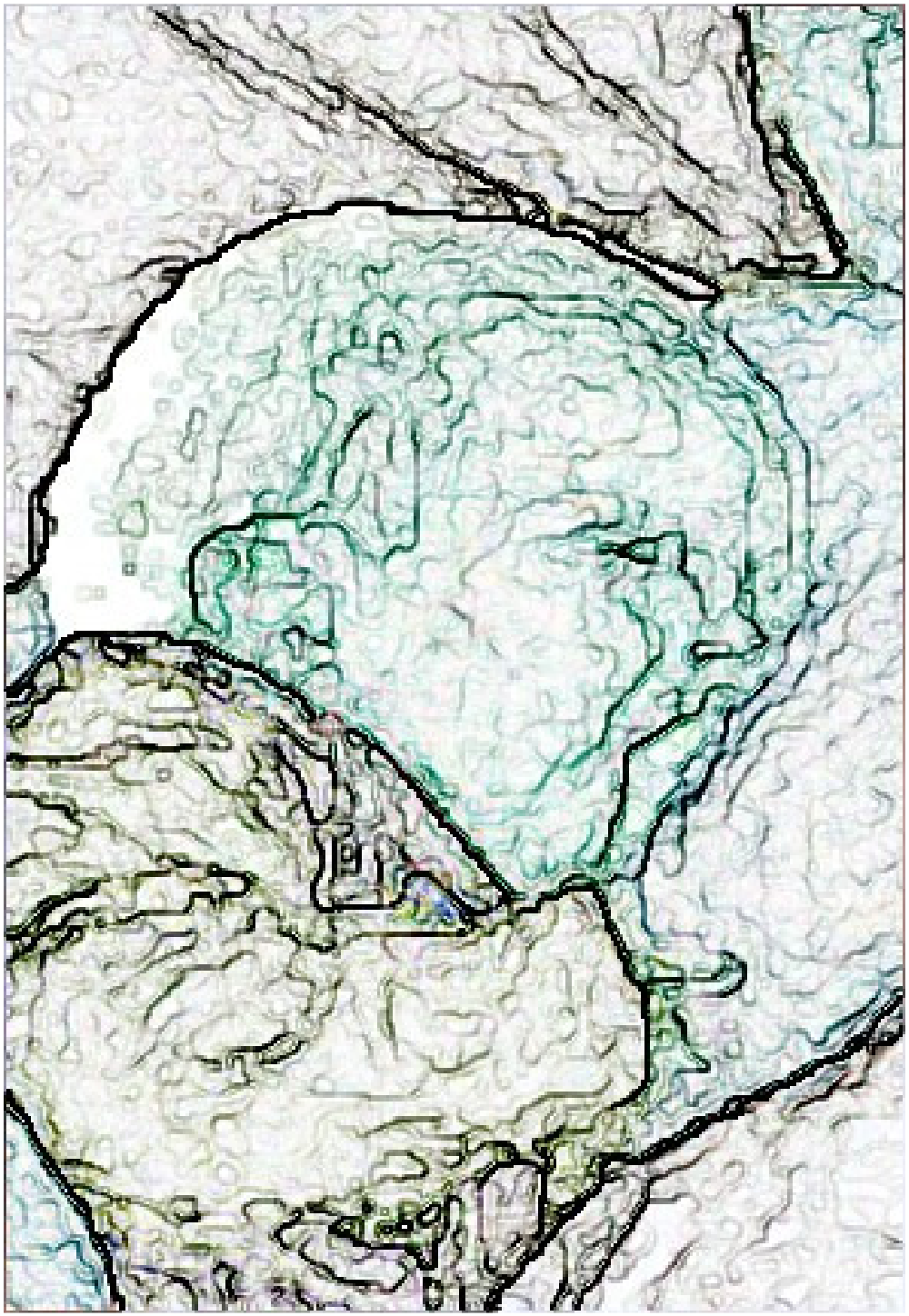


High-protein diet promotes a moderate postpartum weight loss in a prospective cohort of Brazilian women

Castro MBT

Kac G

Leon ACP

Sichieri R

Introduction

Postpartum recommendations: *energy intake/breastfeeding (no orientation about diet composition)*

