Effects of a community-clinic diabetes intervention on depression symptoms in low-income Mexican Americans along the US-Mexico border

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Salud y Vida

- ❖ Salud y Vida is an evidence-based expanded chronic care management program for low-income, uninsured individuals with type 2 diabetes

- ❖ Salud y Vida includes social support by community health workers and community-clinic partnership addressing Social Determinants of Health (SDOH)

- ❖ Salud y Vida is effective at improving HbA1c control

- ❖ **Does the intervention have a secondary effect on depression symptoms among participants**

Salud y Vida diabetes care beyond the clinic: Expanded chronic care management model
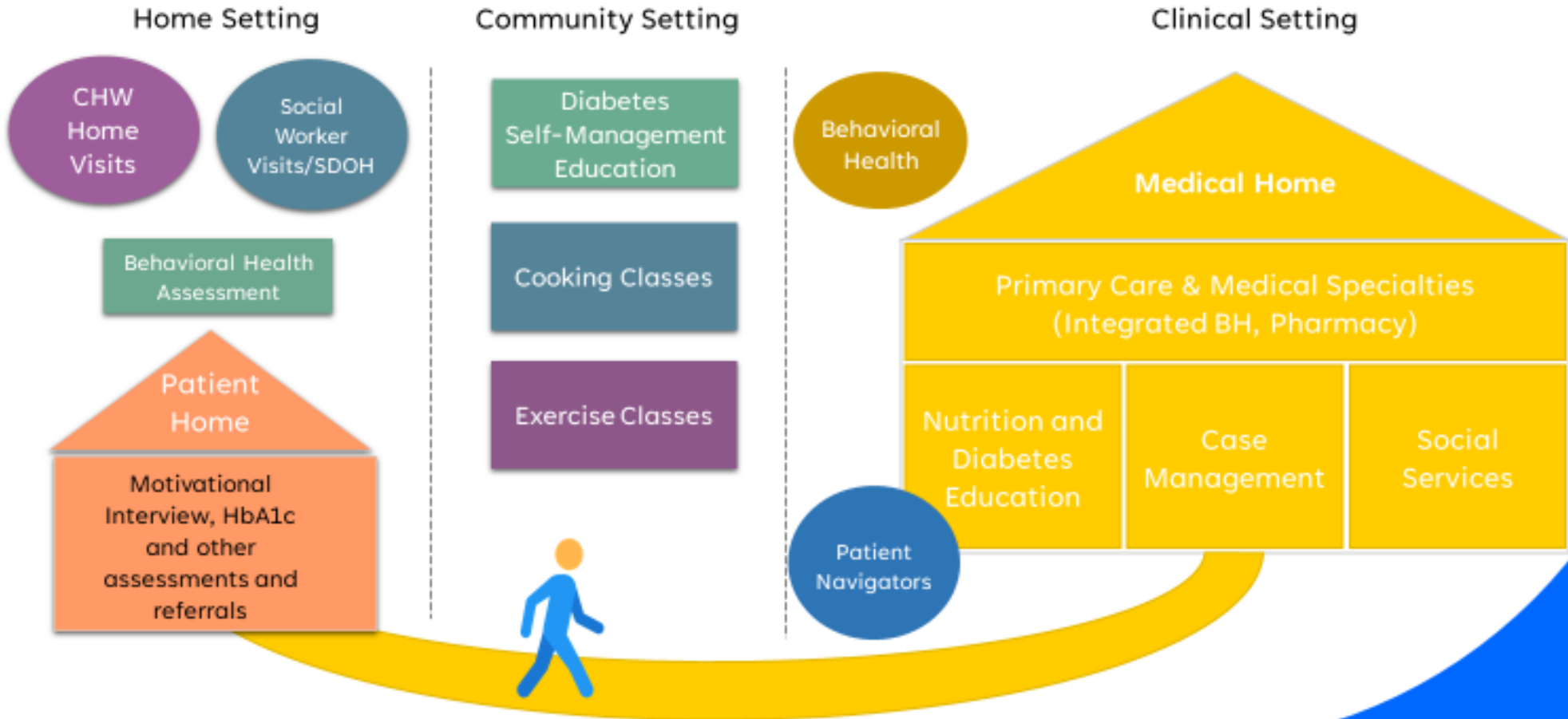
Baseline Demographic Characteristics of Sample

