

What Proportion of Hospital Meals are Consumed, and What are the Implications for Nutrition?



Ciara O’Kane¹, Polly Peters¹, Orla Haughey², Ann Gillick³

¹ MSc Clinical Nutrition and Dietetics. School of Public Health, Physiotherapy and Sports Science, University College Dublin

² Royal Victoria Eye and Ear Hospital Dietetics Department

³ Royal Victoria Eye and Ear Hospital Catering Department

Introduction

- This project was undertaken in collaboration with the Catering Department and Dietitian in RVEEH.
- Adequate nutrition plays a crucial role in patient recovery and overall health outcomes. Current research highlights that malnutrition and poor oral intake are common in hospital settings for several reasons including reduced appetite, dietary restrictions, dissatisfaction with food service, poor meal quality etc. (1)
- Accurately measuring food consumption can provide valuable insight into patient’s nutritional intake (2) and help evaluate the potential effectiveness of food fortification strategies.
- The aim of this research was to evaluate the patient’s actual energy (kcal) and protein intake across breakfast, lunch, and evening meals. This would help us to build an accurate assessment of dietary intake which we can use to determine the importance and potential impact of food fortification in supporting patients with or at risk of malnutrition.

Methods

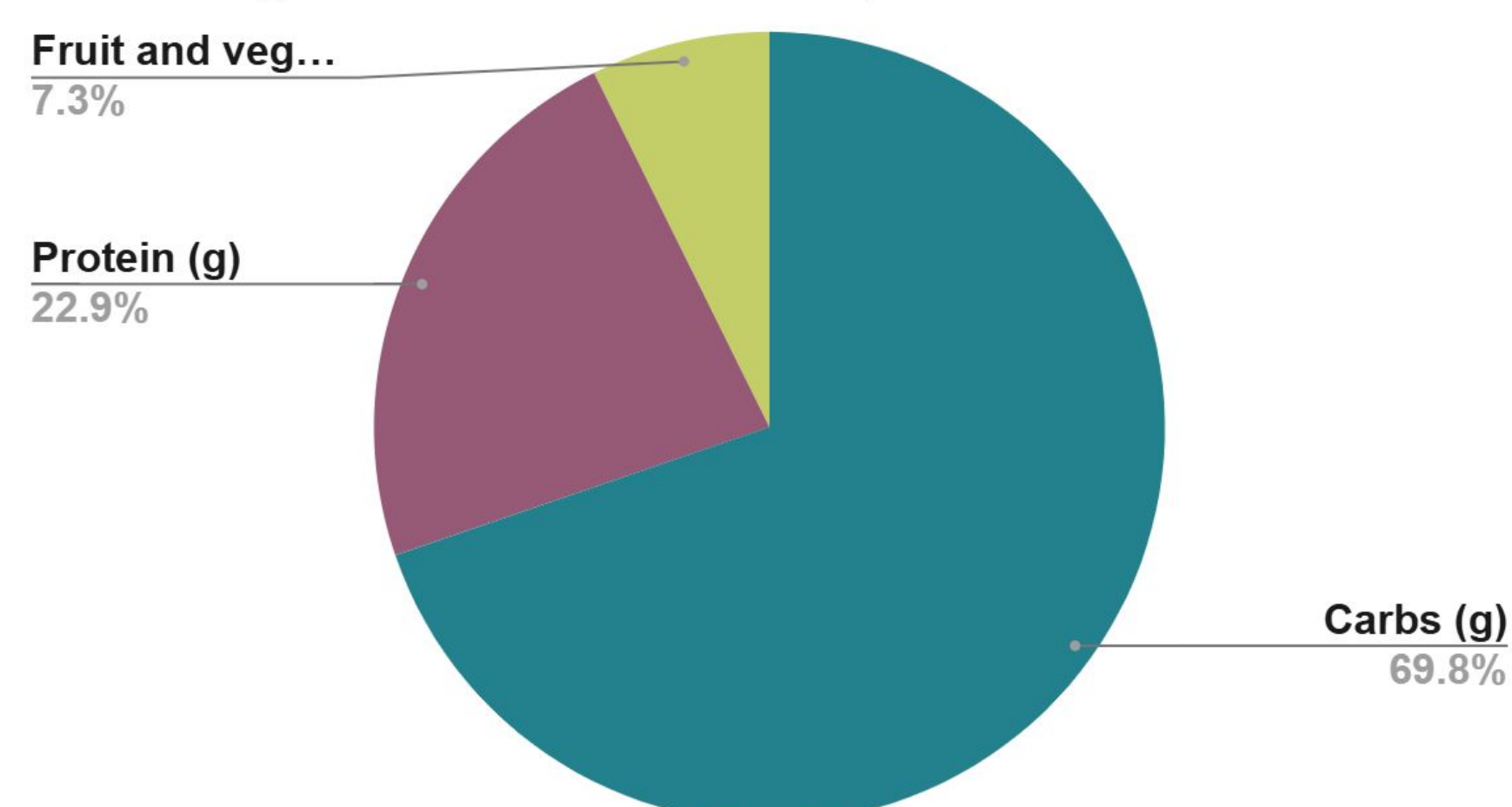
Data was collected using a digital weighing scales and visual observations.

