**Supplementary files**

**P2:** Figure S1: Flow-chart inclusion

**P3:** Table S1: Food intake by quintile of the Lifelines Diet Score

**P4:** Figure S2:Overweight incidence and remission

**P5:** Table S2: Linear regression LLDS vs. BMI-z, stratified by gender

**P6:** Table S3: Linear regression sensitivity analysis LLDS components

**Figure S1:** Flow-chart inclusion.

|  |  |  |
| --- | --- | --- |
|  |  | **Quintile of LLDS** |
|  | **Total** | **1** | **2** | **3** | **4** | **5** |
| LLDS-scorea | 21 [4-41] | 13 [4-15] | 18 [16-19] | 21 [20-22] | 24 [23-26] | 29 [27-41] |
| Energy intake (kcal)b | 1387 ± 293 | 1447 ± 325 | 1413 ± 299 | 1389 ± 290 | 1362 ± 282 | 1329 ± 257 |
| **Positive components** |  |  |  |  |  |  |
| Vegetables | 42 [25-62] | 31 [20-46] | 37 [22-51] | 42 [23-58] | 46 [30-65] | 58 [41-83] |
| Fruit | 113 [79-172] | 82 [48-112] | 112 [77-120] | 113 [82-169] | 121 [111-223] | 167 [112-224] |
| Whole grain products | 39 [3-69] | 1 [0-33] | 23 [1-60] | 41 [4-69] | 50 [12-74] | 65 [42-98] |
| Legumes & Nuts | 6 [1-14] | 2 [0-6] | 5 [0-10] | 7 [1-15] | 9 [4-16] | 11 [5-21] |
| Fish | 4 [2-9] | 3 [0-5] | 4 [0-7] | 4 [2-9] | 5 [2-11] | 7 [4-11] |
| Oils & soft margarines | 13 [7-17] | 9 [3-14] | 12 [5-16] | 12 [7-17] | 13 [11-18] | 16 [12-19] |
| Unsweetened dairy | 186 [59-333] | 80 [13-201] | 139 [38-288] | 214 [66-332] | 211 [96-369] | 284 [167-389] |
| Tea | 0 [0-54] | 0 [0-0] | 0 [0-18] | 0 [0-43] | 5 [0-71] | 39 [0-129] |
| **Negative components** |  |  |  |  |  |  |
| Red & processed meat | 43 [29-58] | 55 [42-78] | 47 [32-64] | 45 [29-57] | 40 [28-51] | 32 [23-46] |
| Butter, hard margarines | 5 [1-11] | 9 [3-16] | 6 [3-11] | 6 [1-11] | 3 [1-6] | 3 [0-6] |
| Sugar-sweetened beverages | 135 [72-238] | 244 [156-399] | 168 [105-295] | 136 [71-230] | 111 [61-172] | 73 [44-113] |
| a Median score + Full Range b Mean + SD |

 **Table S1:** Median intake [25th – 75th percentile] in grams per day for each food group,

 stratified by quintile of the Lifelines Diet Score.

**Figure S2:** Overweight incidence and remission between age three and 10, in different quintiles of the Lifelines Diet Score.

**Table S2:** **Linear regression analyses to investigate the association between LLDS in quintiles and change in BMI-z between age three and ten, stratified by sex.** β for estimated difference in change in BMI-z corresponding to an increase in 1 quintile of the LLDS , Nboys=468, Ngirls=451.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **β** | **95% CI** | **p-value** |
| **Boys** |  |  |  |
| Crude | -.071 | -.126 ; -.015 | **.012** |
| 1A | -.070 | -.126 ; -.015 | **.013** |
| 1B | -.060 | -.113 ; -.007 | **.028** |
| 1C | -.058 | -.112 ; -.005 | **.033** |
|  |  |  |  |
| 2 | -.041 | -.093 ; .011 | .122 |
| **Girls** |  |  |  |
| Crude | -.074 | -.129 ; -.018 | **.010** |
| 1A | -.065 | -.121 ; -.009 | **.022** |
| 1B | -.066 | -.118 ; -.013 | **.014** |
| 1C | -.071 | -.124 ; -.018 | **.008** |
|  |  |  |  |
| 2 | -.044 | -.094 ; .006 | .084 |
| *Crude) LLDS (in quintiles)**Model 1A) crude + birth weight, gestational age, breastfeeding at 1 month**Model 1B) 1A + BMI z-score at age three**Model 2) 1B + BMI father, BMI mother, smoking during pregnancy, age mother, education level mother* |

**Table S3:** **Linear regression analyses to investigate the association between LLDS in quintiles, leaving out one food group at the time, and change in BMI-z between age three and ten.** β for estimated difference in change in BMI-z corresponding to an increase in 1 quintile of the LLDS , N=919. Scores ranked on degree of attenuation in final model 2.

