**Supplemental Figure 1.** Flow chart of participants. SUN cohort 1999-2016.

**Supplemental Table 1**. Baseline characteristics of mothers who answered the questionnaire and mothers who did not. The SUN cohort 1999-2016. Numbers are mean (standard deviation) or N (percentage).

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| --- | --- | --- | --- |
|  | Did not answer  (n=1947) | Answered  (n=1527) | p† |
| Age (years) | 43·1 (5·3) | 42·8 (4·8) | 0·09 |
| Age category |  |  | 0·26 |
| 20-30 years | 1 (01%) | 5 (0·3%) |  |
| 30-35 years | 89 (4·6%) | 65 (4·3%) |  |
| 35-40 years | 496 (25·5%) | 383 (25·1%) |  |
| ≥ 40 years | 1361 (69·9%) | 1074 (70·3%) |  |
| Educational level (years of university) | 4·8 (1·2) | 4·8 (1·2) | 0·36 |
| Adherence to Mediterranean diet |  |  | 0·38 |
| Low (0-3 points) | 822 (42·2%) | 645 (42·2%) |  |
| Medium (4-5 points) | 765 (39·3%) | 615 (40·3%) |  |
| High (6-9 points) | 360 (18·5%) | 267 (17·5%) |  |
| Body Mass Index (kg/m2) | 21·4 (2·6) | 21·5 (2·57) | 0·37 |
| Physical activity (METs-h/week) | 24·5 (21·3) | 25·3 (20·9) | 0·26 |
| Smoking habit |  |  | 0·37 |
| Never | 1036 (53·2) | 840 (55·0) |  |
| Current | 567 (29·1) | 450 (29·5) |  |
| Former | 50 (2·6) | 31 (2·0) |  |
| Smoking habit (packs/year) | 2·5 (4·3) | 2·4 (4·3) | 0·60 |

**Supplemental Figure 2.** Difference and 95% Confident Intervals (CI) in offspring’s z score of the body mass index (BMI) associated with maternal pregestational BMI (kg/m2) by maternal smoking habit (p for interaction=0·02). Pregestational BMI of 22 kg/m2 was used as reference. The histogram represents the frequency distribution of maternal pregestational BMI (kg/m2).

Adjusted for children factor: sex and current age; and maternal factors: age (20-30, 30-35 and ≥35 years), maternal education (years of university), adherence to Mediterranean diet (low/medium/high), total energy intake (quintiles) and physical activity (quintiles).

**Supplemental Table 2.** Sensitivity analyses using WHO definition of obesity and excluding children with z score of the body mass index (BMI) over +4 or below -4. Change and 95% Confidence Interval (CI) in offspring’s z score of the BMI associated with each additional 5 kg/m2 increase in maternal pregestational body mass index. N= 2969 children.

|  |  |  |
| --- | --- | --- |
|  | Change (95% CI) in offspring’s z-score of the BMI | p |
| Crude Model | 0·21 (0·14-0·29) | <0·001 |
| Multivariable adjusted model 1¶ | 0·19 (0·11-0·26) | <0·001 |
| Multivariable adjusted model 2ψ | 0·19 (0·11-0·26) | <0·001 |
| Multivariable adjusted model 3ξ | 0·17 (0·11-0·26) | <0·001 |
| ¶ Adjusted for children factor: sex and current age.  ψ Additionally adjusted for maternal factors: age (20-30, 30-35 and ≥35 years), maternal education (years of university), adherence to Mediterranean diet (low/medium/high), total energy intake (quintiles) and physical activity (quintiles).  ξ Additionally adjusted for maternal smoking habit (yes/no). | | |

**Supplemental Table 3.** Sensitivity analyses using WHO definition of obesity and excluding children with z score of the body mass index (BMI) over +4 or below -4. Risk Ratio (RR) and 95% Confidence interval (CI) for offspring’s overweight or obesity associated with each additional 5 kg/m2 increase in maternal pregestational body mass index. N= 2969 children (591 overweight or obese).

|  |  |  |
| --- | --- | --- |
|  | RR (95% CI) for offspring’s overweight or obesity | p |
| Crude Model | 1·60 (1·43-1·81) | <0·001 |
| Multivariable adjusted model 1¶ | 1·47 (1·33-1·62) | <0·001 |
| Multivariable adjusted model 2ψ | 1·46 (1·32-1·62) | <0·001 |
| Multivariable adjusted model 3ξ | 1·46 (1·32-1·61) | <0·001 |
| ¶ Adjusted for children factor: sex and actual age.  ψ Additionally adjusted for maternal factors: age (20-30, 30-35 and ≥35 years), years of university, adherence to Mediterranean diet (low/medium/high), total energy intake (quintiles) and physical activity (quintiles).  ξ Additionally adjusted for maternal smoking habit (yes/no). | | |

**Supplemental Table 4.** Change and 95% Confidence Interval (CI) in offspring’s z score of the height associated with each additional 5 kg/m2 increase in maternal pregestational body mass index. Z score of the height was calculated with the WHO criteria. Children with z score of the height over +4 or below -4 were excluded. N=2919 children.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Change (95% CI) in offspring’s z-score of the height | | p |
| Crude Model | | 0·21 (0·13-0·29) | <0·001 |
| Multivariable adjusted model 1¶ | | 0·19 (0·11-0·27) | <0·001 |
| Multivariable adjusted model 2ψ | | 0·19 (0·11-0·25) | <0·001 |
| Multivariable adjusted model 3ξ | | 0·20 (0·12-0·28) | <0·001 |
| ¶ Adjusted for children factor: sex and current age.  ψ Additionally adjusted for maternal factors: age (20-30, 30-35 and ≥35 years), maternal education (years of university), adherence to Mediterranean diet (low/medium/high), total energy intake (quintiles) and physical activity (quintiles).  ξ Additionally adjusted for maternal smoking habit (yes/no). | | | |