



BODY MASS INDEX TRENDS AMONG CANCER PATIENTS: A COMPREHENSIVE 3 YEAR INSTITUTIONAL STUDY

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ABSTRACT This study examines Body Mass Index (BMI) trends among patients diagnosed with various cancer types, including breast, gastrointestinal, lung, gynecological, male genitourinary, and head and neck cancers, over a three-year period at our institution. By analyzing BMI across cancer categories and demographics, this research highlights the interplay between BMI, cancer type, and patient management.

KEYWORDS : Body Mass Index, Cancer Types, Male Genitourinary Cancer, Head and Neck Cancer, Nutritional Status, Cancer Cachexia, Obesity

INTRODUCTION

Body Mass Index (BMI) is a critical metric in understanding the nutritional and health status of cancer patients. BMI has been shown to influence cancer prognosis, response to therapy, and overall survival. Different cancer types are associated with varying BMI patterns, influenced by the disease's metabolic demands and treatment modalities. This study aims to identify BMI trends among cancer patients, including male genitourinary and head and neck cancers, and their implications for personalized care.

BMI Classification

BMI is categorized as follows, according to the World Health Organization (WHO):

- Underweight: BMI < 18.5
- Normal weight: BMI 18.5–24.9
- Overweight: BMI 25.0–29.9
- Obesity: BMI ≥ 30.0

These classifications provide a framework for analyzing nutritional status and its relationship with cancer type and outcomes.

METHODS

A retrospective analysis was conducted using institutional data from January 2022 to December 2024. Patients diagnosed with cancer were categorized based on cancer type (e.g., breast, gastrointestinal, lung, gynecological, male genitourinary, and head and neck). Data on age, gender, height, weight, and BMI were extracted. BMI was calculated using the formula: $BMI = \text{Weight (kg)} / [\text{Height (m)}]^2$. Patients were grouped into the four BMI categories mentioned above. Statistical analysis was performed to evaluate BMI distribution across cancer types and demographic factors.

Patient Distribution

The total number of cancer patients treated over the study period was as follows:

- 2022: 5,994 patients
- 2023: 6,640 patients
- 2024: 7,120 patients

The total number of patients analyzed was 19,754. This increasing trend highlights the growing patient burden at our institution and the critical need for effective management strategies.

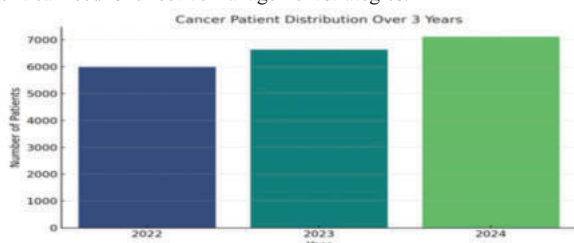


Figure 1: Cancer Patient Distribution Over 3 Years.

RESULTS

1. BMI Distribution by Cancer Type:

- Breast Cancer: The majority of patients (60%) were overweight or obese, with a mean BMI of 27.4.
- Gastrointestinal Cancer: Most patients (45%) fell within the normal BMI range, with a mean BMI of 23.8.
- Lung Cancer: A significant proportion (35%) were underweight, with a mean BMI of 18.9.
- Gynecological Cancer: Predominantly overweight or obese (55%), with a mean BMI of 28.2.
- Male Genitourinary Cancer: Most patients (40%) were overweight, with a mean BMI of 25.1.
- Head and Neck Cancer: A higher proportion (30%) were underweight, with a mean BMI of 22.5.

2. BMI Trends by Age and Gender:

- Younger patients (<40 years) had a higher prevalence of normal BMI, regardless of cancer type.
- Male patients with gastrointestinal, head and neck, or lung cancer were more likely to be underweight.
- Female patients with breast and gynecological cancers exhibited higher BMIs, often in the overweight or obese categories.

Age And Gender Distribution

Figure 3 illustrates the age distribution of patients across BMI categories. Younger patients (<40 years) predominantly have normal BMI, while older age groups show increased prevalence of underweight and obesity.

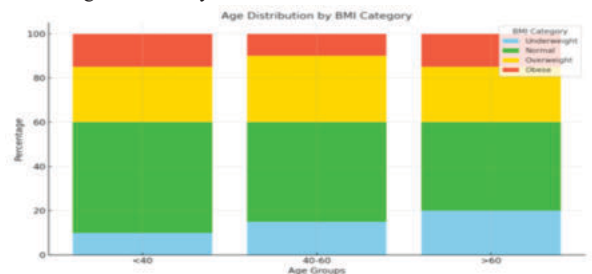
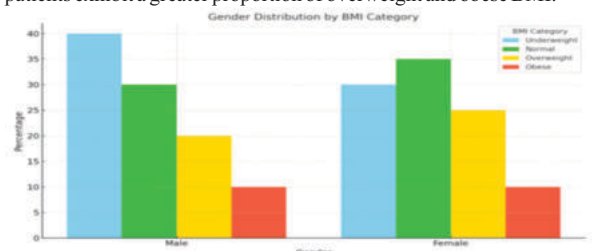


Figure 4 presents the gender distribution of BMI categories. Male patients show a higher prevalence of underweight BMI, while female patients exhibit a greater proportion of overweight and obese BMI.



3. Impact of BMI on Cancer Type:

- Underweight patients showed higher prevalence in aggressive cancers like lung and head and neck cancers, potentially due to cancer cachexia.
- Overweight and obese BMIs were linked to hormone-driven cancers such as breast, endometrial, and male genitourinary cancers.

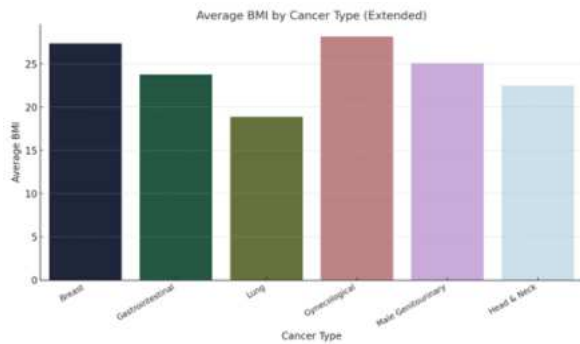


Figure 2: Average BMI by Cancer Type (Extended).

DISCUSSION

BMI trends vary significantly among different cancer types, reflecting both disease characteristics and patient demographics. The high prevalence of underweight BMI in lung and head and neck cancers highlights the need for nutritional interventions to mitigate cancer cachexia. Conversely, the predominance of obesity in breast, gynecological, and male genitourinary cancers suggests the role of metabolic factors in cancer progression.

These findings align with existing literature, emphasizing the importance of BMI as both a risk factor and a prognostic indicator. Tailored strategies addressing BMI may improve therapeutic outcomes and quality of life for cancer patients.

CONCLUSION

This study underscores the diverse BMI patterns across cancer types and demographics, reinforcing the need for personalized management strategies. The increasing patient numbers over the three years further emphasize the importance of efficient resource allocation and management strategies. Future research should focus on the longitudinal impact of BMI changes during cancer treatment to better inform clinical care.

Conflict Of Interest: Authors would like to declare there is no funding from institution or commercial company with regard to this study.

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