**Online Supplemental Material**

Baratali et al. *Impact of dietary and obesity genetic risk scores on weight gain*

**Online supplemental table 1**: SNPs and corresponding weights (beta) used to build the first genetic score

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SNP** | **Nearest gene** | **Chromosome** | **Effect allele** | **Beta** |
| rs2815752 | *NEGR1* | 1 | A | 0.130 |
| rs1555543 | *PTBP2* | 1 | C | 0.060 |
| rs543874 | *SEC16B* | 1 | G | 0.220 |
| rs1514175 | *TNNI3K* | 1 | A | 0.070 |
| rs887912 | *FANCL* | 2 | T | 0.100 |
| rs2890652 | *LRP1B* | 2 | C | 0.090 |
| rs713586 | *RBJ* | 2 | C | 0.140 |
| rs2867125 | *TMEM18* | 2 | C | 0.310 |
| rs13078807 | *CADM2* | 3 | G | 0.100 |
| rs9816226 | *ETV5* | 3 | T | 0.140 |
| rs10938397 | *GNPDA2* | 4 | G | 0.180 |
| rs13107325 | *SLC39A8* | 4 | T | 0.190 |
| rs2112347 | *FLJ35779* | 5 | T | 0.100 |
| rs206936 | *NUDT3* | 6 | G | 0.060 |
| rs987237 | *TFAP2B* | 6 | G | 0.130 |
| rs10968576 | *LRRN6C* | 9 | G | 0.110 |
| rs10767664 | *BDNF* | 11 | A | 0.190 |
| rs3817334 | *MTCH2* | 11 | T | 0.060 |
| rs4929949 | *RPL27A* | 11 | C | 0.060 |
| rs7138803 | *FAIM2* | 12 | A | 0.120 |
| rs4771122 | *MTIF3* | 13 | G | 0.090 |
| rs10150332 | *NRXN3* | 14 | C | 0.130 |
| rs11847697 | *PRKD1* | 14 | T | 0.170 |
| rs2241423 | *MAP2K5* | 15 | G | 0.130 |
| rs1558902 | *FTO* | 16 | A | 0.390 |
| rs12444979 | *GPRC5B* | 16 | C | 0.170 |
| rs7359397 | *SH2B1* | 16 | T | 0.150 |
| rs571312 | *MC4R* | 18 | A | 0.230 |
| rs29941 | *KCTD15* | 19 | G | 0.060 |
| rs2287019 | *QPCTL* | 19 | C | 0.150 |
| rs3810291 | *TMEM160* | 19 | A | 0.090 |

