Association of Palliative Care with In-Hospital Mortality, Length of Stay, and Hospitalization Charges among BMT Recipients

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Introduction

Palliative care (PC) is often underutilized in patients undergoing bone marrow transplantation (BMT), despite its potential to improve symptom management and align goals of care. This study evaluates the association of palliative care with in-hospital mortality, length of stay (LOS), and hospitalization charges among BMT recipients using a nationally representative dataset.

Aim

To evaluate the association of palliative care with in-hospital mortality, length of stay, and hospitalization charges among patients undergoing bone marrow transplantation using a nationally representative inpatient dataset.

Methods

- Conducted a **retrospective cross-sectional analysis** of the 2021 National Inpatient Sample (NIS).
- **Bone marrow transplant (BMT) recipients** were identified using relevant **ICD-10 codes**.
  Used **survey-weighted regression models** to evaluate associations between palliative care and outcomes.
- Applied **logistic regression** for in-hospital mortality.
- Applied **linear regression** for length of stay (LOS) and total hospitalization charges (TOTCHG).
- 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 admissions, only **7.7% received palliative care**.
- **In-hospital mortality** was significantly higher in the palliative care group:
  - **33.3% vs 2.3%**, $p < 0.001$.
  - After adjustment, palliative care remained a strong independent predictor of mortality:
  - **aOR: 20.97**, 95% CI: 14.89–29.54, $p < 0.001$.
- **Mean length of stay (LOS)** was significantly longer with palliative care:
  - **12.5 vs 7.2 days**; adjusted increase: **+5.25 days**, $p < 0.001$.
- **Total hospitalization charges** were higher among those receiving palliative care:
  - **$190,700 vs $121,428**; adjusted increase: **+$68,889**, $p < 0.001$.
- **Higher Charlson Comorbidity Index** and **older age** were also independently associated with increased mortality.

Conclusion

Palliative care in bone marrow transplant recipients is associated with markedly higher mortality, length of stay, and hospitalization costs—findings that likely reflect its use in clinically complex or end-of-life scenarios. This study highlights a critical gap in the timing and implementation of palliative care in the BMT population. Given the intensive nature of transplant care and its high symptom burden, earlier and more proactive integration of palliative services may help align treatment with patient goals, improve quality of care, and potentially optimize resource utilization. These findings support the need for prospective studies and policy-level efforts to redefine the role of palliative care in hematologic malignancies and transplant settings.

Table1: Impact of Palliative care on BMT patients

Outcome	Palliative Care	No Palliative Care	Adjusted Effect Estimate	p-value
In-Hospital Mortality	33.3%	2.3%	aOR: 20.97 (95% CI: 14.89–29.54)	< 0.001
Length of Stay (LOS)	12.5 days (mean)	7.2 days (mean)	+5.25 days (adjusted increase)	< 0.001
Total Hospital Charges	$190,700 (mean)	$121,428 (mean)	+$68,889 (adjusted increase)	< 0.001

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