USUAL PROTEIN INTAKE OF NURSING HOME RESIDENTS WITH (RISK OF) MALNUTRITION - EFFECTS OF AN INDIVIDUALISED NUTRITIONAL INTERVENTION: AN *ENABLE* STUDY

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INTRODUCTION

- Protein intake (PI) in many older adults, especially nursing home (NH) residents with (risk of) malnutrition, is below recommended amounts (1,2)
- Adequate PI is crucial for maintaining muscle mass and function (3,4)
- To adequately improve dietary PI with intervention products, it is necessary to consider usual PI.
- Data on usual PI from NH residents with (risk of) malnutrition is scarce
- It is often not specified if or how nutritional interventions influence usual PI

AIM

**To describe aspects of usual PI (total amount/day (d) and meal, sources/d and meal) and
to analyse the effect of an individualised intervention on these aspects.**

METHODS

Participants NH residents with (risk of) malnutrition and inadequate dietary intake

Study design 6-week usual care phase (UCP) followed by 6-week intervention phase (IP)

Intervention Protein-energy drink and/or protein creams offered (mainly at breakfast/lunch) single or combined in 4 levels to compensate for individual energy/protein deficiencies (Mean additional offer 29 ± 11 g protein/day)
For details see (5)

Measurements PI assessed by 3-day-weighing records at the beginning and the end of UCP and IP

Data analysis and statistics
- PI at 4 meals and from 12 protein sources
- PI presented as mean ± standard deviation of 6 assessment days per phase
- T-test for paired samples to test differences between UCP and IP

RESULTS

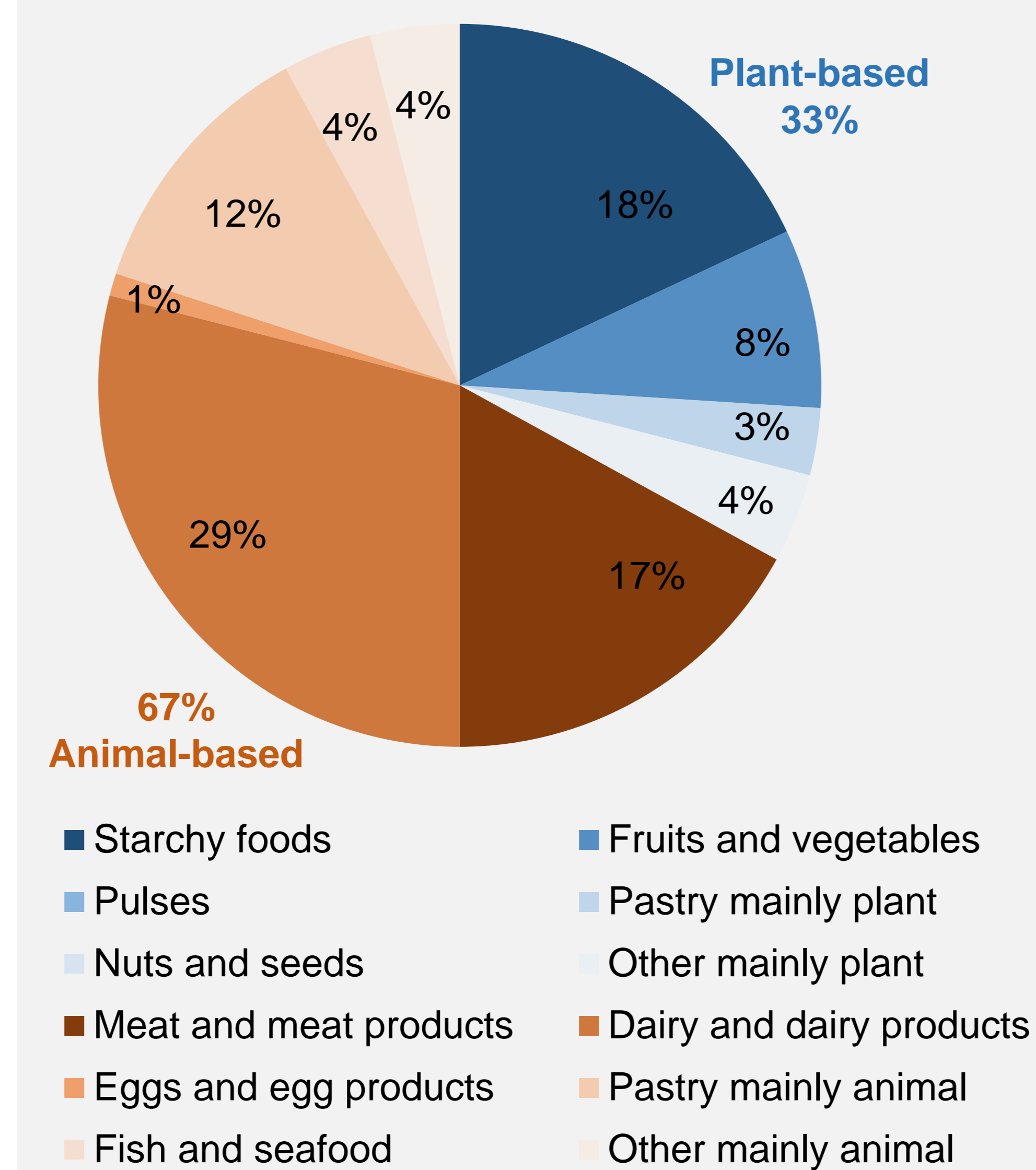**Figure 1: Mean contribution [%] of 12 usual protein sources to daily PI during UCP**