**Online supplemental table 2**: SNPs and corresponding weights (beta) used to build the second genetic score

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SNP** | **Nearest gene** | **Chromosome** | **Effect allele** | **Beta** |
| rs657452 | *AGBL4* | 1 | A | 0.0601 |
| rs11583200 | *ELAVL4* | 1 | C | 0.0167 |
| rs12566985 | *FPGT-TNNI3K* | 1 | G | 0.0200 |
| rs12401738 | *FUBP1* | 1 | A | 0.0447 |
| rs17024393 | *GNAT2* | 1 | C | 0.0556 |
| rs2820292 | *NAV1* | 1 | C | 0.0308 |
| rs3101336 | *NEGR1* | 1 | C | 0.0172 |
| rs11165643 | *PTBP2* | 1 | T | 0.0178 |
| rs543874 | *SEC16B* | 1 | G | 0.0242 |
| rs10182181 | *ADCY3* | 2 | G | 0.0227 |
| rs11688816 | *EHBP1* | 2 | G | 0.0192 |
| rs7599312 | *ERBB4* | 2 | G | 0.0249 |
| rs1016287 | *FLJ30838* | 2 | T | 0.0482 |
| rs11126666 | *KCNK3* | 2 | A | 0.0451 |
| rs2121279 | *LRP1B* | 2 | T | 0.0307 |
| rs13021737 | *TMEM18* | 2 | G | 0.0334 |
| rs1528435 | *UBE2E3* | 2 | T | 0.0188 |
| rs13078960 | *CADM2* | 3 | G | 0.0176 |
| rs1516725 | *ETV5* | 3 | C | 0.0262 |
| rs2365389 | *FHIT* | 3 | C | 0.0207 |
| rs3849570 | *GBE1* | 3 | A | 0.0211 |
| rs6804842 | *RARB* | 3 | G | 0.0297 |
| rs16851483 | *RASA2* | 3 | T | 0.0179 |
| rs10938397 | *GNPDA2* | 4 | G | 0.0192 |
| rs11727676 | *HHIP* | 4 | T | 0.0261 |
| rs2112347 | *POC5* | 5 | T | 0.0230 |
| rs205262 | *C6orf106* | 6 | G | 0.0188 |
| rs9400239 | *FOXO3* | 6 | C | 0.0194 |
| rs13191362 | *PARK2* | 6 | A | 0.0283 |
| rs2207139 | *TFAP2B* | 6 | G | 0.0402 |
| rs1167827 | *HIP1* | 7 | G | 0.0188 |
| rs2245368 | *PMS2L11* | 7 | C | 0.0249 |
| rs17405819 | *HNF4G* | 8 | T | 0.0315 |
| rs2033732 | *RALYL* | 8 | C | 0.0395 |
| rs4740619 | *C9orf93* | 9 | T | 0.0403 |
| rs6477694 | *EPB41L4B* | 9 | C | 0.0207 |
| rs10968576 | *LINGO2* | 9 | G | 0.0229 |
| rs10733682 | *LMX1B* | 9 | A | 0.0225 |
| rs1928295 | *TLR4* | 9 | T | 0.0220 |
| rs7899106 | *GRID1* | 10 | G | 0.0224 |
| rs17094222 | *HIF1AN* | 10 | C | 0.0185 |
| rs11191560 | *NT5C2* | 10 | C | 0.0818 |
| rs12286929 | *CADM1* | 11 | G | 0.0198 |
| rs2176598 | *HSD17B12* | 11 | T | 0.0174 |
| rs3817334 | *MTCH2* | 11 | T | 0.0217 |
| rs4256980 | *TRIM66* | 11 | G | 0.0334 |
| rs7138803 | *BCDIN3D* | 12 | A | 0.0277 |
| rs11057405 | *CLIP1* | 12 | G | 0.0202 |
| rs12429545 | *OLFM4* | 13 | A | 0.0317 |
| rs7141420 | *NRXN3* | 14 | T | 0.0483 |
| rs11847697 | *PRKD1* | 14 | T | 0.0245 |
| rs12885454 | *PRKD1* | 14 | C | 0.0207 |
| rs10132280 | *STXBP6* | 14 | C | 0.0221 |
| rs3736485 | *DMXL2* | 15 | A | 0.0358 |
| rs16951275 | *MAP2K5* | 15 | T | 0.0174 |
| rs1558902 | *FTO* | 16 | A | 0.0209 |
| rs12446632 | *GPRC5B* | 16 | G | 0.0360 |
| rs758747 | *NLRC3* | 16 | T | 0.0658 |
| rs2650492 | *SBK1* | 16 | A | 0.0218 |
| rs1000940 | *RABEP1* | 17 | G | 0.0182 |
| rs12940622 | *RPTOR* | 17 | G | 0.0195 |
| rs1808579 | *C18orf8* | 18 | C | 0.0217 |
| rs7243357 | *GRP* | 18 | T | 0.0311 |
| rs6567160 | *MC4R* | 18 | C | 0.0182 |
| rs29941 | *KCTD15* | 19 | G | 0.0177 |
| rs17724992 | *PGPEP1* | 19 | A | 0.0235 |
| rs2287019 | *QPCTL* | 19 | C | 0.0307 |
| rs3810291 | *ZC3H4* | 19 | A | 0.0492 |

