

Background

American Diabetes Association (ADA) recommends all diabetes patients be screened annually for depression

Global rate of diabetes has nearly doubled in the past 35 years from 4.5% in 1980 to 8.8% in 2015¹

Depression affects nearly 1 in 10 patients with diabetes²

Depression is significantly associated with non-adherence to diabetes treatment recommendations^{3,4}

Glycemic response of antidepressants in diabetes patients has shown mixed results^{5,6}

- Proposed direct biologic mechanism involves:

Stress of Hypothalamus Pituitary Adrenal Axis

↑ Interleukin 6 & C-Reactive Protein production

Increase beta cell destruction

Increase destruction of serotonin

- The need to conduct this study comes from the growing global prevalence of diabetes and depression and the need to better understand the relationship between the two disease states.

Purpose and Objectives

Purpose

- To evaluate potential correlation between treatment of uncontrolled depression and change in glycated hemoglobin A1c (HgbA1c) in patients with uncontrolled diabetes

Primary Endpoint

- To determine a correlation between HgbA1c values and Patient Health Questionnaire 2/9 (PHQ2/9) scores
 - HgbA1c values at time 0, 3, 6, and 12 months
 - PHQ2/9 scores at time 0, 3, 6, and 12 months

Secondary Endpoints

- Percent of patients with a dose change in their diabetes and/or depression medication during trial period
- Percent of patients that subjectively stated their symptoms of depression improved during the study period
- Percent of patients with emergency department (ED) visits and/or hospital admissions related to diabetes or depression

Methods

Setting

- Family Medical Care Center
- 43 providers
- >4,000 underserved patients

Study Design

- Minimal risk, retrospective, case-controlled study

Time Period

- January 1, 2016 – December 31, 2018

- Correlation between diabetes and depression was developed and defined with a clinically significant difference as outlined below:



Inclusion & Exclusion Criteria



Inclusion Criteria Exclusion Criteria

- | | |
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| <ul style="list-style-type: none"> - Age ≥ 18 years & < 65 years - Chart diagnosis for major depressive disorder and diabetes with HgbA1c > 5.7% - Patient encounter at Family Medical Care Center during study period - Antidepressant issued during study period | <ul style="list-style-type: none"> - Patients experiencing normal bereavement - Vulnerable populations (i.e. elderly, pregnancy, etc.) |
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Results

New Depression Patients Baseline Characteristics

Characteristic	Total Trial Members (N = 24)
Age ± IQR	47 ± 18
Female (%)	16 (67%)
Caucasian (%)	23 (96%)
Baseline HgbA1c % ± IQR	8.06% ± 2.5%
Baseline PHQ9 Completed (%)	15 (63%)
Baseline PHQ9 ± IQR	16.5 ± 9

Results (Continued)

Primary Objective Measures (N=24)

Characteristic	Baseline	3 Months	6 Months	12 Months
HgbA1c Completed (%)	24 (100%)	11 (46%)	14 (58%)	13 (54%)
HgbA1c% ± IQR	8.06% ± 2.5%	8.34% ± 3.4%	7.96% ± 2.1%	7.91% ± 2.9%
HgbA1c Point Change Compared to Baseline ± IQR	N/A	-0.52% ± 2.3%	-0.29% ± 1.3%	-0.82% ± 3.1%
PHQ9 Completed (%)	15 (63%)	5 (21%)	4 (17%)	2 (8%)
PHQ9 ± IQR	16.5 ± 9	16 ± 9.5	15.5 ± 11	13.5 ± 17
PHQ9 Point Change ± IQR	N/A	-1 ± 8	-3.3 ± 11	-3.5 ± 13

Discussion & Future Direction

- Low number of patients had documented follow-up visits. For patients with follow-ups, inconsistent HgbA1c and PHQ9 parameters were followed
- Wide IQRs and lack of patient enrollment warrant additional studies to take place

- Future Direction:

Present findings to family medicine residency administration

Design follow-up prospective study

Perform a validation study within the health system

References

- Alzoubi, Abdallah, et al. The Bidirectional Relationship between Diabetes and Depression: A Literature Review. Korean Journal of Family Medicine. 2018;39(3):137-146.
- McKellar JD, Humphreys K, Piette JD. Depression increases diabetes symptoms by complicating patients' self-care adherence. Diabetes Educ. 2004;30(3):485-492.
- Holt, Richard I. G., et al. Diabetes and Depression. Current Diabetes Reports. 2014;14(6).
- Gonzalez JS, Peyrot M, McCarl LA, et al. Depression and diabetes treatment nonadherence: a Middle-Income Countries: a Systematic Review Protocol. Systematic Reviews. 2018;7(1meta-analysis). Diabetes Care. 2008;31(12):2398-403.
- Manigault, Kendra R. The Bidirectional Relationship Between Depression & Diabetes. U.S. Pharmacist – The Leading Journal in Pharmacy. 2016.
- Udedi, Michael, et al. The Effect of Depression Management on Diabetes and Hypertension Outcomes in Low- and Middle-Income Countries: a Systematic Review Protocol. Systematic Reviews. 2018;7(1).

Author Disclosures

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