Depression & Cardiac Rehabilitation Outcomes

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Introduction

Depression is common in patients with cardiovascular disease, and cardiac rehabilitation (CR) programs typically screen patients for depression upon entry and program exit using validated screening tools such as the Patient Health Questionnaire-9 (PHQ-9). The intent of this study was to evaluate the impact that a positive depression screen on entry into CR impacted specific CR outcome measures compared to those entering CR with a negative screen. The outcome measures evaluated were completion rate (defined as at least 12 visits), quality of life measured by the Dartmouth COOP, BP control on discharge (<130/80 mmHg) and functional capacity improvement (6-min walk).

Methods

A cross-sectional study design was used for CR facilities participating in the Montana Outcomes Project (MOP). The MOP is a multi-state CR registry that is administered by the Cardiovascular Health Program within the Montana Department of Public Health and Human Services. Over 100 CR programs from 14 states participate in the MOP. The sample included patients who completed a PHQ-9 survey on entry and attended at least 12 CR visits. The time frame for data collection was from October 2019 through September 2021. Statistical analysis included Chi-square and Mann-Whitney tests with p-value of ≤ 0.05 indicating statistical significance.

Results

The sample consisted of 6,769 patients who had a PHQ-9 score ≤4 and 4,839 patients (41%) who had a PHQ-9 score >4 on CR entry (Table 1). Mean number of visits were identical for both groups (26.6 visits). Patients with PHQ-9 score ≤4 were significantly older (68.9 vs. 67.4 years), had a higher completion rate (74.7% vs. 71.9%), and had a lower percentage of women (27% vs. 34%) compared to those with PHQ-9 scores >4. In addition, those with a PHQ-9 entry score ≤4 had significantly better post CR quality of life scores (QOL) measured by the Dartmouth COOP survey (16.0 vs 19.5) (Figure 1). Those in the PHQ-9 score >4 sample had significantly better blood pressure control (<130/80 mmHg) at the end of CR (74.5% vs. 72.8%) and had a larger percentage who had at least a 10% improvement in the 6-min walk over the course of CR (76.6% vs 74.5%) (Figure 2).

Table 1. Demographics & Mean Visits

	PHQ-9 Score ≤ 4 Mean (SD)	PHQ-9 Score > 4 Mean (SD)	P-value
Age (years)	68.9 (SD)	67.4 (11.4)	<0.001
PII Visits	26.6 (9.1)	26.6 (9.0)	0.899
	% (n)	% (n)	
Completion Rate (N=15,787)	74.7 (6769)	71.9 (4839)	<0.001
Sex			
Male	73 (4923)	66 (3204)	<0.001
Female	27 (1846)	34 (1635)	
Race			0.037
White	95 (6407)	94 (4536)	
Non-white	5 (362)	6 (303)	
Diabetes	27 (1827)	33 (1596)	<0.001

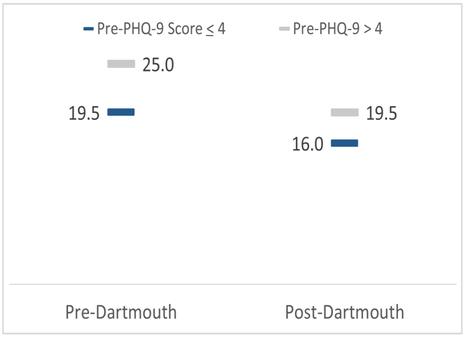

Figure 1. Mean Pre-Dartmouth and Post-Dartmouth Scores, by Pre-PHQ9 Score Categories.

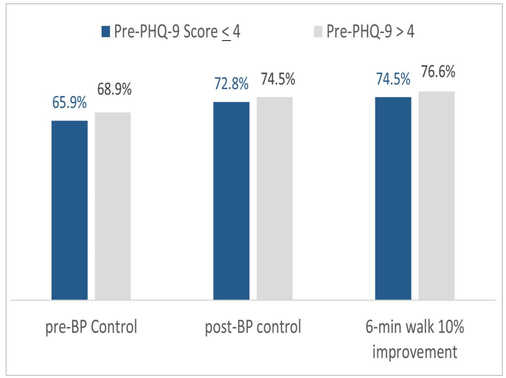

Figure 2. Percentage improvement of Pre-Blood Pressure, Post-Blood Pressure Control, and 10% Improvement in 6 minute walk, by Pre-PHQ9 Score Categories.

Conclusions

The impact of the positive depression screen score upon entry to CR had mixed results related to the outcomes that were examined. In comparison, those with a >4 score on entry had a significantly higher percentage of women, had better blood pressure control and better functional capacity improvement. Those who had scores ≤4 on entry had a significantly higher CR completion rate and better QOL scores at the end of CR.

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