Impact of a pulse-based vegetarian lunch meal on daily food intake

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INTRODUCTION

The impact of a meal change, for example, at a metabolic level, can only be objectively studied if the food intake in the rest of the day remains unchanged, which may not always be the case.

OBJECTIVES

Assess if the replacement of a typical omnivorous lunch by a pulse-based vegetarian meal affects the food intake during the rest of the day.

METHODS

Considering the project "**TRUE:** *Transition paths to sustainable legume-based systems in Europe*", **pulse-based vegetarian lunch meals** were served to a group of **omnivorous adults**, for **8 weeks**, **5 days per week**. The food intake was assessed **before (week 0)** and in the **last week (week 8)** of the intervention, trough **3-day food records**. The **number and time of meals** were accounted for, together with the intake of the following food groups: **fruits and vegetables; red meat; fish and seafood; pulses; and sugar-rich foods and beverages.** Results are expressed using medians (P$_{25}$; P$_{75}$). Wilcoxon signed-rank test was used to compare median differences in intake between paired observations and a p-value <0.05 was considered statistically significant. A cut-off of **≥400g/day** (WHO/FAO 2002), **≤100g/day** (IARC 2018), and **≥80g/day** (cooked) (Rodrigues et al. 2006), was used to assess the adequacy of intake regarding fruits and vegetables, red meat and pulses, respectively.

RESULTS

- Pulse-based vegetarian lunch
- 5x/week
- 8 weeks

0 week   n=19   8 week

Food Records

n=1 n=18
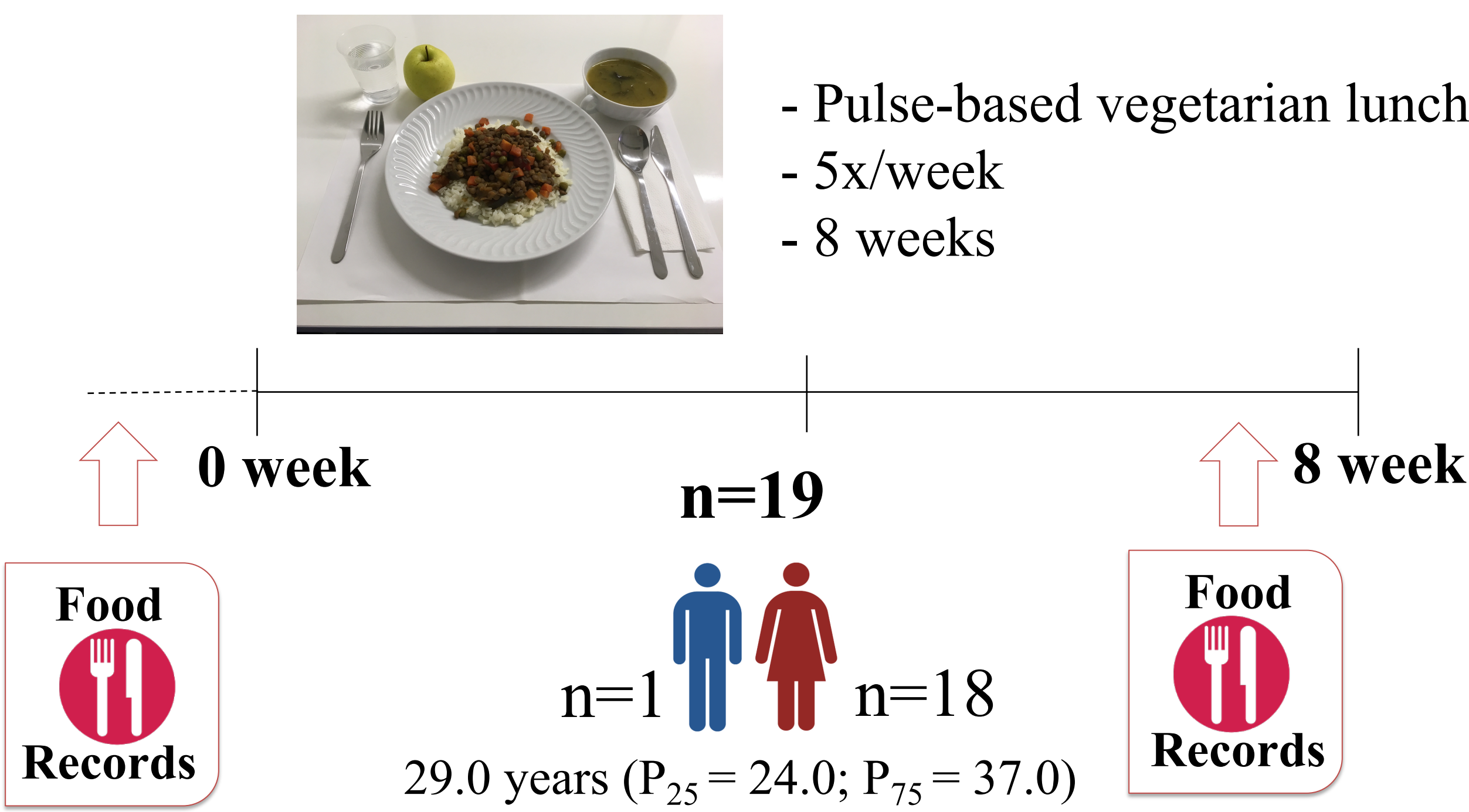29.0 years (P$_{25}$ = 24.0; P$_{75}$ = 37.0)

Food Records

Fig 1. Diagram representing the food intervention.

There were no statistical differences (p=0.126) between the **number of meals** performed at baseline and during the intervention. Also, the **time between lunch and the following afternoon snack** showed no statistical difference (p=0.198). **Fish and seafood** intake showed a statistically s**ignificant decrease (p=0.044), while pulses** intake **increased (p=0.001)** at week 8.

The intervention period seems to have exposed a **slight reduction** in the prevalence of **inadequate intake** of **fruits and vegetables** (36.8% *vs* 31.6%), and **pulses** (100% *vs* 68.4%). However, the prevalence of **inadequate intake** of **red meat increased** from after the 2 months (5.3% vs 15.8%).

WEEK 0		WEEK 8
	N° meals	
5 (4.7; 5.7)		4.7 (4.0; 5.3)
	Lunch >> Snack	
3:48h (3:18h; 4:30h)		4:03h (3:00h; 5:00h)
468.2g (377.1; 536.0) <400g/day – 36.8%		485.8g (326.0; 661.8) <400g/day – 31.6%
35.3g (10.3; 77.7) >100g/day – 5.3%		72.0g (28.0; 96.0) >100g/day – 15.8%
63.1g (30.7; 100.0)		**22.0g (11.7; 54.0) p=0.044**
10.0g (0.0; 29.3) <80g/day – 100%		**59.8g (48.3; 88.2) <80g/day – 68.4% p=0.001**
98.7g (39.7; 208.0)		128.0g (67.7; 169.3)

Fig 2. Comparison between baseline and week 8 – median (P$_{25}$; P$_{75}$).

CONCLUSION

Changes in the daily intake of fish and seafood, as well as pulses, could be a direct consequence of the food intervention itself. Still, there were no statistical significant differences regarding other food groups, and the overall daily meal distribution was maintained. Noteworthy, the food intervention was able to increase the percentage of participants fulfilling the dietary guidelines for fruits and vegetables, and pulses. The increase in the inadequacy of red meat intake may have happened vegetat the expense of the consumption of fish at lunch meals, possible more frequent prior to the intervention. However, these results need further exploration, including a cross-validation with nutrient intake quantification.

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