Depressive Symptoms and Cardio-Metabolic Disease Control in Adults: Findings from Annual Wellness Visits

Shyam Maisuria, B.S. [1], Amber Parson, B.A. [1], Jenna Phreaner, B.A. [1], Alayna Santarosa, MPH, [1], Julianne Sohn, ScM [1], Reynaldo Zamora, B.S. [1], Khuram Riaz Ghumman, M.D. [1]

[1] Quinnipiac University, Frank H. Netter MD School of Medicine, North Haven, CT

Background

Depression affects about one in six adults aged 65 and older and is more common in those with chronic conditions such as diabetes and cardiovascular disease. The Patient Health Questionnaire-9 (PHQ-9) is a validated, practical screening tool and is reimbursed through Medicare during the Annual Wellness Visit (AWV). Prior studies link higher PHQ-9 scores with poorer glycemic and blood pressure control, obesity, dyslipidemia, and greater hospitalization risk. However, little is known about how PHQ-9 scores captured at AWVs reflect differences in real-world cardio-metabolic outcomes, creating a gap our study aims to address.

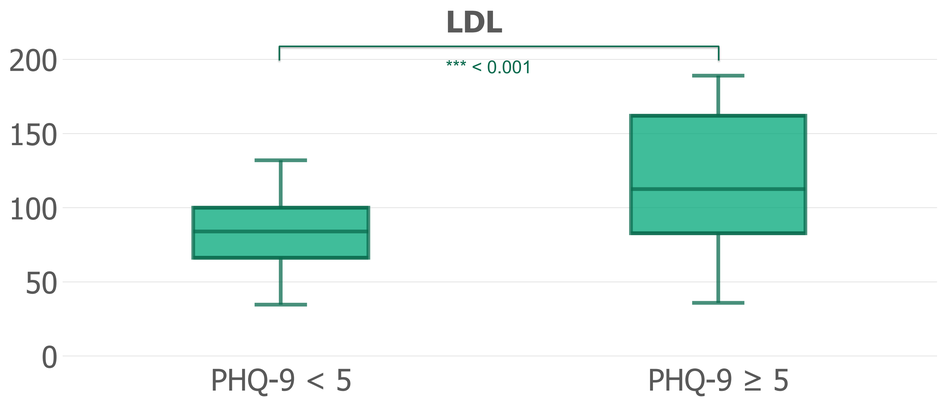
Objectives & Aims

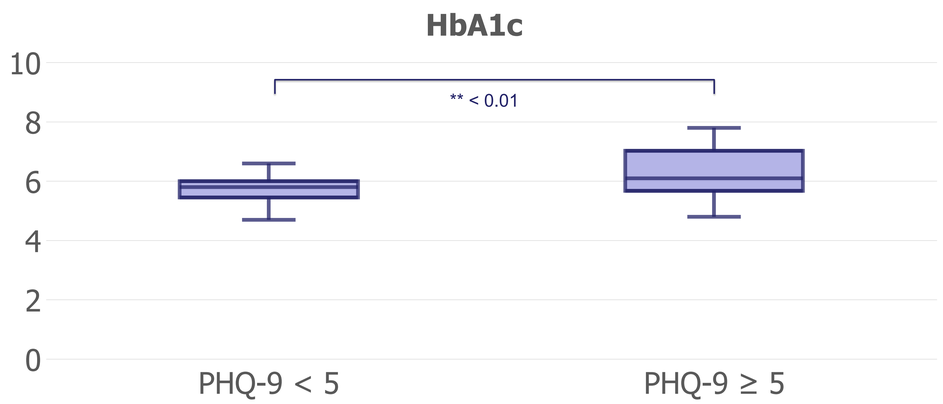
To determine whether older adults (≥65) with depressive symptoms (PHQ-9 ≥5 at Annual Wellness Visit) have poorer control of cardio-metabolic markers compared to those with PHQ-9 <5.