Studies concerning protein consumption

- *non-pregnant women: more effective weight loss diet (Layman &Baum, 2004; Hu, 2005)*
- *Postpartum women: exclusion criterias (Westman et al., 2002; Foster et al., 2003)*

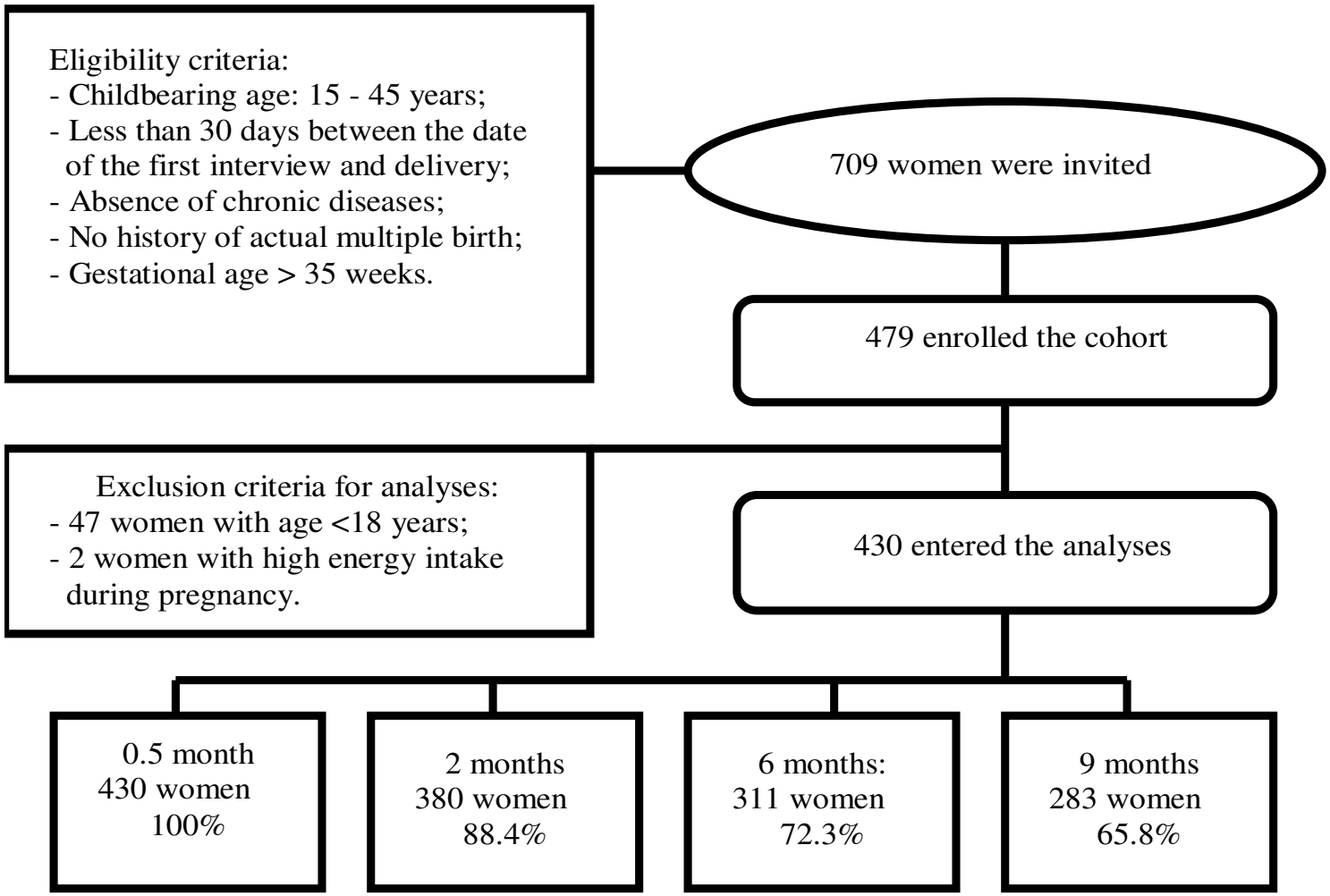
High-protein diets (HP ≥ 1.2 g/kg): occidental *standard*