Table 1 Baseline demographic characteristics				
Variable	All n=292	Standard Intervention n=145 (49.9%)	Enhanced Intervention n=147 (51.1%)	P value
Age, mean (SD)	51.58 (9.07)	52.08 (9.24)	51.08 (9.00)	0.350
Female, n(%)	215 (73.63%)	110 (75.86)	105 (71.43)	0.467
White, n(%)	274 (96.48%)	139 (97.89)	135 (95.07)	0.334
Speak Spanish, n(%)	196 (67.12%)	100 (68.97)	96 (65.31)	0.589
Employment				
Not employed, n(%)	181 (63.07%)	90 (62.94)	91 (63.19)	0.351
Employed, n(%)	35 (12.20%)	21 (14.64)	14 (9.72)	
Other, n(%)	71 (24.74%)	32 (22.38)	39 (27.08)	
Married, n(%)	150 (52.08%)	77 (53.47)	73 (50.69)	0.723
Insurance, n(%)	79 (30.15%)	41 (31.30)	38 (29.01)	0.788
Education, > 8th grade, n(%)	115 (39.79%)	58 (40.56)	57 (39.04)	0.886

Depression

❖ Depression can be responsive to social support and community-clinic partnership service referrals that are part of Salud y Vida

❖ Behavioral health referrals are instigated when participants are screened for depression, among other social and medical needs

❖ Salud y Vida participants completed PHQ-9 depression screening questionnaires at baseline, at month 6, and month 12

❖ Question: Does Salud y Vida participation help address depression symptoms?

PHQ-9 Depression Screening & Scoring

Over the last 2 weeks, how often have you been bothered by the following problems?	Not at all	Several days	More than half of the days	Nearly every day
Little interest of pleasure in doing things	0	1	2	3
Feeling down, depressed, or hopeless	0	1	2	3
Trouble falling or staying asleep, or sleeping too much	0	1	2	3
Feeling tired or having little energy	0	1	2	3
Poor appetite or overeating	0	1	2	3
Feeling bad about yourself- or that you are a failure or have let yourself or your family down	0	1	2	3
Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
Moving or speaking so slowly that other people could have noticed, or the opposite- being so fidgety or restless that you have been moving a lot more than usual	0	1	2	3
Thoughts that you would be better off dead, or of hurting yourself in some way	0	1	2	3

Interpreting PHQ-9 Scores

Score	Severity of Depression Symptoms	Recommended Clinical Action
0-4	None to minimal	None
5-9	Mild	Watchful waiting, use clinical judgment regarding need for intervention, repeat PHQ-9 at follow-up
10-14	Moderate	Use clinical judgment regarding counseling and/or therapy
15-19	Moderately severe	Treatment involving antidepressants and/or psychotherapy
20-27	Severe	Treatment using antidepressants and psychotherapy

Referral to behavioral health services

Methods

❖ Multivariable longitudinal regression analysis using generalized estimating equation method to account for potential repeated measures correlations

❖ Negative binomial regression model for PHQ-9 score changes longitudinally

❖ Logistic regression model for proportion of PHQ-9 based referrals longitudinally

❖ Tested interaction of intervention and time to estimate intervention effect at each time point