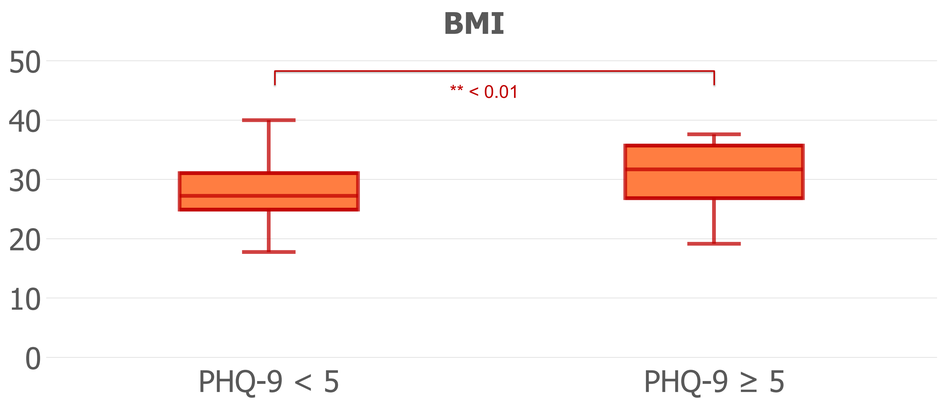
1. **Compare** A1c, systolic/diastolic blood pressure, LDL, total cholesterol, triglycerides, HDL, and BMI between PHQ-9 ≥5 vs <5 groups.
2. **Assess** whether even mild depressive symptoms (PHQ-9 ≥5) are associated with measurable differences in cardio-metabolic control.
3. **Identify** a potential role for integrating routine PHQ-9 screening into AWVs as a strategy for improving chronic disease management in older adults.

Methods

- **Design**: Retrospective review across 6 primary care practices
- **Population**: 86 patients, age ≥65, with Annual Wellness Visit (AWV) and documented PHQ-9
- **Groups**: PHQ-9 <5 (no/minimal depressive symptoms) and PHQ-9 ≥5 (mild to severe depressive symptoms)
- **Outcomes measured**: HbA1c, systolic BP, diastolic BP, BMI, LDL, HDL, triglycerides, total cholesterol
- **Analysis**: Normality assessed; unpaired t-tests or Mann–Whitney tests for group comparisons







Results

HbA1c: PHQ-9 ≥5 group had significantly higher average values compared to PHQ-9 <5 ($p < 0.01$).
BMI: PHQ-9 ≥5 group had significantly higher BMI than PHQ-9 <5 ($p < 0.01$).
Systolic Blood Pressure: PHQ-9 ≥5 group showed higher systolic BP ($p < 0.05$).
Diastolic Blood Pressure: PHQ-9 ≥5 group showed higher diastolic BP ($p < 0.05$).
LDL Cholesterol: PHQ-9 ≥5 group had markedly higher LDL ($p < 0.001$).
Total Cholesterol: PHQ-9 ≥5 group had higher total cholesterol ($p < 0.05$).
HDL Cholesterol: No significant difference between groups.
Triglycerides: No significant difference between groups.

Conclusions

- Older adults with PHQ-9 ≥5 had worse control of key cardio-metabolic markers.
- Even mild depressive symptoms were linked to elevated A1c, BP, LDL, cholesterol, and BMI.
- Results support the clinical value of PHQ-9 screening at Annual Wellness Visits (AWVs) as a tool for integrated chronic disease and mental health management.
- Findings align with prior literature, strengthening their clinical relevance despite limitations.
- **Limitations**: Small sample size (n=86), cross-sectional design, no adjustment for age, sex, comorbidities, or medication use.
- **Future directions:** Larger, prospective and interventional studies to test whether treating depression improves cardio-metabolic outcomes.
- **Takeaway**: PHQ-9 screening at AWVs should be viewed as both a mental health and a chronic disease care strategy.

References & Links