- *Coronarian disease (Tucker et al., 2005; Dauchet et al., 2006)*
- *Cancer incidence (Key et al., 2004; Uauy & Solomons, 2005)*

Prospective study: *diet composition (HP/LP) ⇔ postpartum weight variation*

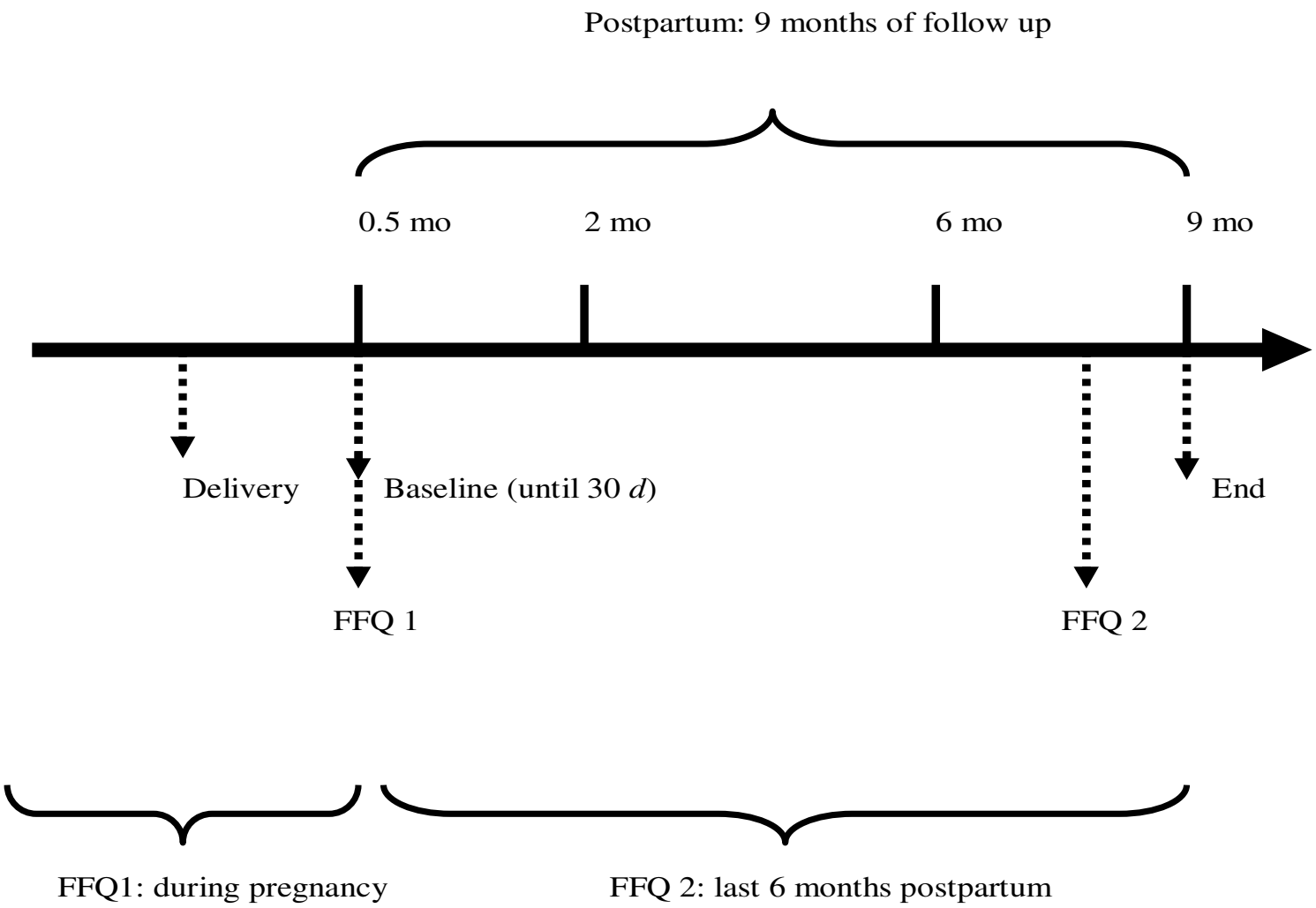
Methods

Figure 1a.



