

# CIGARETTE SMOKING CESSATION DURING PREGNANCY AND SUSTAINABILITY 4 YEARS AFTER DELIVERY



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## INTRODUCTION

- Worldwide, smoking constitutes the single most frequent preventable cause of death. In Portugal, smoking remains more frequent in men but is increasing in women. Among women, the prevalence is higher among younger and more educated women placing Portugal in a relatively early stage of the epidemic compared to other Western European countries.
- Pregnancy is a privileged opportunity in women's life to promote lifestyle changes.

## METHODS

### Baseline

Population-based birth cohort study – Geração XXI. A total of 8495 mothers, who gave birth to 8647 infants were enrolled in the cohort. From those, we excluded 313 who were recruited during the first trimester of pregnancy, since self-report of smoking is expected to change over time during pregnancy.

### Follow-up

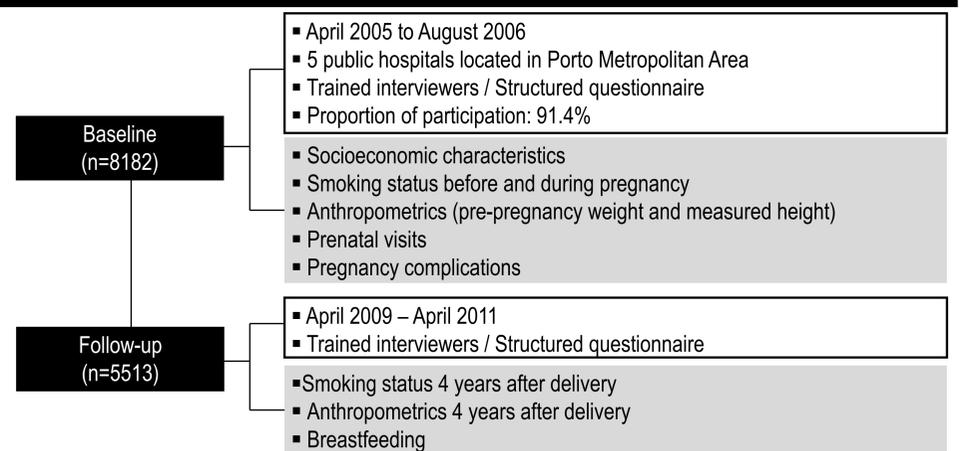
After a median (IQR) follow-up time of 50.8 (range: 48.7-54.6) months, 5513 were re-evaluated. Mothers who attended the follow-up re-evaluation were older, more educated, with higher income, less frequently smokers before pregnancy and more likely to stop smoking during pregnancy than those who did not attend the follow-up re-evaluation.

### Statistical analysis

Prevalence ratios (PR) and 95% confidence intervals (95%CI) were estimated by robust Poisson regression.

## OBJECTIVES

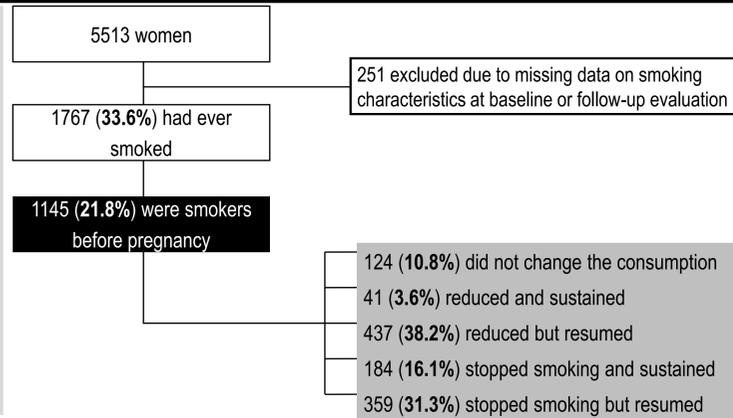
- To assess the maternal determinants of smoking cessation during pregnancy.
- To study how decisions about smoking cessation during pregnancy evolve 4 years after delivery and evaluate the role of socio-economic position in the sustainability of smoking cessation.



## RESULTS

### Characteristics of the participants at delivery:

- Mean age: 30.1 years (range: 13 to 47)
- Married/cohabiting: 95.0%
- Median (IQR) education: 11 (7-15) years
- Household income above 1500€/month: 31.0%
- Prevalence of pre-pregnancy obesity (BMI ≥30Kg/m<sup>2</sup>): 8.8%
- First pregnancy: 48.5%
- Planned pregnancy: 70.5%
- More than 6 prenatal visits: 90.4%
- Pregnancy complications (infectious, placental, hemorrhagic, cardiovascular): 28.2%
- Weight gain during pregnancy above recommended (IOM, 2009): 31.8%



- During the three months before pregnancy, 22% of the women smoked
- Overall, 41.8% of the women reduced their consumption and 47.4% ceased smoking during pregnancy
- On average, smokers reduced 11 cigarettes per day during pregnancy, from 16 to 5
- Four years after delivery, only 3.6% of the women sustained the reduction and 16.1% maintained the cigarette smoking cessation