❖ Confounding factors
  ❖ Demographics such as age, sex, race, preferred language, marital status, employment, equipment, insurance status
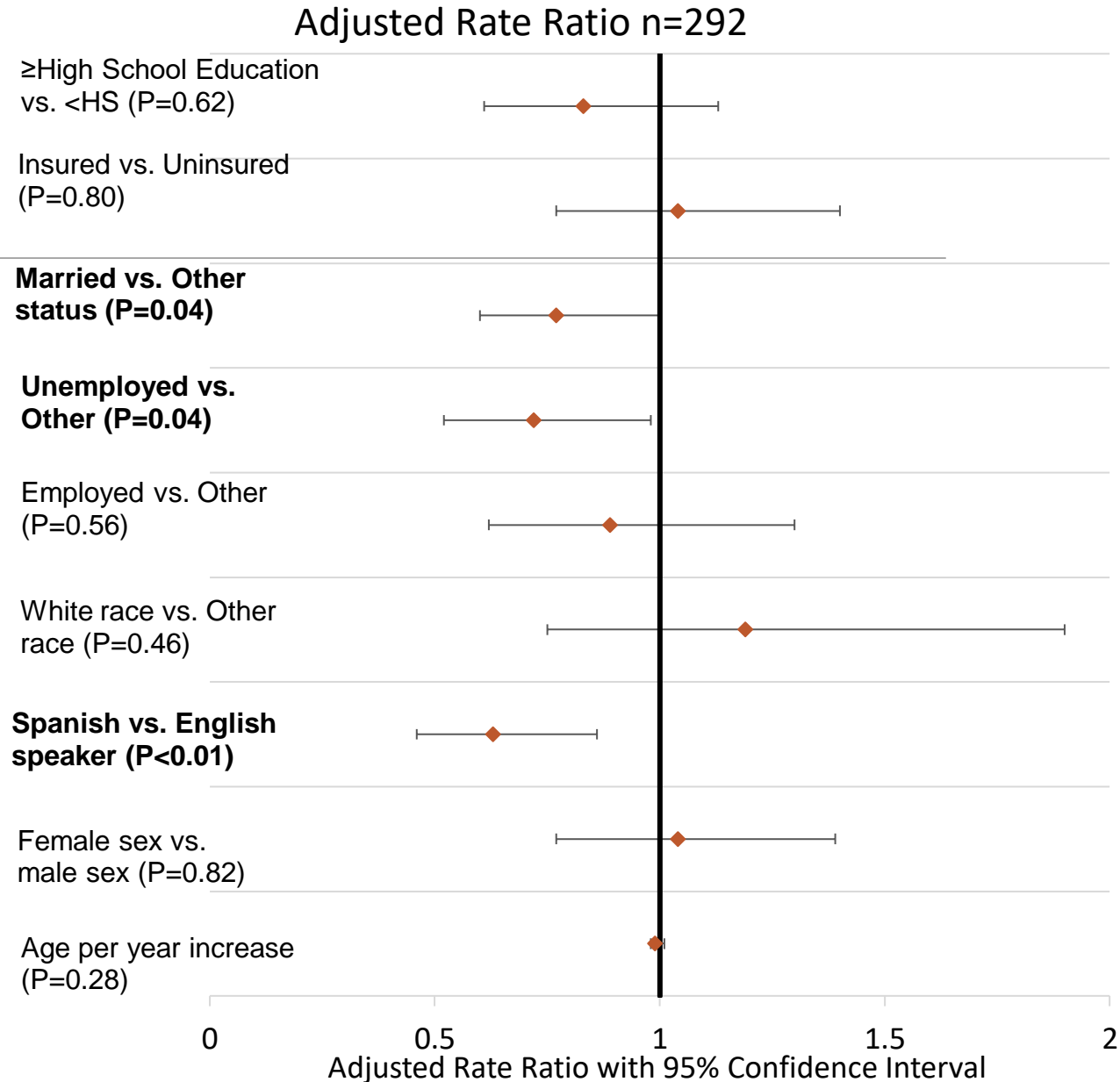
❖ Used SAS 9.4

Results

- ❖ Mean PHQ-9 Score Reduction

- ❖ Significant decreases in mean PHQ-9 from baseline vs. month 6 and month 6 vs. month 12