Methods

Figure 1b.



Methods

Models were fitted in five steps as follows:

Model A: unconditional mean model describing partition of the outcome variation

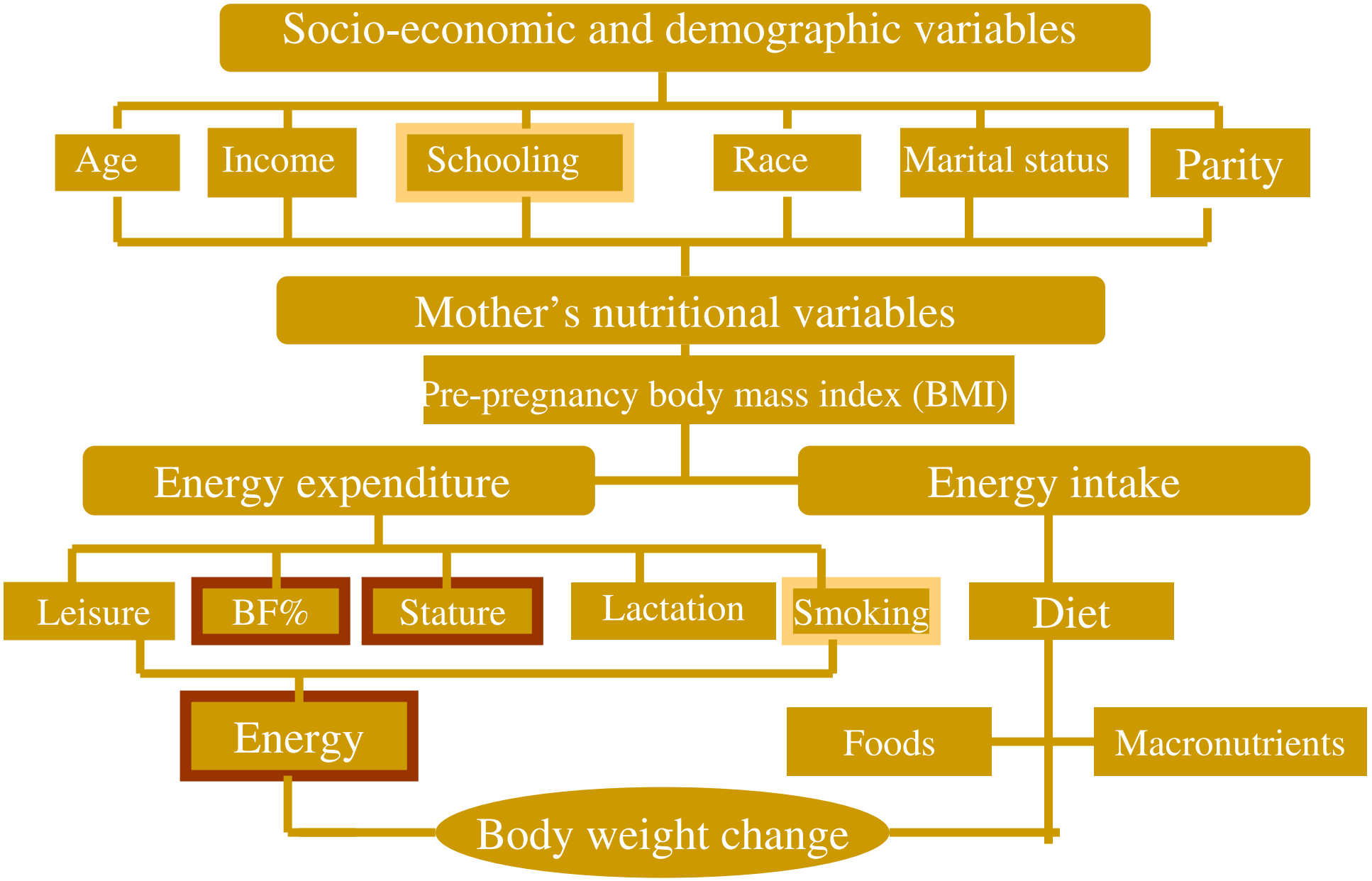
Model B: unconditional growth model which includes time variable

Model C: conditional model that includes the effect of the HP diet

Model D: conditional model adjusted for time-invariant variables: energy intake, percent body fat, stature, age, race, schooling and smoking during postpartum and their interaction with time.

