Impact of Depression on In-Hospital Outcomes Among Patients Undergoing Bone Marrow Transplantation

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Introduction

Depression is a common comorbidity in patients with chronic and life-threatening illnesses. However, its impact on clinical outcomes among patients undergoing bone marrow transplantation (BMT) remains unclear. This study aimed to evaluate the association of depression with in-hospital mortality, length of stay (LOS), and hospitalization charges among BMT patients using a nationally representative dataset.

Aim

To evaluate the impact of comorbid depression on in-hospital mortality, length of stay, and hospitalization charges among patients undergoing bone marrow transplantation using a nationally representative inpatient dataset.

Methods

- Retrospective cohort study using the 2021 National Inpatient Sample (NIS) database
- Included adult patients undergoing Bone Marrow Transplant (BMT) with a diagnosis of depression (identified via ICD-10 codes)
- **Primary outcome:** In-hospital mortality
- **Secondary outcomes:** Length of stay (LOS) and total hospitalization charges
- Employed survey-weighted logistic and linear regression models to assess associations

Table 1: Impact of Depression on BMT

Outcome	Result
Total BMT hospitalizations	20,165
Prevalence of depression	14.4%
Female (%)	55.3% vs. 41.4% (p < 0.001)
Mean age	~4 years higher (β = 4.05, p < 0.001)
In-hospital mortality	4.66%
Unadjusted mortality OR	0.47 (95% CI: 0.26–0.83), p = 0.010
Adjusted mortality OR	0.46 (95% CI: 0.26–0.82), p = 0.008
Length of stay	7.6 days (p = 0.637)
Hospitalization charges	$111,771 vs. $129,325 (p = 0.191)

Methods

- Multivariable models adjusted for confounders:
  - Age
  - Sex
  - Race
  - Income quartile by ZIP code
  - Primary insurance type
  - Charlson Comorbidity Index
  - Hospital bed size
    Teaching status
  - Hospital region

Results

- Among 20,165 BMT hospitalizations in the 2021 NIS, 14.4% had a documented diagnosis of depression.
- Patients with depression were:
  - More likely to be female (55.3% vs. 41.4%, **p < 0.001**).
  - Older by an average of 4 years (**β = 4.05, p < 0.001**).
  - Overall in-hospital mortality rate: **4.66%**.
- Depression was associated with **lower in-hospital mortality**:
  - Unadjusted: **OR = 0.47 (95% CI: 0.26–0.83), p = 0.010**
  - Adjusted: **aOR = 0.46 (95% CI: 0.26–0.82), p = 0.008**
    - Adjusted for age, sex, race, comorbidities, socioeconomic status, and hospital factors.
- Depression was **not significantly associated** with:
  - **Length of stay**: 7.6 days (**p = 0.637**)
  - **Hospitalization charges**: $111,771 vs. $129,325
    - Adjusted difference: **β = –$13,550, p = 0.191**

Conclusion

In this nationally representative cohort, depression was independently associated with **lower in-hospital mortality** among patients undergoing BMT, without significant differences in LOS or hospitalization costs. These findings suggest a potential protective role of enhanced care or monitoring among patients with depression. Further studies are warranted to explore the underlying mechanisms and to validate these findings.

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