

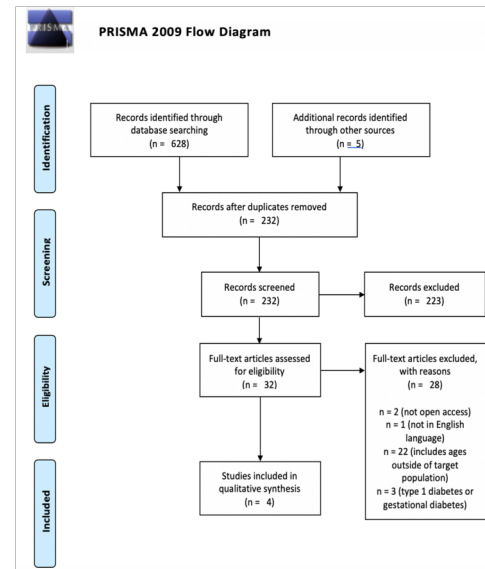
- English Language
- January 2012 – October 2018
- Randomized Controlled Trials (RCTs)
- Sample size of  $\geq 10$  subjects
- Attrition rate of at least 20%
- Ages 30-70 years old
- Diagnosis of T2DM
- Group-based programs
- Free-living, community dwelling
- Minimum study period- 12 weeks

### Exclusion Criteria:

- Prediabetes, type 1 diabetes, or prediabetes diagnosis
- Preventative educational programs
- Does not meet the listed inclusion criteria

Primary outcome measurements: Hb A1c and FPG

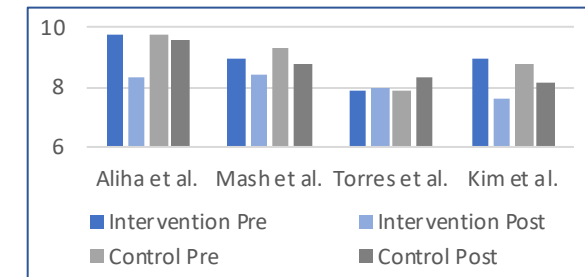
Figure 1: PRISMA diagram of the search strategy for the systematic review



## Results

- N = 4 studies
- Conducted in Iran, Africa, Brazil, and the United States (US)
- Outcome measurements: Hb A1c – n = 4 studies; FPG – n = 2 studies

Table 1: HbA1c measures in intervention vs control groups in included studies (%)



\* HbA1c at baseline and 12 months, with n = 1 study results after 12 weeks (Aliha et al.)

### Systematic Review Highlights:

- N = 1 study with significant improvements in FPG after 12 weeks, ( $p < 0.05$ ) [Aliha et al]
- N = 1 study with significant improvements in HbA1c after 3, 6, 9, and 12 months, ( $p < 0.001$ ) [Kim et al.]
- Program duration: 1 hour education sessions, greater than 12 weeks
- Topic: self-management, insulin, diet, oral drugs, exercise
- Instructor: nurses, community health workers, dietitians, physicians
- Setting: community centers and clinics

## Conclusions

*This systematic review reveals group-based diabetes management education programs are effective in improving glycemic measures in adults with T2DM when they incorporate multidisciplinary teams, discuss diet, medication, and glucose monitoring, and are 12 weeks or longer.*

*This review provides foundational aspects for health professionals to consider when developing diabetes management programs. Future research is needed to assess group program effects with larger samples.*