Model E: final model with interactions between stature, age and race with time

Methods


Socio-economic and demographic variables
Age
Income
Schooling
Race
Marital status
Parity
Mother's nutritional variables
Pre-pregnancy body mass index (BMI)
Energy expenditure
Energy intake
Leisure
BF%
Stature
Lactation
Smoking
Diet
Energy
Foods
Macronutrients
Body weight change

Results

HP/LP at baseline (Table 1)

Weight: *Thinner (p<0.0001)*

Stature: *Lower stature (p=0.0012)*

Body fat: *lower BF% e BMI (p<0.0001)*

Age: *younger (p=0.05)*

Race: *lower proportion of whites (p=0.04)*

Results

HP/ LP intake at baseline (Table 2)

Energy intake: *2623 kcal versus 1791 kcal, p<0.01)*

Protein intake: *higher*

Protein intake *per* kg of body weight (g/kg/d):
1.54 g/kg/d (±0.32 g/ kg/d) versus 0.83 g/kg/d (±0.20 g/ kg/d)

Density of the protein: *was higher at HP diet except for chicken and bean*

Figure 2.a - Mean body weight difference in women with high-protein diet (HP): ■ High protein intake during postpartum (≥ 1.2 g/kg/d; n = 97, 97, 97, 87); ● Low protein intake during postpartum (< 1.2 g/kg/d; n = 181, 181, 181, 164); * significant time by group interaction.