Plant-based 33%
67% Animal-based

18% · 8% · 3% · 4% · 17% · 29% · 1% · 12% · 4% · 4%

- Starchy foods
- Pulses
- Nuts and seeds
- Meat and meat products
- Eggs and egg products
- Fish and seafood
- Fruits and vegetables
- Pastry mainly plant
- Other mainly plant
- Dairy and dairy products
- Pastry mainly animal
- Other mainly animal

Table 1: Participants' characteristics (n=40)

Sex	75 % female
Age	85 ± 8 years
Severe dementia	55 %
Body weight (BW)	59 ± 11 kg
Body Mass Index	22 ± 3 kg/m²
Energy intake	1404 ± 327 kcal/day

Protein intake

Usual care phase
- Mean PI was 0.70 ± 0.18 g/kg BW/day
- PI was highest at dinner and lunch (Fig. 2)
- Two-thirds of daily PI originate from animal-based sources (Fig. 1)
- Main sources were dairy products, starchy foods and meat/meat products

Intervention phase
- Mean PI was 1.04 ± 0.21 g/kg BW/day
- Highest additional intake was at lunch and breakfast (Fig. 2)
- Total daily and mealtime intake from usual sources did not change during IP (Fig. 2)

Figure 2: Mean daily and mealtime protein intake [g] during UCP (left bars) and IP (right bars) from usual food sources and intervention products

Intake from usual food sources during UCP
Intake from usual food sources during IP
Intake from intervention products

Day: 40.7 / 41.8 (18.2) p < 0.001 / p = 0.434
Breakfast: 9.7 / 9.7 (6.0) p < 0.001 / p = 0.944
Lunch: 12.6 / 13.4 (7.4) p < 0.001 / p = 0.346
Dinner: 13.1 / 13.6 (1.8) p = 0.011 / p = 0.591
Snacks: 5.3 / 5.1 (3.0) p < 0.001 / p = 0.667

CONCLUSIONS

- Daily and mealtime PI was very low in NH residents with inadequate dietary intake
- Offering an individualised enrichment, primarily at breakfast and lunch, improved daily and mealtime PI
- PI from usual food sources did not change when residents consumed supplemental protein products
- Future research with the aim of optimizing PI in NH residents should investigate the effects of additional protein on function and clinical parameters

