

Back to the Basics with SMART Goals: A Multimodal Intervention for Adults Who Have Type 2 Diabetes (T2D)

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Significance of the Problem

- Diabetes is the 7th leading cause of death in the U.S. and has increased by 70% in 20 years (CDC, 2020)
- T2D accounts for 90% to 95% of diagnosed cases and can result in stroke, heart attack, and kidney disease (ADA, 2019; WHO, 2021)
- Indiana: top 10 states with highest number of cases, highest prevalence rate in Midwest at 12.4% (ISDH, 2019; SCOB, 2020)

PICOT Question

In adults who have T2D (P), how does the implementation of a multimodal intervention to encourage self-management (I) compared to current practices (C) impact hemoglobin A1c (HgbA1c) levels (O) over a 12-week period (T)?

Review of Literature

Evidence	Database	LOE ^a / Quality ^b
Alexandre et al. (2021) Khanh-Dao Le (2021a) Khanh-Dao Le (2021b) Ombech (2021) Podder (2021)	JBI	I/High
Garber et al. (2021) Pogach et al. (2017) Standiford et al. (2019) Waring et al. (2021)	TRIP	I/Good I/High I/High I/Good
Chrvala et al. (2016) Sherifali et al. (2016)	CINAHL	I/High
Almutairi et al. (2020) Baldoni et al. (2017)	MEDLINE	I/High
Riddle et al. (2019)	Citation Chase	I/High

^aMelnik & Fineout-Overholt (2019); ^bJohns Hopkins (Dang et al., 2022)

Search Terms

- “Diabetes Mellitus”, “Type 2”
- Self-manag*, Manag*, Self-care
- “Hemoglobin A1c”

Best Practices

- Diabetes self-management education (DSME) and support (DSMS) to improve glycemic control (Chrvala et al., 2016; Podder, 2021; Pogach et al., 2017; Riddle et al., 2019; Sherifali et al., 2016)
- DSME: Lifestyle modifications centered around nutrition, physical activity, blood glucose monitoring, and medication adherence (Alexandre et al., 2021; Almutairi et al., 2020; Garber et al., 2021; Khanh-Dao Le, 2021b; Pogach et al., 2017; Riddle et al., 2019; Standiford et al., 2019; Waring et al., 2021)
- DSMS: Goal setting, empowerment, and frequent follow-up (Almutairi et al., 2020; Baldoni et al., 2017; Chrvala et al., 2016; Garber et al., 2020; Khanh-Dao Le, 2021b; Pogach et al., 2017; Riddle et al., 2019; Sherifali et al., 2016; Standiford et al., 2019; Waring et al., 2021)

Implementation

EBP Model: Iowa Model Revised
Setting: Rural family practice office in Northern Indiana
Participants: 33 patients recruited, 18 or older, had T2D, and desired to make lifestyle changes
Multimodal Intervention: Patients set individualized SMART goals centered on lifestyle modifications, received a folder containing DSM educational supplements and tools, and frequent follow-up by way of reminder letters and a progress telephone call at 2, 4, and 8 weeks
Comparison: HgbA1c level and DSM questionnaire (DSMQ) pre- and post-intervention
Timeframe: 12 weeks

S Specific	What do I want to achieve? (Is your goal precise?)
M Measurable	How will I know when I've reached my goal? (How will you track your progress?)
A Attainable	Is meeting this goal possible for me? (What do you need to make sure you achieve your goal?)
R Realistic	Is this goal something I know I can achieve if I try? (Is this goal important to you?)
T Time-Specific	When do I want to achieve this goal? (What is your target date?)

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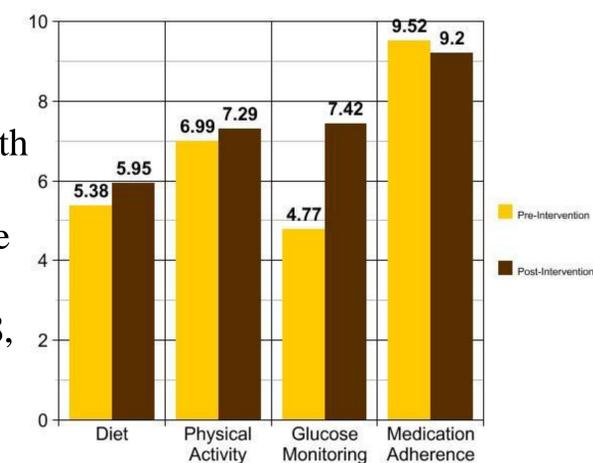
Evaluation

Primary Outcomes

- A paired-samples *t* test was calculated to compare mean HgbA1c levels: pre-intervention HgbA1c was 7.79 (*SD* = 1.28) and post-intervention HgbA1c was 7.69 (*SD* = 1.28)
- Primary outcome lacked statistical significance between pre- and post-intervention HgbA1c levels ($t(30) = .59, p = .557$)
- 45% of patients had lower post-intervention HgbA1c levels

Secondary Outcomes

- A paired-samples *t* test was calculated to compare the mean pre- and post-intervention DSMQ scores ($n = 22$)
- Statistical significance was noted with improved blood glucose monitoring ($t(22) = -3.18, p < .05$)
- 100% satisfaction



Conclusion & Recommendations

- Limitations: holidays, weather, and illness
- Patients were satisfied with the multimodal intervention and appreciated frequent follow-up to promote DSM accountability
- Future research is needed to:
 - determine how to help patients better manage T2D during winter months/holidays
 - if intervention impacts long-term diabetes outcomes and overall health



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