Adjusted Mean PHQ-9 Scores

Legend:
- Overall (n=292)
- Subgroup with baseline clinical depression (n=121)
- --- Mild Depression Threshold
- --- Moderate Depression Threshold
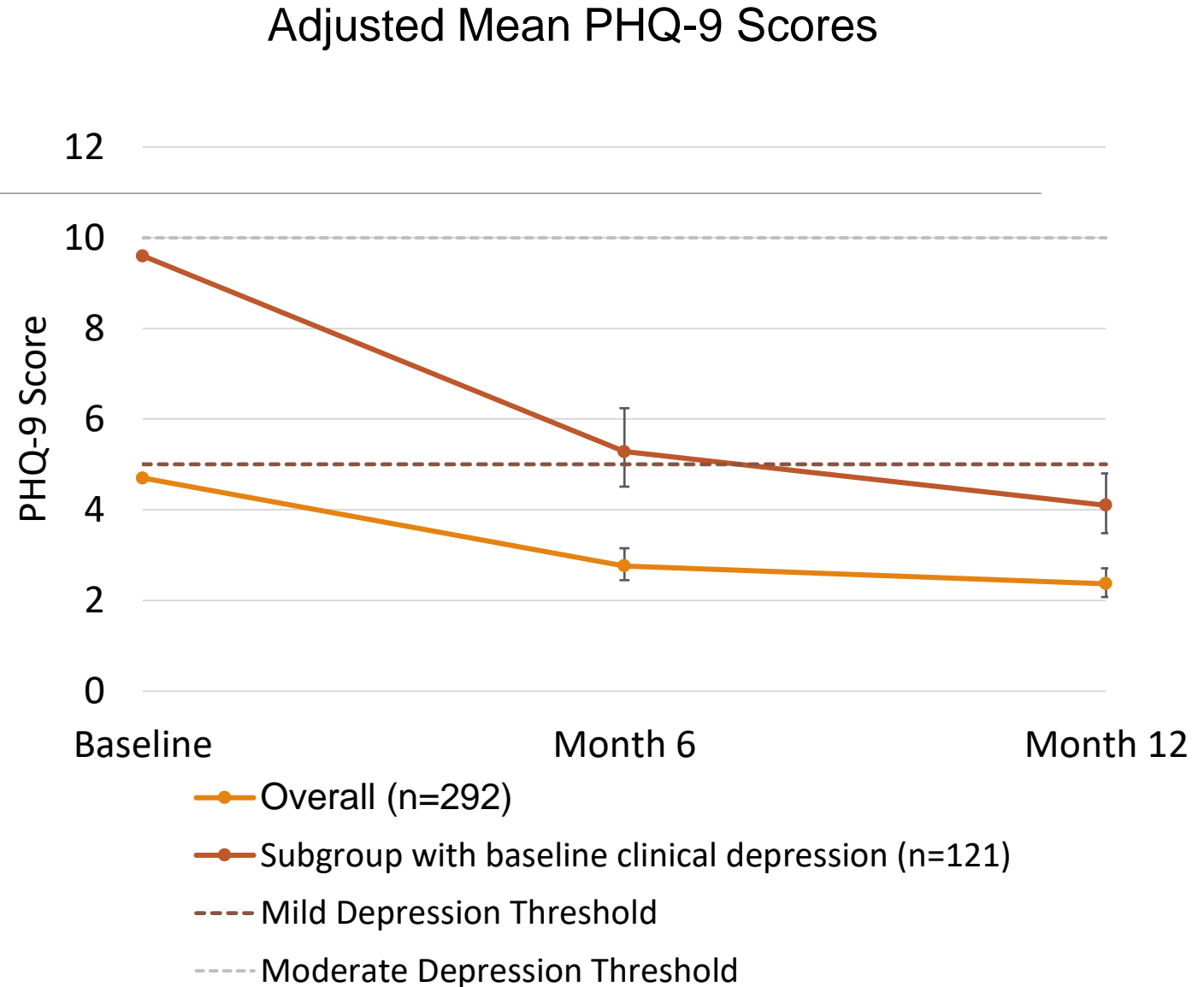
Results

Multivariable Regression of Predictors of PHQ-9 Score Change in All Participants

Adjusted Rate Ratio of PHQ-9 Score Change Over Time in All Salud y Vida Participants (n=292)

Adjusted Rate Ratio n=292

≥High School Education vs. <HS (P=0.62)

Insured vs. Uninsured (P=0.80)

Married vs. Other status (P=0.04)

Unemployed vs. Other (P=0.04)

Employed vs. Other (P=0.56)

White race vs. Other race (P=0.46)

Spanish vs. English speaker (P<0.01)

Female sex vs. male sex (P=0.82)

Age per year increase (P=0.28)

0   0.5   1   1.5   2

Adjusted Rate Ratio with 95% Confidence Interval

Results

Multivariable Regression of Predictors of PHQ-9 Score Change in Participants with Baseline Depression

