# Body Mass Index (BMI) Trajectories and Nutrition Status as Predictors of Young Adult Hematopoietic Stem Cell Transplantation (HSCT) Health Outcomes

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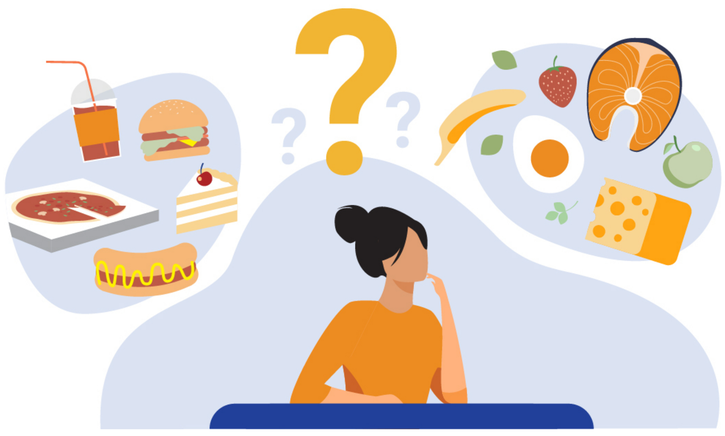
## Background

- Hematopoietic stem cell transplantation (HSCT) is a life-saving procedure for myeloma, lymphoma, and leukemia.
- However, graft-versus-host disease (GVHD), bacterial infection, hospital readmission, and increased mortality remain frequent concerns.
- Due to hormonal and lifestyle changes, young adult (YA) HSCT patients (18-39 years) are at an increased risk for complications.

## Purpose

To determine whether body mass index (BMI) and nutritional status were associated with YA HSCT health outcomes.



## Methods

- A single-center retrospective chart review was conducted on YA cancer patients who received HSCT from January 2010 to December 2019.
- All patients included in this study received a dietitian consult upon hospital admission and had height and weight measured.
- A nutritional status score was extracted from the dietitian consult upon initial hospital admission, ranging from 1 – 3, with lower scores representing better nutritional status.
- Post-HSCT outcomes assessed included GVHD, infection, hospital readmission, recurrence, and mortality.
- BMI trajectories were compared across longitudinal outcomes at 3, 6, 9, and 12 months post-HSCT.

## Results

- A total of 514 records were included in the sample; most patients were non-Hispanic white (n=383, 75%), male (n=293; 57%), diagnosed with lymphoma (n=166, 32%), with a mean age of 29.7 years (±6.2).
- There was a significant relationship between poor nutritional status and cancer recurrence (p=0.035), GVHD (p=.013), and malnutrition (p=.002).
- There was a significant difference in BMI across mortality for participants 12 months post-HSCT (t(44.763) = 2.066, p= 0.039), indicating that a lower BMI at 12 months increased mortality risk.

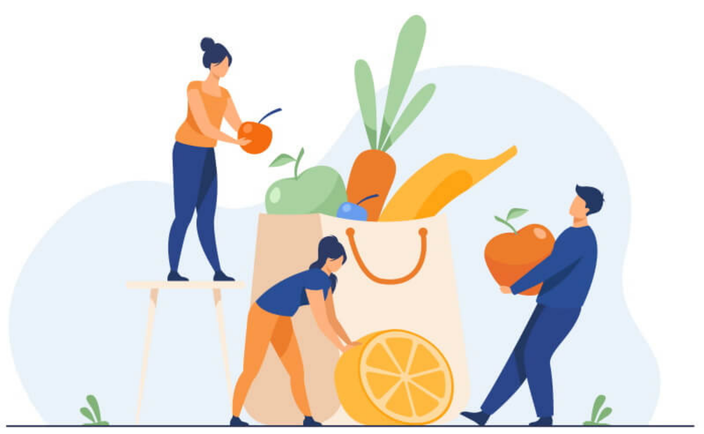
**Table 3: BMI change and Mortality**

| | Mean ± SD | | | |
|---|---|---|---|---|
| **[a]BMI (kg/m$^{2)}$ : Mean ± SD [range]** | Alive | Dead | MD (SE) | p-value |
| **At Diagnosis** | 28.2 ± 6.5 | 28.3 ± 7.9 | 0.18 (0.6) | 0.787 |
| **3-months post-HSCT** | 28.6 ± 6.6 | 27.9 ± 6.7 | 0.59 (0.6) | 0.334 |
| **6-months post-HSCT** | 28.4 ± 6.7 | 27.7 ± 6.8 | 0.71 (0.6) | 0.251 |
| **9-months post-HSCT** | 28.1 ± 6.9 | 29.3 ± 6.5 | 0.79 (0.6) | 0.195 |
| **12-months post-HSCT** | 28.3 ± 6.8 | 27.0 ± 6.1 | 1.21 (0.6) | 0.039* |

[a]Body Mass index; *p<.05

## Conclusion

- YA HSCT patients with more nutritional concerns are more likely to experience reoccurrence, GVHD, and malnutrition.
- Future dietary intervention planning for YA HSCT patients should focus on strategies to promote nutritional status and prevent malnutrition using nutrient-dense foods.



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