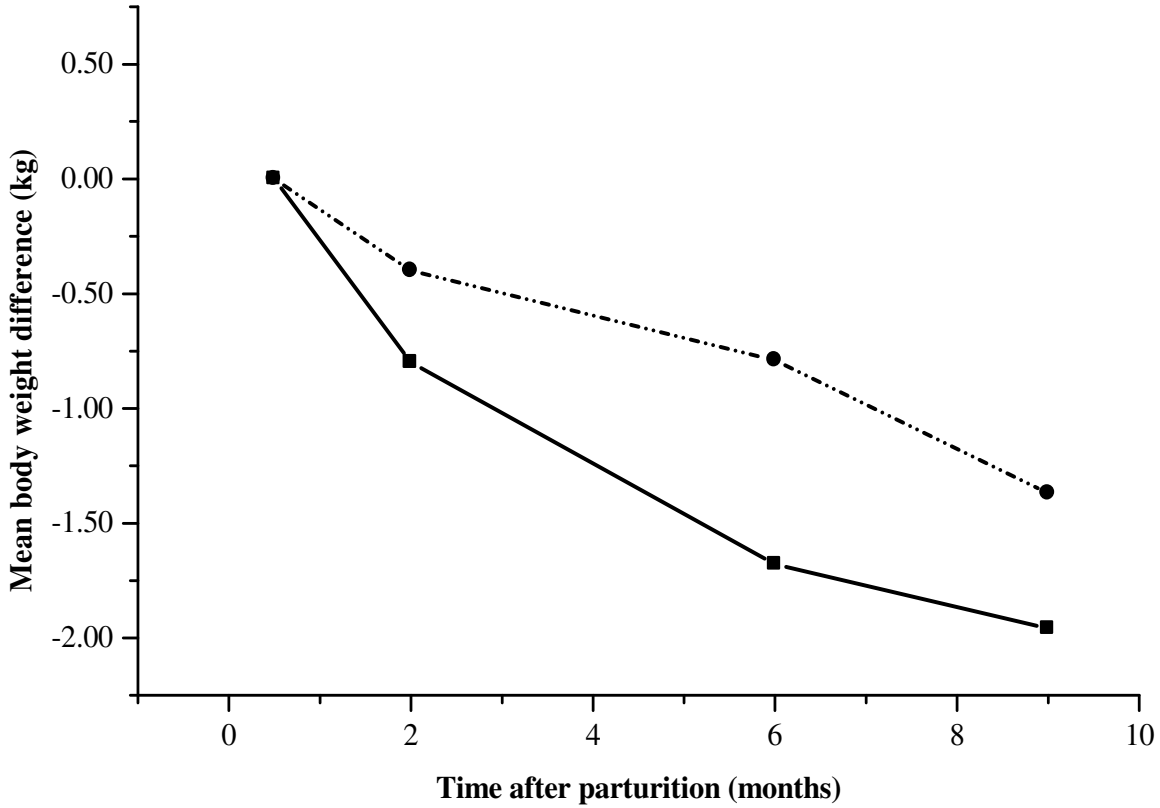


Figure 2.b – Adjusted mean body weight loss by energy intake, energy intake*time, stature, BF%, BF%*time, age, race, smoking, smoking*time, schooling and schooling*time in women with high-protein diet (HP) ■ High protein intake during postpartum (≥ 1.2 g/kg/d; n = 97, 97, 97, 87); ● Low protein intake during postpartum (< 1.2 g/kg/d; n = 181, 181, 181, 164); * significant time by group interaction.