|  |  |  |
| --- | --- | --- |
|  | **Model 1C** | **Model 2** |
|  | **β** | **95% CI** | **P-value** | **% attenuation** | **β** | **95% CI** | **P-value** | **% attenuation** |
| **Total LLDS** | -.064 | -.101 ; -.026 | **.001** | **0 (REF)** | -.043 | -.079 ; -.007 | **.019** | **0 (REF)** |
| **LLDS w/o Dairy** | -.046 | -.083 ; -.009 | **.014** | 28.1 % | -.028 | -.063 ; .008 | .125 | 34.9 % |
| **LLDS w/o Whole grain** | -.056 | -.093 ; -.019 | **.003** | 12.5 % | -.034 | -.070 ; .001 | .056 | 20.9 % |
| **LLDS w/o Fruit** | -.057 | -.093 ; -.020 | **.002** | 10.9 % | -.037 | -.071 ; -.002 | **.038** | 14.0 % |
| **LLDS w/o Meat** | -.058 | -.094 ; -.021 | **.002** | 9.4 % | -.043 | -.078 ; -.008 | **.015** | 0 % |
| **LLDS w/o Oils** | -.060 | -.097 ; -.023 | **.001** | 6.3 % | -.036 | -.071 ; -.001 | **.043** | 16.3 % |
| **LLDS w/o Tea** | -.060 | -.097 ; -.023 | **.002** | 6.3 % | -.040 | -.075 ; -.004 | **.029** | 7.0 % |
| **LLDS w/o Vegetables** | -.063 | -.100 ; -.026 | **.001** | 1.6% | -.045 | -.080 ; -.010 | **.012** | +4.7 % |
| **LLDS w/o Fish** | -.064 | -.101 ; -.027 | **.001** | 0 % | -.045 | -.080 ; -.009 | **.013** | +4.7 % |
| **LLDS w/o butter** | -.066 | -.103 ; -.030 | **.001** | +3.1 % | -.044 | -.079 ; -.010 | **.013** | +2.3 % |
| **LLDS w/o SSB** | -.066 | -.103 ; -.028 | **.001** | +3.1 % | -.045 | -.081 ; -.009 | **.014** | +4.7 % |
| **LLDS w/o Legumes&Nuts** | -.067 | -.104 ; -.030 | **<.001** | + 4.7 % | -.048 | -.083 ; -.013 | **.008** | +11.6 % |
| *LLDS (in quintiles) vs. BMI change, adjusted for birth weight, sex, gestational age, breastfeeding at 1 month, BMI z-score at age three and total energy intake (Model 1C), and additionally adjusted for BMI father, BMI mother, smoking during pregnancy, age mother and education level mother in Model 2.* |

**Table S4: Baseline characteristics of participants included in the study vs. those who dropped out between age 3 and 10, and for whom outcome data was therefore not available.**

|  |  |  |
| --- | --- | --- |
| Child characteristics | Included (N=1001) | Lost to follow-up (N=130) |
| Sex, n(%)*Boy**Girl* | 508 (50.7)493 (49.3) | 78 (60.0)52 (40.0) |
| Birth weight (gram) | 3605 ± 494 | 3574 ± 525 |
| Gestational age (weeks) | 39.9 ± 1.4 | 39.9 ± 1.7 |
| Breastfeeding at 1 month, n(%) | 651 (65.8) | 62 (49.2) |
| BMI z-score age three (SD) | 0.10 ± 0.89 | 0.05 ± 1.03 |
| Overweight age three, n (%) | 83 (8.3) | 15 (11.5) |
| Energy Intake (kcal/day)*BoyGirl* | 1387 ± 2931430 ± 2931342 ± 289 | 1395 ± 2721402 ± 2781383 ± 264 |
| Lifelines Diet Score | 21.2 ± 6.1 | 20.8 ± 6.6 |
| Parental characteristics  |
| Maternal age at birth (years) | 31.2 ± 4.1 | 31.0 ± 4.5 |
| Paternal age at birth (years) | 33.8 ± 4.6 | 33.2 ± 5.4 |
| Maternal BMI before pregnancy (kg/m2) | 24.8 ± 4.8 | 25.4 ± 4.7 |
| Paternal BMI before pregnancy (kg/m2) | 25.4 ± 3.2 | 26.0 ± 4.0 |
| Maternal education level, n(%)*Low**Middle* *High* | 248 (24.9)337 (33.9)409 (41.1) | 54 (43.2)38 (30.4)33 (26.4) |
| Smoking during pregnancy, n(%) | 100 (10.1) | 14 (11.1) |