ORIGINAL RESEARCH

81. Cardiovascular Readmissions After Heart Failure: Substance Use Disorder as a Potential Risk Factor Among Psychiatric Comorbidities

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Background. Psychiatric comorbidities are known to adversely affect cardiovascular (CV) outcomes, but their specific influence on CV-related hospital readmissions remains unclear. While prior research has focused on all-cause 30-day readmissions, few studies have evaluated psychiatric conditions in relation to CV-specific readmissions over both short- and long-term periods. This study aims to assess how individual psychiatric diagnoses impact 30-day and 1-year CV-specific readmission risk in patients initially hospitalized for heart failure (HF).

Methods. We conducted a retrospective cohort analysis using the Nationwide Readmissions Database (NRD) from 2016 to 2022. A total of 31,886,859 weighted hospitalizations were included. Adult patients (≥18 years) hospitalized for HF were stratified by psychiatric comorbidity, including depression, anxiety, bipolar disorder, post-traumatic stress disorder (PTSD), schizophrenia/psychotic disorders, and substance use disorder (SUD). The primary outcomes were CV-specific readmissions within 30-days and 1-year, identified using ICD-10 codes. Multivariable Cox regression models adjusted for age, sex, Charlson Comorbidity Index, income quartile, hospital characteristics, and discharge disposition were used to calculate hazard ratios (HRs) with 95% confidence intervals (CIs).

Results. SUD was the only condition associated with a clinically significant increased risk of CV-specific readmission at both 30-days (HR 1.03, 95% CI 1.02-1.03, p < 0.001) and 1-year (HR 1.02, 95% CI 1.02-1.03, p < 0.001). In contrast, statistically significant but clinically modest reductions in CV-specific readmission at both were observed at both time points for depression (30-day HR 0.85, 95% CI 0.84-0.85, p < 0.001; 1-year HR 0.85, 95% CI 0.84-0.85, p < 0.001), bipolar disorder (30-day HR 0.82, 95% CI 0.81-0.84, p < 0.001; 1-year HR 0.81, 95% CI 0.80-0.82, p < 0.001), PTSD (30-day HR 0.84, 95% CI 0.82-0.86, p < 0.001; 1-year HR 0.84, 95% CI 0.83-0.86, p < 0.001), and schizophrenia/psychotic disorders (30-day HR 0.90, 95% CI 0.89-0.92, p < 0.001; 1-year HR 0.90, 95% CI 0.88-0.91, p < 0.001). Anxiety was associated with the smallest reduction in CV-specific readmission at 30-days (HR 0.94, 95% CI 0.90-0.98, p = 0.002) and 1-year (HR 0.96, 0.93-0.98, p = 0.001).

Conclusion. SUD emerged as the only psychiatric comorbidity independently associated with a clinically significant increase in CV-specific readmissions at both 30-days and 1-year following HF hospitalization. In contrast, other psychiatric conditions, including depression, bipolar disorder, PTSD, schizophrenia/psychotic disorders, and anxiety, were associated with modest reductions in readmission risk. This counterintuitive pattern may reflect increased clinical monitoring and psychosocial support in patients with these established psychiatric diagnoses, which could help prevent CV decompensation. Additionally, these patients may be more frequently rehospitalized for non-CV reasons, leading to an underestimation of CV-specific readmissions in administrative data. Altogether, these findings highlight SUD as a uniquely high-risk diagnosis in the context of post-discharge CV outcomes and reinforce the critical need for structured discharge planning and timely follow-up that incorporates addiction treatment alongside CV care. Targeted interventions during and after HF hospitalization may help reduce preventable readmissions and improve long-term prognoses for this patient population.

Table 1. Risk of CV-Specific 30-Day and 1-Year Readmission by Psychiatric Covariates.

Variables (N = 31,886,859)	Cardiovascular - Specific 30-Day Readmission	Multivariable		Cardiovascular - Specific 1-year Readmission	Multivariable	
	% (SE)	HR (95 %CI)[1]	p-value		HR (95 %CI)[1]	p-value
Depression						
No	6.21 (0.007)	REF		12.9 (0.009)	REF	
Yes	5.62 (0.016)	0.85 (0.84, 0.85)	< 0.001	11.6 (0.022)	0.85 (0.84, 0.85)	< 0.001
Anxiety						
No	6.13 (0.006)	REF		12.7 (0.009)	REF	
Yes	5.91 (0.12)	0.94 (0.90, 0.98)	0.002	12.3 (0.16)	0.96 (0.93, 0.98)	< 0.001
Bipolar Disorder						
No	6.12 (0.006)	REF		12.8 (0.009)	REF	
Yes	6.28 (0.044)	0.82 (0.81, 0.84)	< 0.001	11.8 (0.057)	0.81 (0.80, 0.82	< 0.001
Schizophrenia/ psychotic disorders						
No	6.11 (0.006)	REF		12.8 (0.009)	REF	
Yes	7.09 (0.053)	0.90 (0.89, 0.92	< 0.001	12.9 (0.07)	0.90 (0.88, 0.91)	< 0.001
PTSD						
No	6.12 (0.006)	REF		12.8 (0.009)	REF	
Yes	5.97 (0.067)	0.84 (0.82, 0.86)	< 0.001	11.8 (0.091)	0.84 (0.83, 0.86)	< 0.001
Substance Abuse Disorder						
No	5.91 (0.007)	REF		12.4 (0.009)	REF	
Yes	7.04 (0.015)	1.03 (1.02, 1.03)	< 0.001	14.1 (0.02)	1.02 (1.02, 1.03)	< 0.001

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