CHANGE IN BMI IN CANCER PATIENTS AFTER RADIOTHERAPY AND CHEMOTHERAPY THERAPY: A COMPARATIVE ANALYSIS

Reetu sharma[1] & Dr. Renu Verma[2]

1 Research Scholar, Govt. MLB Girls PG Autonomous College, Bhopal

2 Associate professors, Department of Home Science, Govt. MLB Girls PG Autonomous College, Bhopal

Email Id: ritus309@gmail.com

Abstract

This study evaluates the impact of chemotherapy and radiotherapy on the BMI classification of cancer patients before and after the third therapy cycle. A total of 300 patients, equally divided between the two treatment groups, were analysed. At baseline, the majority of patients were classified as having a normal BMI (69.3%), while underweight and morbidly obese individuals accounted for smaller proportions. Post-therapy, a significant increase in the prevalence of underweight individuals (48.7%) was observed, accompanied by a decrease in overweight and morbidly obese categories. The shift was more pronounced in the radiotherapy group compared to chemotherapy. Statistical analysis confirmed the significance of these BMI changes ($p < 0.05$), suggesting that both treatments substantially affect nutritional status. These findings emphasize the importance of integrating nutritional interventions into cancer care to mitigate adverse effects on BMI and improve patient outcomes. This study provides critical insights into the nutritional challenges faced by cancer patients during treatment and underscores the need for comprehensive management strategies.

Keywords: *BMI, chemotherapy, radiotherapy, cancer treatment, weight changes.*

INTRODUCTION

Body Mass Index (BMI) is a critical indicator of nutritional and health status, especially in cancer patients undergoing therapy. Cancer treatments such as chemotherapy and radiotherapy often lead to significant side effects, including nausea, appetite loss, and metabolic alterations, which can adversely affect BMI. These changes are not just clinical

indicators but also prognostic factors, as extreme BMI values are associated with poorer outcomes, including reduced survival rates and diminished quality of life.

Cancer therapy's impact on BMI is multifaceted. Chemotherapy involves the administration of cytotoxic drugs, which may induce gastrointestinal disturbances and systemic inflammation, contributing to weight loss or cachexia. Similarly, radiotherapy targets localized cancer cells but often affect adjacent tissues, leading to complications such as microsites or esophagitis, which impair nutrient intake and digestion. These effects underscore the importance of closely monitoring BMI during treatment to identify and address nutritional deficits promptly.

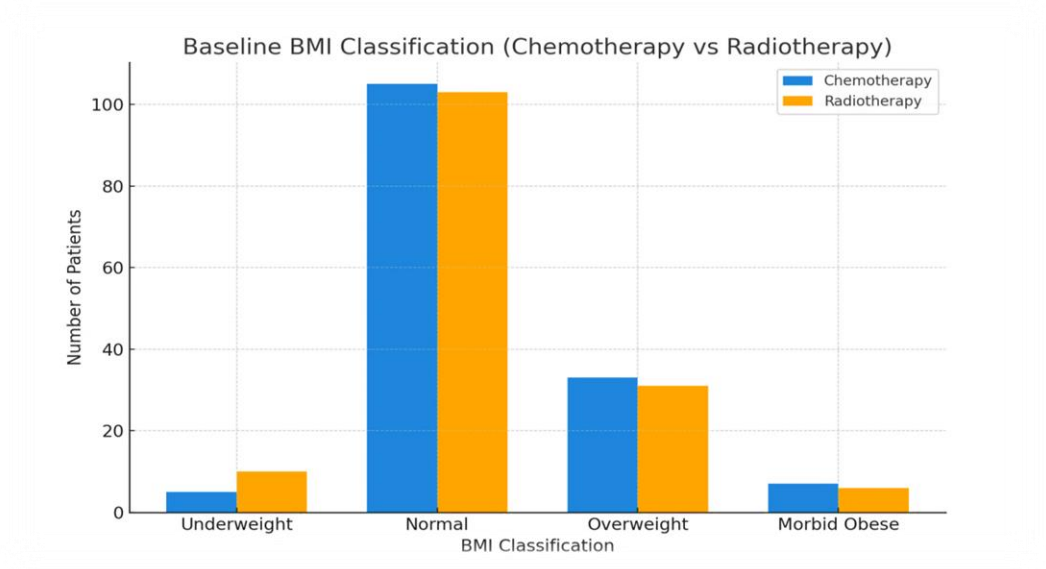
This study compares the BMI distribution among patients receiving chemotherapy and radiotherapy at two key time points: baseline and after the third therapy cycle. By analyzing the prevalence of underweight, normal, overweight, and morbidly obese categories, this research highlights the nutritional challenges faced by these patients and offers insights for integrating dietary interventions into treatment plans to improve outcomes and quality of life. Ultimately, the findings aim to inform clinicians and policymakers about the critical need for nutritional management in comprehensive cancer care.