- Meals were weighed at three timepoints:
 1. In the kitchen as the individual components were plated,
 2. Prior to serving,
 3. After the patient finished eating and the plate was collected.
- We visually estimated each component of the meal that was not consumed.

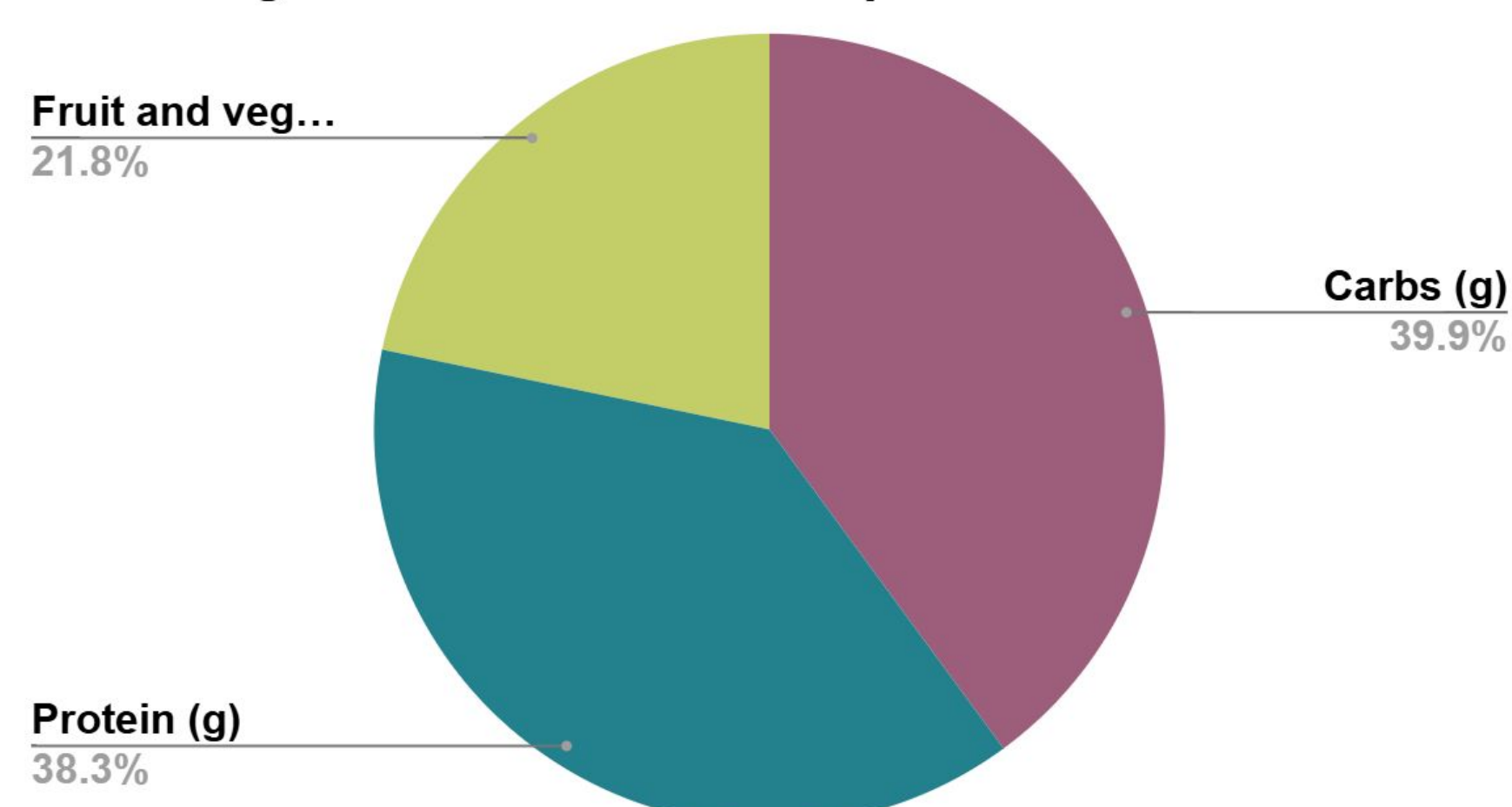


Results

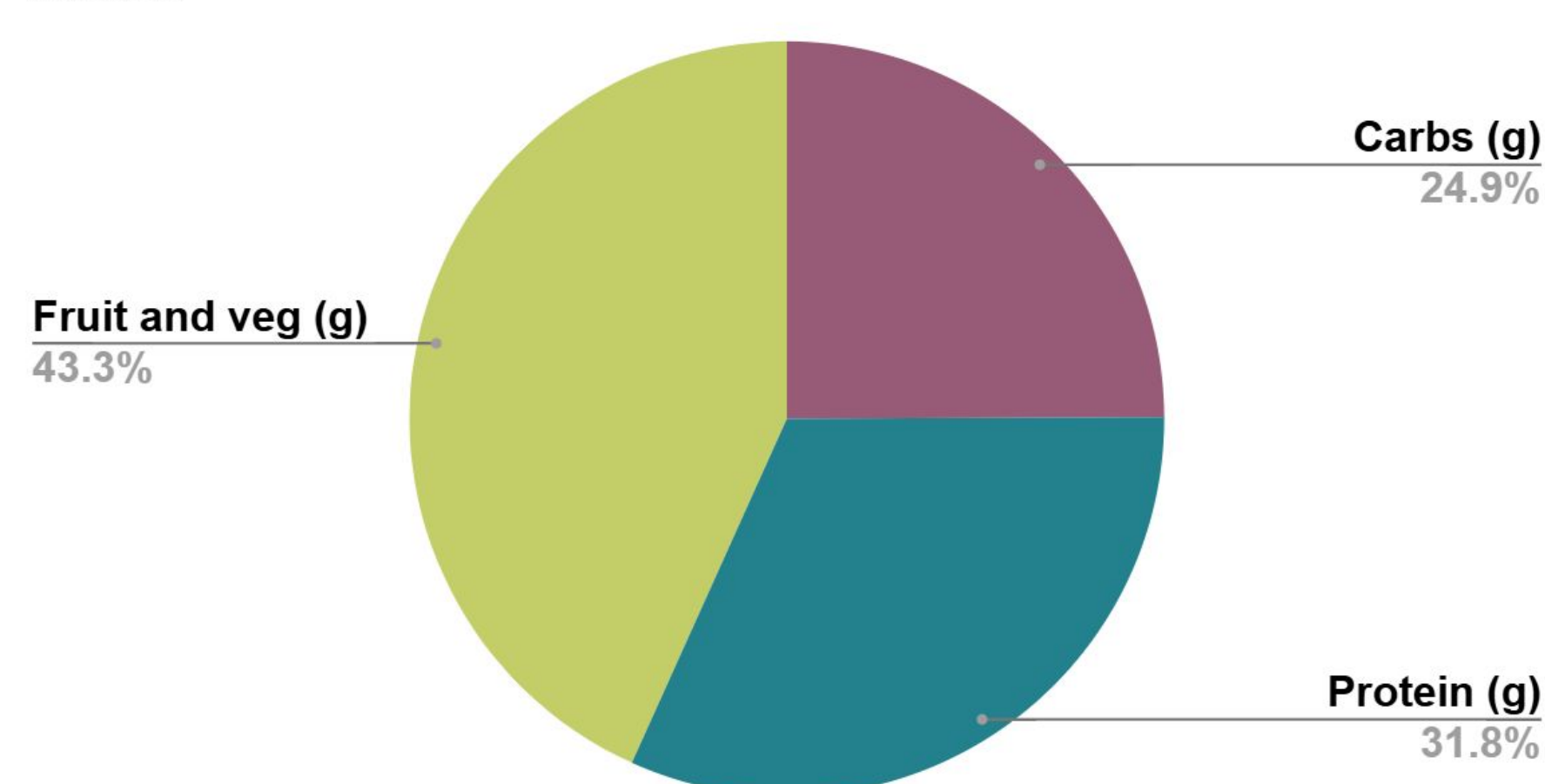
Percentage Waste Per Food Group From Breakfast