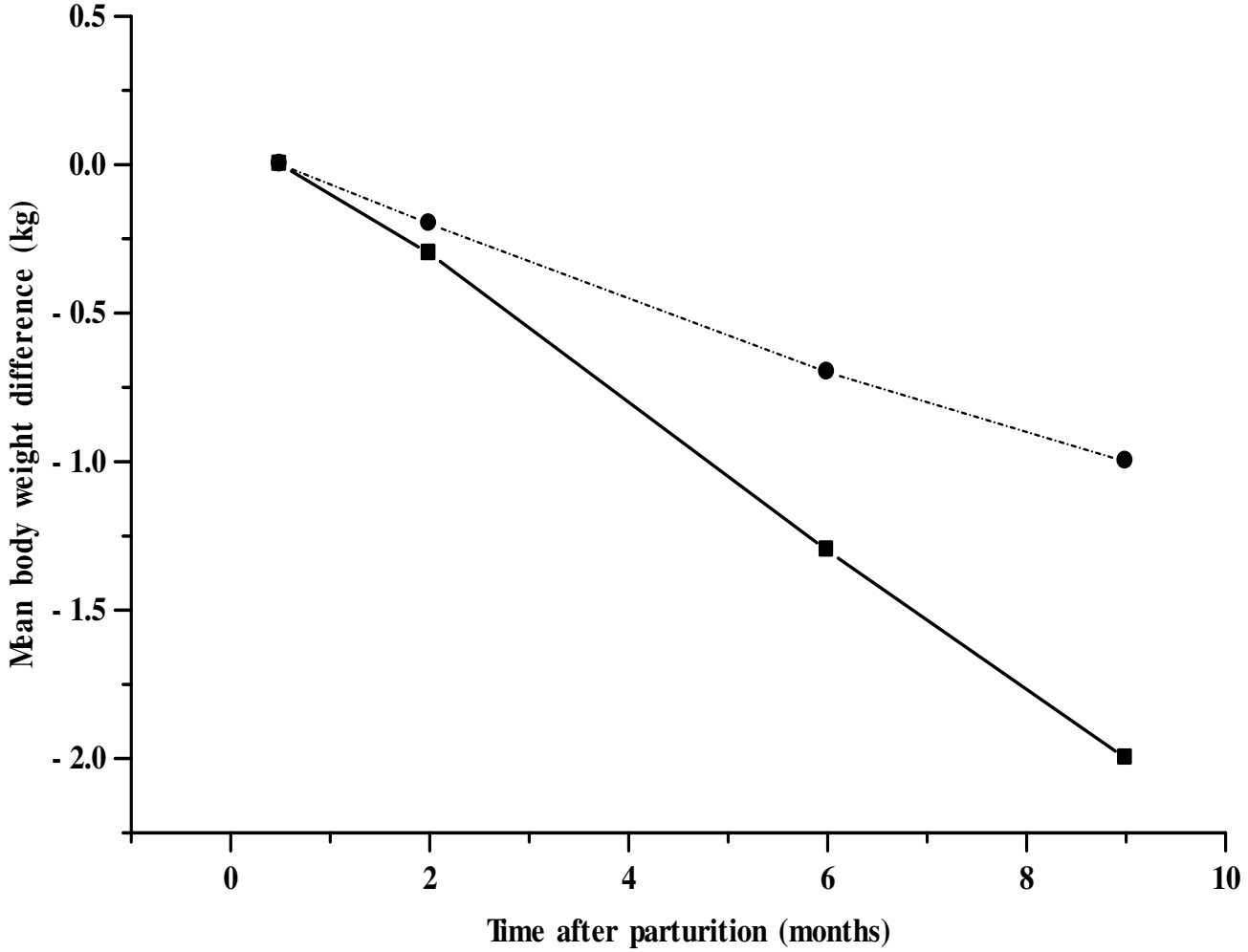


Table 3. Regression coefficients and (standard error) of multilevel models for body weight (n=278) for high (HP) [†] and low (LP) [††] protein intake during postpartum.

Parameter			Model A	Model B	Protein intake Model C[‡]	Protein intake Model D[‡‡]
Fixed Effects						
Intercept		Weight	62.246**	62. 757**	66.678**	63.612**
			(0.590)	(0.594)	(0.865)	(0.753)
		HP/LP			-10.153**	-4.975**
					(1.465)	(1.023)
Rate of change		Time		-0.153**	-0.123**	-0.123**
				(0.021)	(0.027)	(0.027)
		HP/LP			-0.104**	-0.103*
					(0.047)	(0.046)
Variance Components						
Level 1	within-person		5.905**	5.591**	5.713**	5.713**
			(0.267)	(0.253)	(0.285)	(0.285)
Level 2	between-person		147.53**	147.76**	131.62**	30.538**
			(10.208)	(10.216)	(11.329)	(2.751)
Goodness-of-fit:						
-2 Res Log Likelihood			8337.8	8289.8	6225.3	5852.6
Akayke Information Criterion			8341.8	8293.8	6229.3	5856.6

[†] HP = Protein intake ≥ 1.2 g/kg. [††] LP = Protein intake < 1.2 g/kg.

[‡] Unadjusted model. [‡‡] Adjusted model. *$p \leq 0.05$; **$p \leq 0.01$.

Discussion

- HP: *higher body weight loss*/strategy (lose and maintain)

Body weight loss ⇔ Dietary change
↑ energy restriction/↑ protein

- Sustantable weight loss: *small X over time*

- **Nutritional requirements/Lactation**
  - OMS: 0.91 g /kg + 16.0 g
  - IOM: 1.3 g/kg
  - Study: 1.54g/kg

Discussion

Advantages of HP diet

- Promotes body weight loss *(Westman et al., 2002 and others)*
- Preserves body lean mass *(Motil et al., 1998)*
- Satiety *(Mikkelsen et al., 2000; Layman et al., 2003;)*
- Blood lipid profiles *(Westman et al., 2002; Hu, 2005)*
- Energy expenditure *(Mikkelsen et al., 2000)*
- Thermogenesis *(Johnston et al., 2004)*

Losses of follow-up

- *Random* (Kac *et al*., 2003; Castro *et al*., 2006)
- *6 months*: *72% of participants*

FFQ: *Fatter (underestimate)*

Obese ↓ CH e ↑ protein (Sichieri & Everhart, 1998).

⇳

↑ alternative hypothesis

-*Usual consumption, validity and reprodutibility* (Erkola *et al*., 2001)

- *Postpartum* (Rodrigues & Costa, 2001 and others).

- **HP:** *high proportion of participants*
- **Confounding:** *adjusted analysis*

- Positive relation: HP/weight loss

- Strategy: loss/mantainance during postpartum

- Clinical trials/prospective studies: risks and benefits