Adjusted Rate Ratio (95% confidence interval) of PHQ-9 Score Change Over Time in Salud y Vida Participants with Baseline Depression (n=121)
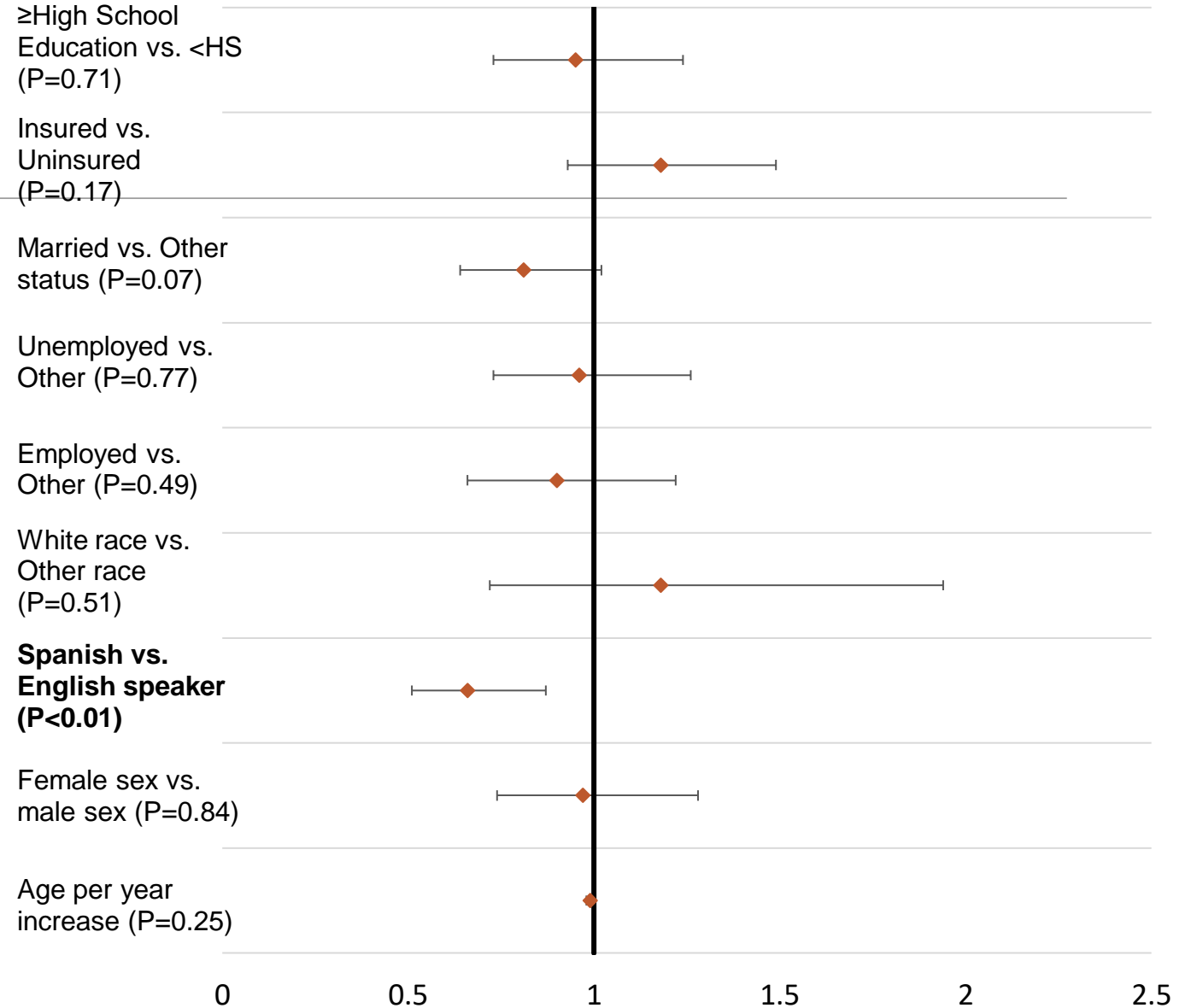
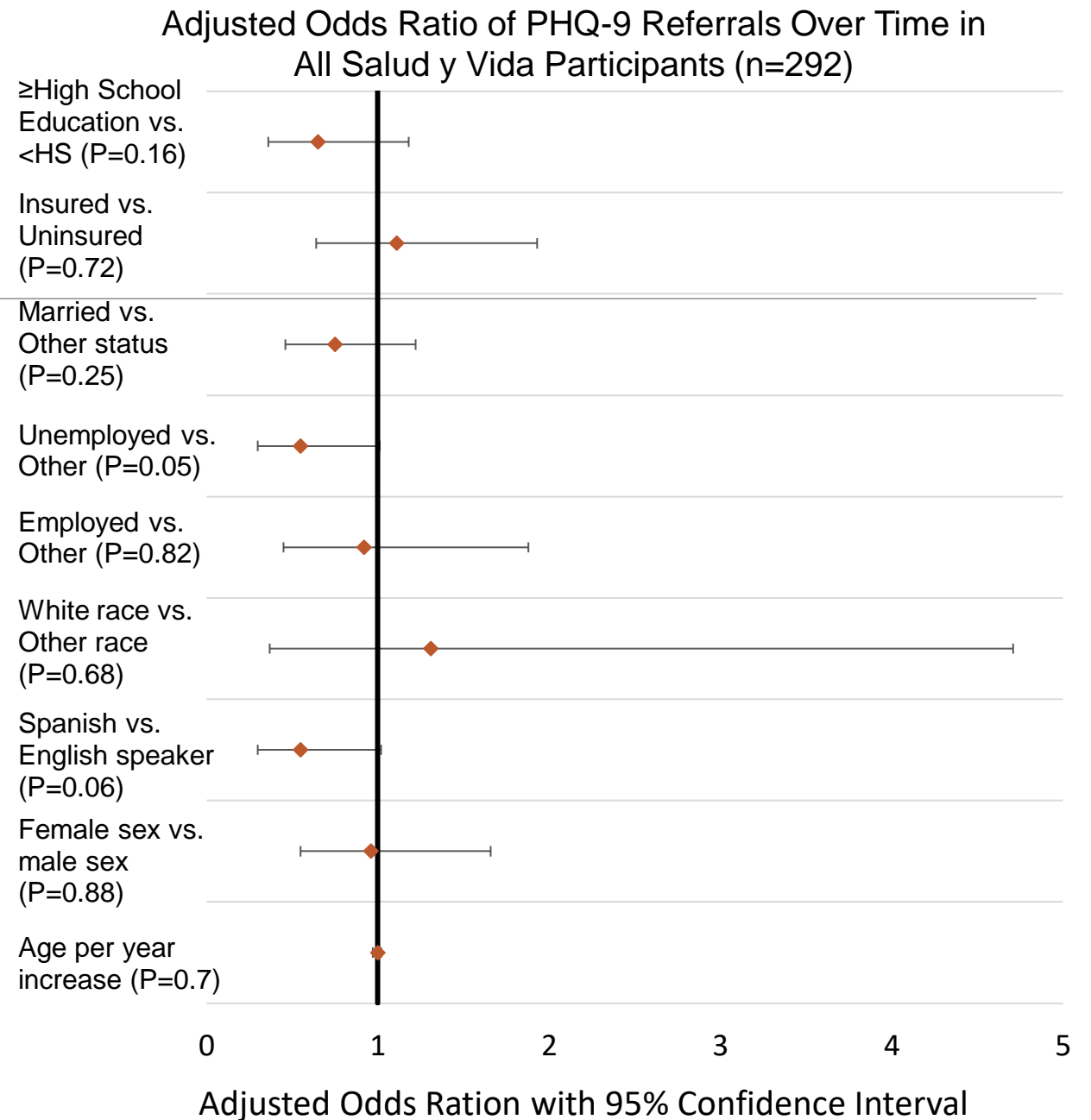**Results: Adjusted Mean Probability of Behavioral Health Referrals**