Percentage Waste Per Food Group From Lunchtime Meal



Percentage Food Waste Per Food Group From Evening Meals



The most commonly wasted food groups across each meal includes:

- Breakfast; carbohydrates
- Lunch; carbohydrates
- Dinner; fruit & vegetables.

Using this information to tailor portions to patients could prevent waste and increase intake among patients.

On average, patients are eating **83%** of their breakfast, **70%** of their lunch meal and **89%** of their evening meals.

At breakfast, patients on average

- are offered **523 kcal**,
- Consume **434 kcal**

At lunch, patients on average

- are offered **550 kcal**,
- Consume **456 kcal**.

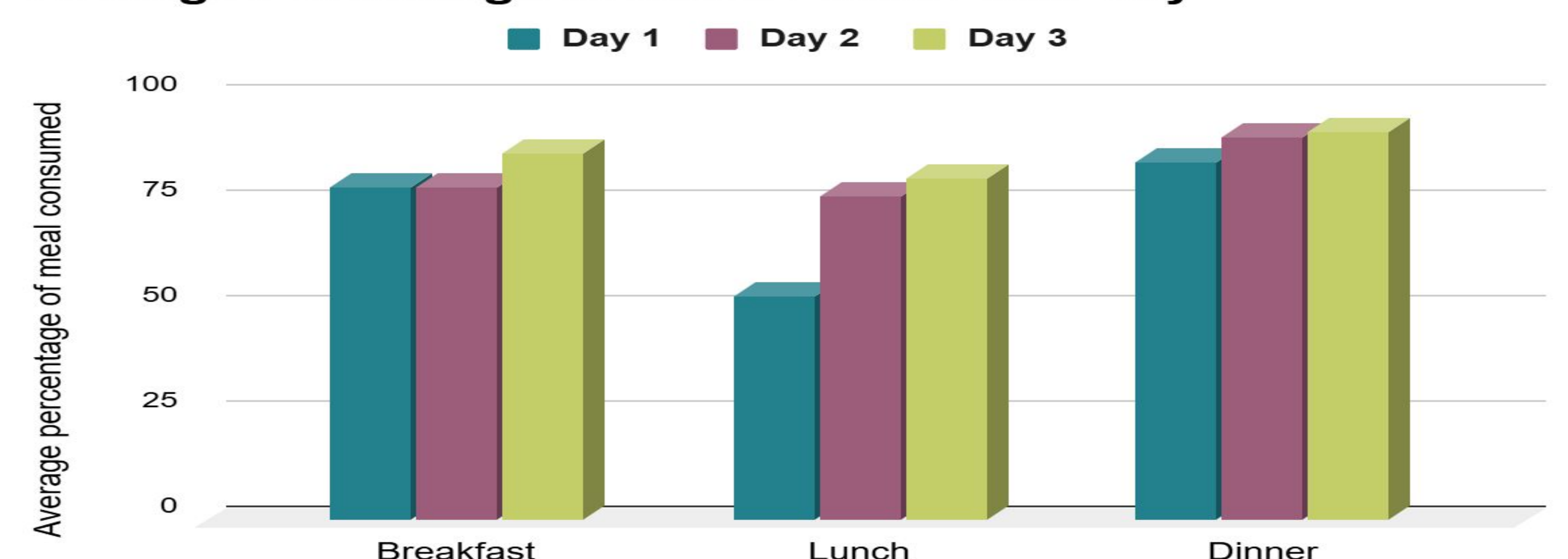
At dinner, patients on average

- are offered **570 kcal**
- Consume **508 kcal**.

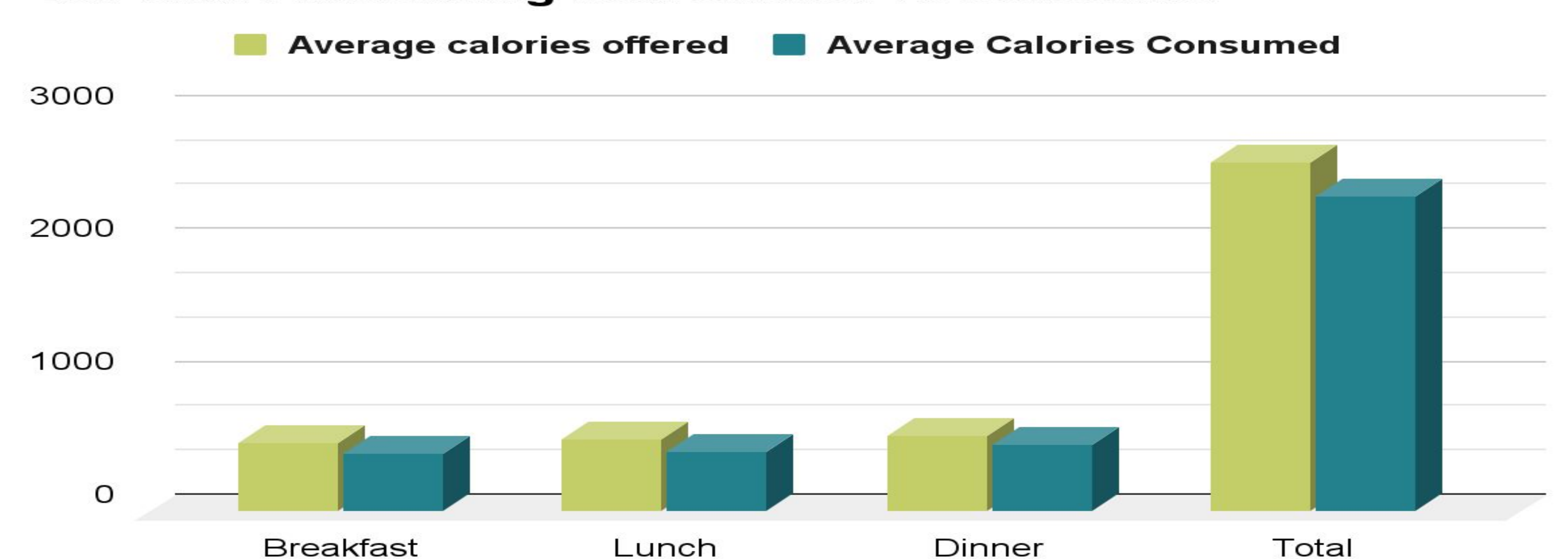
Total calories offered across the day was **2623 kcal**, and total consumed was **2378 kcal**.

The recommended intake of protein is **90g** in this setting. The regular menu achieved **105.5g**, while the vegetarian menu offered **62.6g**.