Table 1 – Cigarette smoking cessation during pregnancy

	n (%)	Crude PR (95% CI)	Adjusted PR (95% CI) <sup>a</sup>
<b>Age (years)</b>			
<25	139 (45.1)	1	1
25-29	141 (47.8)	1.06 (0.89-1.26)	0.86 (0.72-1.04)
30-34	171 (48.2)	1.07 (0.91-1.26)	0.79 (0.65-0.96)
≥35	92 (49.2)	1.09 (0.90-1.32)	0.90 (0.72-1.13)
<b>Number of previous pregnancies</b>			
0	304 (54.3)	1	1
1	161 (42.7)	0.79 (0.68-0.90)	0.85 (0.73-0.98)
≥2	77 (37.2)	0.69 (0.57-0.83)	0.76 (0.61-0.94)
<b>Education (years)</b>			
< 10	230 (39.7)	1	1
10-12	171 (50.9)	1.28 (1.11-1.48)	1.14 (0.97-1.34)
≥ 13	138 (62.2)	1.56 (1.36-1.81)	1.41 (1.16-1.70)
<b>Household monthly income (€)</b>			
<1000	173 (41.0)	1	1
1001-1500	149 (50.7)	1.24 (1.05-1.45)	1.06 (0.89-1.27)
≥ 501	158 (54.9)	1.34 (1.15-1.56)	1.09 (0.90-1.32)
Does not know/ Prefers not to answer	55 (43.0)	1.05 (0.83-1.32)	1.01 (0.81-1.28)
<b>Pre-pregnancy BMI (kg/m<sup>2</sup>)</b>			
<25	358 (46.3)	1	1
25.0-29.9	107 (50.5)	1.09 (0.93-1.27)	1.17 (1.00-1.36)
≥30	38 (54.3)	1.17 (0.93-1.47)	1.37 (1.10-1.71)
<b>Prenatal visits</b>			
<6	48 (36.1)	1	1
7-9	218 (46.3)	1.28 (1.00-1.64)	1.18 (0.91-1.52)
≥10	262 (51.3)	1.42 (1.11-1.81)	1.27 (1.10-1.71)
<b>Smoking initiation age (years)</b>			
<14	131 (38.4)	1	1
15-17	227 (48.8)	1.27 (1.08-1.50)	1.31 (1.11-1.56)
≥18	183 (55.5)	1.44 (1.22-1.70)	1.40 (1.16-1.68)

<sup>a</sup> Adjusted for all the variables in the table

- Education was the most important socio-economic determinant of smoking cessation
- Cigarette smoking cessation increased with BMI, the number of prenatal visits and the smoking initiation age and decreased with the number of previous pregnancies.

Table 2 – Sustainability of smoking cessation 4 years after delivery

	n (%)	Crude PR (95% CI)	Adjusted PR (95% CI) <sup>a</sup>
<b>Age (years)</b>			
<25	37 (26.6)	1	1
25-29	38 (27.0)	1.01 (0.69-1.49)	1.07 (0.70-1.66)
30-34	71 (41.5)	1.56 (1.12-2.17)	1.67 (1.13-2.47)
≥35	38 (41.3)	1.55 (1.07-2.24)	1.95 (1.29-2.94)
<b>Education (years)</b>			
<10	74 (32.2)	1	1
10-12	55 (32.2)	1.00 (0.75-1.33)	1.17 (0.85-1.62)
≥13	55 (39.9)	1.24 (0.94-1.64)	1.24 (0.88-1.75)
<b>Household monthly income (€)</b>			
<1000	60 (34.7)	1	1
1001-1500	51 (34.2)	0.99 (0.73-1.34)	0.91 (0.64-1.30)
≥ 501	50 (31.7)	0.91 (0.67-1.24)	0.73 (0.50-1.05)
Does not know/ Prefers not to answer	18 (32.7)	0.94 (0.61-1.45)	0.90 (0.56-1.45)
<b>Prenatal visits</b>			
<6	19 (39.6)	1	1
7-9	79 (36.2)	0.92 (0.62-1.35)	0.75 (0.48-1.16)
≥10	81 (30.9)	0.78 (0.53-1.16)	0.64 (0.41-1.00)
<b>Pregnancy complications</b>			
No	121 (31.0)	1	1
Yes	63 (42.0)	1.36 (1.07-1.72)	1.48 (1.15-1.91)
<b>Breastfeeding (weeks)</b>			
≤ 12	59 (30.9)	1	1
13-26	44 (34.9)	1.13 (0.82-1.56)	1.07 (0.78-1.79)
27-52	42 (36.2)	1.17 (0.85-1.62)	1.14 (0.83-1.57)
> 52	22 (34.9)	1.13 (0.76-1.68)	1.15 (0.78-1.49)
<b>Subsequent pregnancies</b>			
None	131 (31.1)	1	1
One or more	53 (43.4)	1.40 (1.09-1.79)	1.60 (1.21-2.11)

<sup>a</sup> Adjusted for all the variables in the table

- Older women, who developed a complication during pregnancy and who got pregnant in the follow-up period were more likely to sustain the cigarette smoking cessation.
- Women with higher levels of education tended to sustain their lifestyle change, although the association did not reach statistical significance.

## CONCLUSIONS

- Higher educational level was associated with smoking cessation during pregnancy and with the sustainability of this lifestyle change.
- Although almost all women reduced or stopped smoking during pregnancy, more than half returned to their usual consumption level after delivery. This suggests that women are aware of the harmful impact of smoking on reproductive and infant health during pregnancy, which constitutes a strong enough motivation for the effort of stopping smoking at least temporarily. Given the low sustainability of smoking cessation 4 years after delivery and taking into account that concern with the child's health seems to be an effective motivation to stop smoking for several months, successful educational interventions should probably be focused on the harmful effects of passive smoking on the child's health after birth.