Y-axis: % of Participants with PHQ-9 ≥5

X-axis: Baseline, Month 6, Month 12
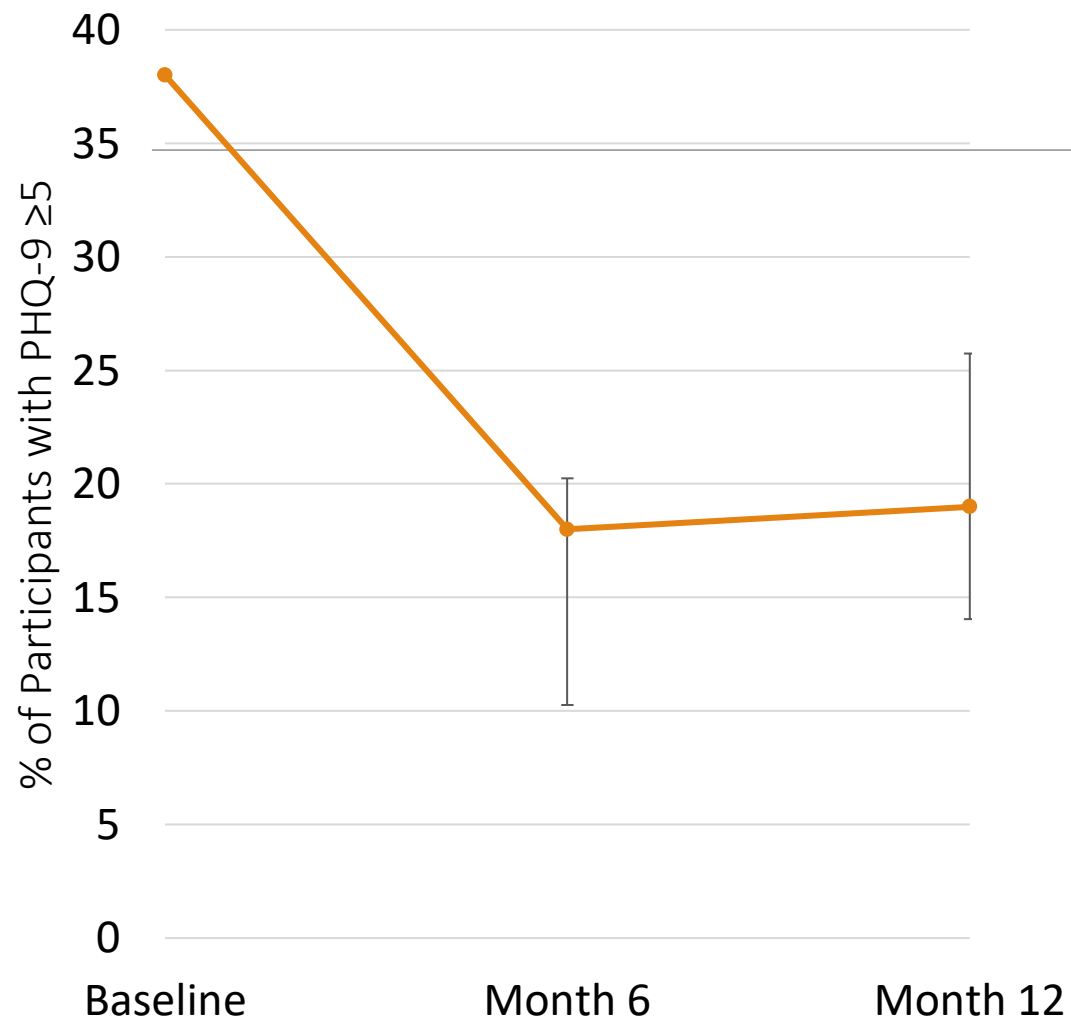
Proportion of participants requiring a behavioral health referral and change from previous timepoint

Results

Multivariable Regression of Predictors of the Odds of PHQ-9 Referrals in All Participants

Adjusted Odds Ratio of PHQ-9 Referrals Over Time in All Salud y Vida Participants (n=292)

- ≥High School Education vs. <HS (P=0.16)
- Insured vs. Uninsured (P=0.72)
- Married vs. Other status (P=0.25)
- Unemployed vs. Other (P=0.05)
- Employed vs. Other (P=0.82)
- White race vs. Other race (P=0.68)
- Spanish vs. English speaker (P=0.06)
- Female sex vs. male sex (P=0.88)
- Age per year increase (P=0.7)

Adjusted Odds Ration with 95% Confidence Interval

Discussion

❖ Participation in Salud y Vida led to significant and sustained depression symptom improvements in Mexican American adults with diabetes and comorbid depression

❖ Depression mitigation is a **secondary** effect of diabetes-based management intervention

❖ Multimodal community delivery of chronic disease management with quarterly community health worker visits, motivational interviewing, SDOH screening and behavioral health referrals for uncovered depression → diabetes and depression severity improvement in a low-income Mexican-American border population

References

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[3]Zolezzi M, Lopez J, Mitchell-Bennet L, Payne LY, McCormick JB, Reininger B. A Chronic Care Management Framework Bridging Clinic, Home, and Community Care in a Mexican American Population. Health Promot Pract. May 2022;23(3):367-371. doi:10.1177/1524839920987842

[4]Reininger BM, Lee M, Hessabi M, et al. Improved diabetes control among low-income Mexican Americans through community-clinical interventions: results of an RCT. BMJ Open Diabetes Res Care. 2020/05// 2020;8(1):e000867. doi:10.1136/bmjdrc-2019-000867