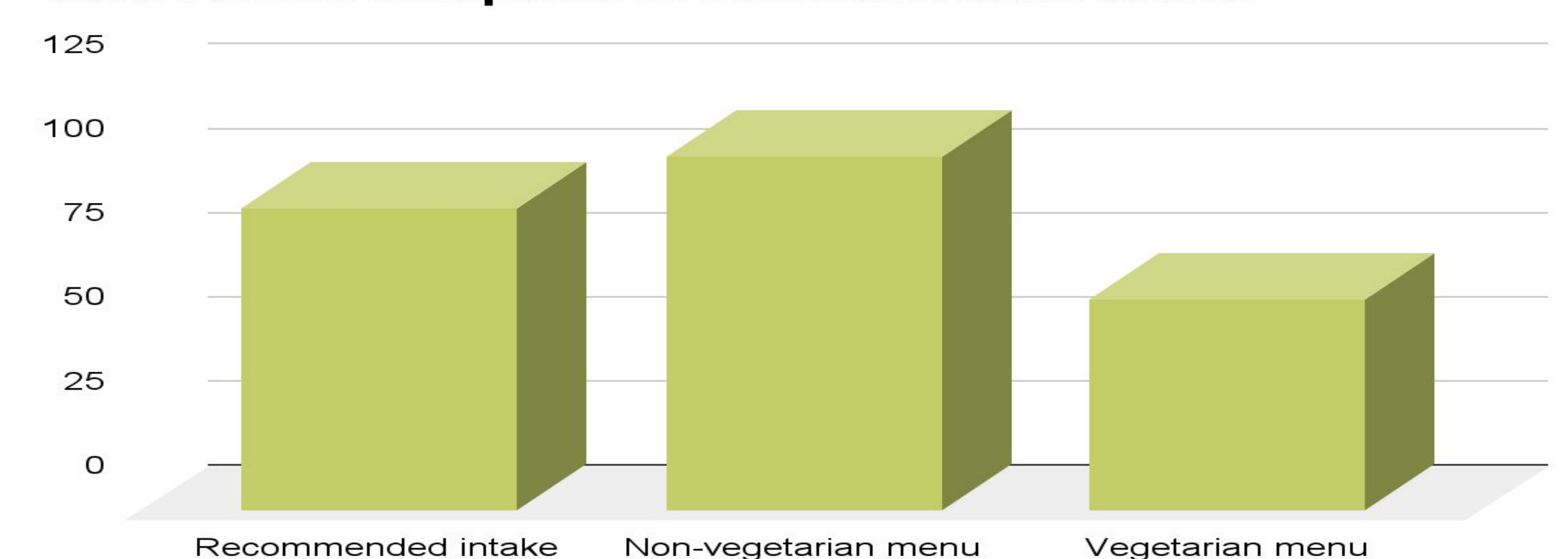
Average Percentage of Meals Eaten Each Day



Bar Chart illustrating kcal offered vs consumed



Meal Protein compared to Recommended Intake



Conclusion

What is the take home message? Overall, meals provided in this setting meet the recommended daily energy (2100-2400 kcal +), patients generally consume an average of 2376 kcal. Non-vegetarian patients achieve sufficient protein intake (approx 105g/day), whereas vegetarian patients consume substantially less (~ 62.6 g/day) when meals and snacks are fully consumed. This highlights the need to increase both the protein quantity and quality variety in vegetarian meal options as well as at snack time to ensure nutritional adequacy in line with relevant guidelines.

Future directions? While snacks provided twice daily meet basic energy (approx 150 kcal) and protein (approx 1.5-2.5g) targets, they could be made more nutritionally balanced. Offering options such as yoghurt with fruit, brown bread with cheese, or a glass of milk would better support patient’s recovery and nutritional status as well as helping those on a vegetarian diet reach their 90g protein target. Additionally, incorporating more protein-rich plant foods, including beans, pulses, nuts, seeds and tofu, into the vegetarian menus is recommended to improve overall protein intake and dietary diversity.

This project highlighted the overall adequacy of meal energy provision but identified a protein gap in the vegetarian diet, emphasising the need to enhance protein quality and variety in vegetarian meal options and snacks.

References: 1: Cass et Charlton 2022, 2: Palmer et al 2015., HSE Food, Nutrition and Hydration Policy for Adult Patients (2018)

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