2. Methods

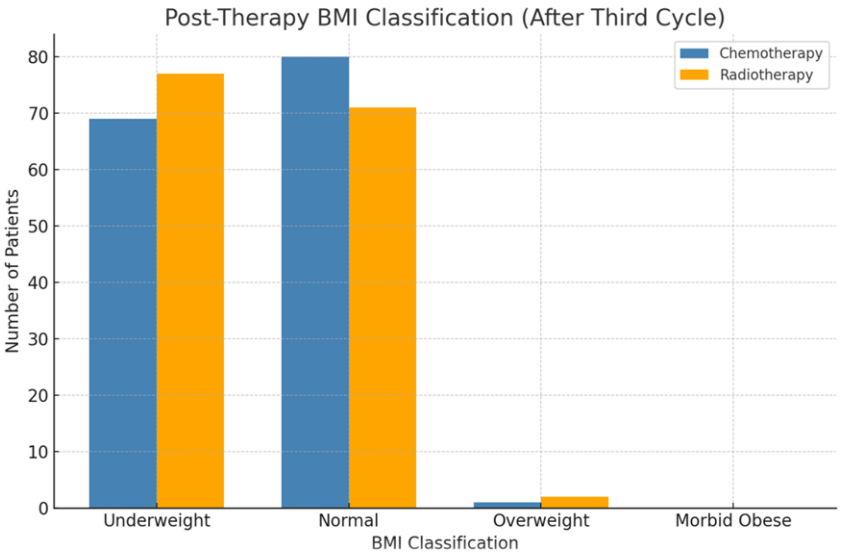
- **Study Design**: This comparative, observational study analysed BMI data from patients undergoing chemotherapy and radiotherapy.
- **Sample Population**: The study included 300 cancer patients, with 150 receiving chemotherapy and 150 receiving radiotherapy.
- **Data Collection**: BMI was measured at two time points: baseline (before therapy initiation) and post-therapy (after the third cycle).
- **BMI Classification**: Patients were categorized into four groups based on World Health Organization (WHO) standards:
- **Statistical Analysis**: Descriptive statistics summarized BMI distributions, and chi-square tests assessed differences between treatment groups and time points. statistical significance was set at $p < 0.05$.

1. Result

- **Baseline BMI Classification**



Post-Therapy BMI Classification (After Third Cycle)



Discussion

The baseline BMI distribution showed that the majority of patients in both therapy groups fell within the normal range (69.3%). However, after the third cycle, a significant shift occurred, with a substantial increase in the proportion of underweight patients (48.7%) and a sharp decrease in overweight and morbidly obese categories. Radiotherapy patients exhibited a slightly higher proportion of underweight individuals compared to chemotherapy patients after the third cycle (51.3% vs. 46.0%).

The results suggest that both therapies have a profound impact on BMI, likely due to side effects such as appetite loss, nausea, and metabolic changes. Radiotherapy appears to have a slightly more pronounced effect in shifting patients toward the underweight category.

Statistical Analysis

Chi-square tests were conducted to compare BMI distributions between groups and across time points. The observed changes were statistically significant ($p < 0.05$), indicating that the therapies contributed to the observed BMI shifts.

Conclusion The study highlights the significant impact of cancer therapies on BMI, emphasizing the need for nutritional support to mitigate underweight risks. Regular monitoring of BMI during treatment is recommended to improve patient outcomes.

References

1. Rock, C. L., et al. (2020). American cancer society guideline for diet and physical activity for cancer prevention. *A Cancer Journal for Clinicians*, 70(4) 245-271. 10.3322/caac.21591. https://doi.org
2. Arends, J., et al. (2017). ESPEN guidelines on nutrition in cancer patients. *Clinical Nutrition*, 36(1), 11-48. https://doi.org/10.1016/j.clnu.2016.07.015.
3. Martin, L., et al. (2015). Cancer cachexia in the age of obesity, skeletal muscle loss is a powerful prognostic factor, independent of BMI. *Journal of Clinical Oncology*, 33(10), 973-979. https://doi.org/10.1200/JCO.2014.56.0104.
4. Wallengren, O., et al. (2013). Loss of muscle mass in the early phase after diagnosis of cancer: A systematic literature review. *Clinical Nutrition*, 32(6), 1057-1067. https://doi.org/10.1016/j.clnu.2013.06.007.
5. White, J. V., et al. (2012). Consensus statement, academy of nutrition and dietetics and American society for parenteral and enteral nutrition. *Journal of the academy of nutrition and dietetics*, 112(5), 730-738. https://doi
6. Fearon, K., et al. (2011). Definition and Classification of Cancer Cachexia: An International Consensus. *The Lancet Oncology*, 12(5), 489-495. https://doi.org/10.1016/S1470-2045 (10)70218-7.

7. Prado, C. M., & Baracos, V. E. (2010). Body composition in chemotherapy: The promising role of CT scans. *Current opinion in clinical nutrition & metabolic care*, 13(5), 525-533. https://doi.org/10.1097/MCO.0b013e32833cf9e5.