Depression as a Barrier to Diabetes Management: A Mixed-Methods Review

Kelsey Mendell, Gateways to Medicine Program
Mentors: Carolyn Nassar, MD[1], Edward Stulik, MD[1], Elizabeth Tobin-Tyler, JD, MA[2], Gowri Anandarajah, MD[2]
[1]Brown Internal Medicine, [2]Warren Alpert Medical School at Brown University

Background

- In 2019, more than **10.4%** of the Rhode Island population had been diagnosed with diabetes
- Diabetes contributes to heart disease and strokes, the leading and fifth leading causes of death, respectively, in the U.S.
- Individuals with diabetes are at a higher risk of developing **co-morbidities**
- In 2020, **37.1%** of adults in Rhode Island reported symptoms of depression or anxiety
- There has been a **3-fold increase** in prevalence of depression in the U.S. during the COVID-19 pandemic
- In Rhode Island, diabetes and depression are the second and third most common **chronic conditions**, respectively

Objectives

- *Determine the impact of depression on diabetes management*
- *Suggest possible interventions to improve symptoms and overall health*

Methods

Mixed-Methods Design

In collaboration with Brown Internal Medicine

Literature Review

- Utilized Google Scholar and PubMed to evaluate what research has found regarding the influence of depression on diabetes management.
- This review also served to determine possible methods of intervention to improve patient care.

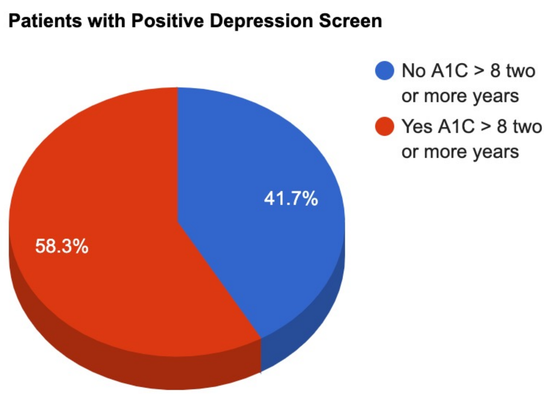
QI Project

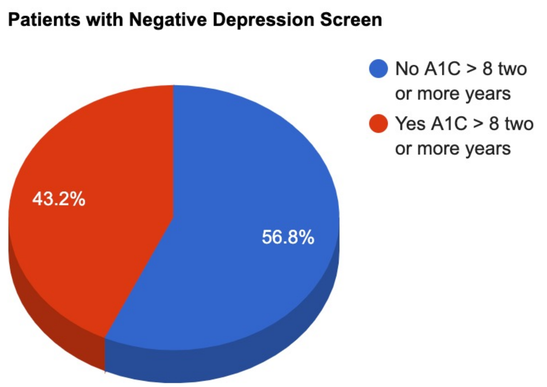
- Reviewed the EMRs via EClinicalWorks for 142 patients from January 2021 with unmanaged diabetes who were identified through Brown IM's regular "Quality Bundle."
- Patients qualified as unmanaged if their HbA1c levels > 8%. Analyzed data with Excel.

QI Results

Group	# of Patients	# of Patients Eligible	Proportion (%)
Patients with a Positive Depression Screen	24	142	16.9%
Patients with a Positive Depression Screen & HbA1c > 8 for 2 or more years	14	24	58.3%
Patients with a Negative Depression Screen	118	142	83.1%
Patients with a Negative Depression Screen & HbA1c > 8 for 2 or more years	51	118	43.2%

Figure 1: Counts and percentages of patients at Brown IM with positive or negative depression screens and HbA1c levels > 8 for ≥ 2 years (n=142) ; Positive Depression Screen: PHQ ≥ 3



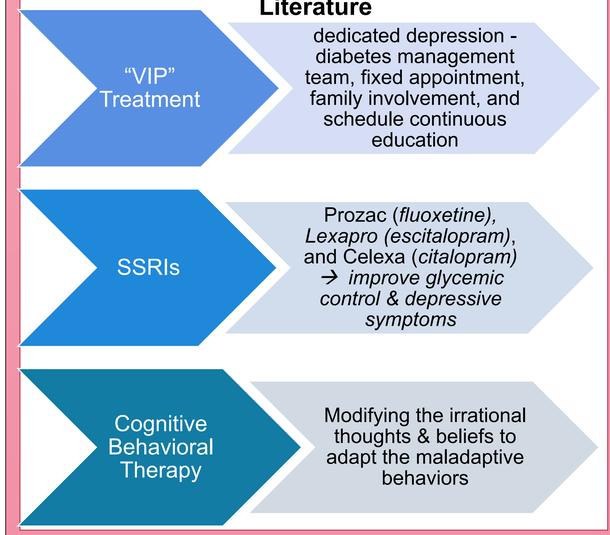


Literature Review Results

Impacts of depression on diabetic management

- Patients under the emotional toll of depression were **less** likely to comply with medications, physical activity and regular glucose testing regimens
- **42** Independent studies concluded that depression was *significantly* associated with **non-adherence** to diabetic treatment ($P < 0.0001$)
- Depression in T2DM is associated with an *increased risk of* developing **heart disease, stroke, metabolic syndrome, retinopathy,** and **obesity**
- Depression was associated with **poorer** glycemic control

Suggestions for Best Practices from the Literature



Conclusions & Next Steps for Brown IM

- Patients with a positive depression screen are more likely to have an **HbA1c > 8** for **2** or more years
- Next Steps:
  - Evaluate which interventions will work with Brown IM
  - Implement them through another QI project or experimental study
  - Assess the improvements both during and after the studies
  - Obtain both patient and provider feedback

Acknowledgements

- Special thanks to my project mentors Elizabeth Tobin-Tyler for keeping me on track and Dr. Carolyn Nassar for her guidance and expertise throughout the project.
- Thank you to Dr. Ed Stulik for allowing me to shadow him throughout the year and ask questions constantly.
- Thank you to my peers Julianne Baker, Vasundhara Balraj, Hudson Lee, Joshua McBriar, & Saif Pasha for their support and encouragement.

References

See Handout