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For details see: Seemer J et al. Usual Protein Intake Amount and Sources of Nursing Home Residents with (Risk of) Malnutrition and Effects of an Individualized Nutritional Intervention: An *enable* Study. *Nutrients* 2021;13(7).
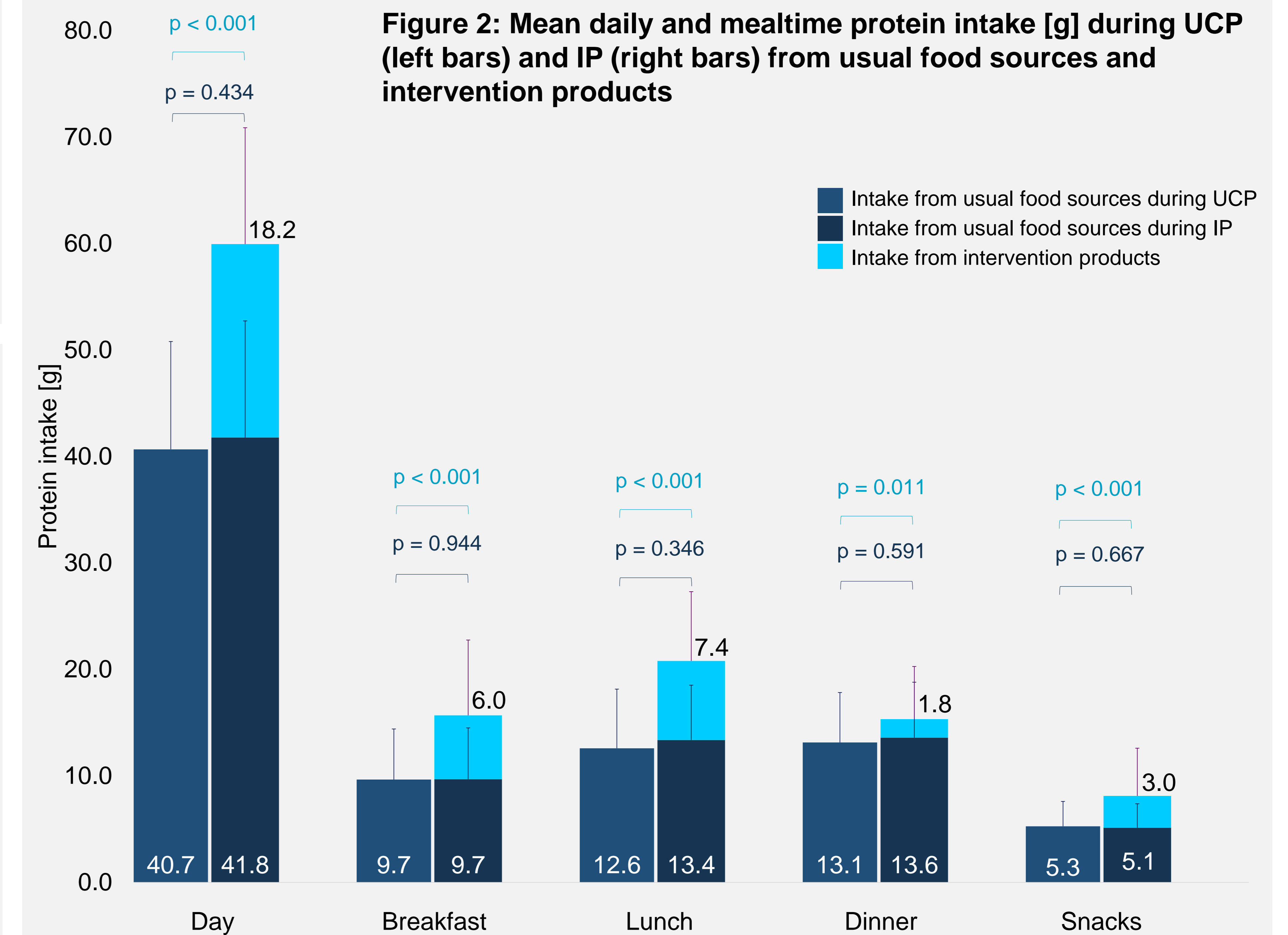
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