**Online supplemental table 3**: cross-sectional analysis, bivariate associations between dietary and genetic scores and obesity markers, overall and by sex, CoLaus study, Lausanne, Switzerland.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **All participants (N=3033)** | | | | **Females (N=1612)** | | | | **Males (N=1421)** | | | |
|  | **Weight** | **BMI** | **Waist** | **Hip** | **Weight** | **BMI** | **Waist** | **Hip** | **Weight** | **BMI** | **Waist** | **Hip** |
| AHEI | -0.129 | -0.100 | -0.116 | -0.074 | -0.074 | -0.061 | -0.054 | -0.062 | -0.074 | -0.092 | -0.089 | -0.050 |
| P-value | <0.001 | <0.001 | <0.001 | <0.001 | 0.003 | 0.015 | 0.029 | 0.013 | 0.005 | <0.001 | <0.001 | 0.060 |
| Mediterranean 1 | -0.053 | -0.061 | -0.067 | -0.062 | -0.097 | -0.078 | -0.101 | -0.076 | -0.086 | -0.065 | -0.080 | -0.061 |
| P-value | 0.003 | 0.001 | 0.001 | 0.001 | <0.001 | 0.002 | <0.001 | 0.002 | 0.001 | 0.015 | 0.003 | 0.022 |
| Mediterranean 2 | -0.065 | -0.073 | -0.084 | -0.083 | -0.108 | -0.091 | -0.116 | -0.109 | -0.049 | -0.052 | -0.058 | -0.053 |
| P-value | <0.001 | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.065 | 0.050 | 0.029 | 0.047 |
| Meat & fries | 0.187 | 0.127 | 0.155 | 0.047 | 0.026 | 0.061 | 0.039 | 0.015 | 0.043 | 0.065 | 0.045 | -0.006 |
| P-value | <0.001 | <0.001 | <0.001 | 0.011 | 0.298 | 0.016 | 0.126 | 0.564 | 0.112 | 0.016 | 0.101 | 0.820 |
| Fruits & vegetables | -0.207 | -0.132 | -0.169 | -0.089 | -0.076 | -0.058 | -0.051 | -0.055 | -0.062 | -0.089 | -0.068 | -0.044 |
| P-value | <0.001 | <0.001 | <0.001 | <0.001 | 0.003 | 0.022 | 0.044 | 0.032 | 0.021 | 0.001 | 0.013 | 0.108 |
| Fatty & sugary | -0.009 | -0.074 | -0.021 | -0.052 | -0.061 | -0.098 | -0.066 | -0.067 | -0.076 | -0.093 | -0.041 | -0.064 |
| P-value | 0.633 | <0.001 | 0.260 | 0.005 | 0.016 | <0.001 | 0.009 | 0.008 | 0.005 | <0.001 | 0.129 | 0.018 |
| GRS 31 SNPs | 0.111 | 0.134 | 0.111 | 0.118 | 0.136 | 0.141 | 0.122 | 0.140 | 0.092 | 0.117 | 0.093 | 0.081 |
| P-value | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | <0.001 | <0.001 | 0.002 |
| GRS 68 SNPs | 0.104 | 0.122 | 0.102 | 0.121 | 0.144 | 0.150 | 0.125 | 0.143 | 0.084 | 0.088 | 0.083 | 0.094 |
| P-value | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.002 | 0.001 | 0.002 | <0.001 |

BMI, body mass index; AHEI, alternative healthy eating index; GRS, genetic risk score; SNP, single nucleotide polymorphism. Results are expressed as Spearman correlation coefficient and p-value.

**Supplemental table 4**: cross-sectional analysis, obesity markers according to quartiles of dietary and genetic scores, females (N=1612), univariate and multivariate-adjusted, CoLaus study, Lausanne, Switzerland.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Bivariate** | | | | **Multivariable** | | | |
|  | **Weight (kg)** | **BMI (kg/m2)** | **Waist (cm)** | **Hip (cm)** | **Weight (kg)** | **BMI (kg/m2)** | **Waist (cm)** | **Hip (cm)** |
| AHEI |  |  |  |  |  |  |  |  |
| Q1 [5; 26] | 68.1 ± 0.6 | 25.6 ± 0.2 | 88.3 ± 0.6 | 99.9 ± 0.5 | 67.9 ± 0.6 | 25.5 ± 0.2 | 87.9 ± 0.6 | 99.6 ± 0.5 |
| Q2 [27; 33] | 66.1 ± 0.6 | 24.8 ± 0.2 | 85.8 ± 0.6 | 98.0 ± 0.5 | 66.2 ± 0.6 | 24.9 ± 0.2 | 86.1 ± 0.6 | 98.2 ± 0.5 |
| Q3 [33.5; 40] | 66.0 ± 0.6 | 25.0 ± 0.2 | 86.2 ± 0.6 | 98.2 ± 0.5 | 65.9 ± 0.6 | 25.0 ± 0.2 | 86.1 ± 0.6 | 98.1 ± 0.5 |
| Q4 [40.5; 67.5] | 65.1 ± 0.7 | 24.6 ± 0.2 | 85.6 ± 0.7 | 97.6 ± 0.6 | 65.2 ± 0.7 | 24.8 ± 0.2 | 85.9 ± 0.6 | 97.9 ± 0.5 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | -0.084 | -0.071 | -0.067 | -0.071 | -0.076 | -0.048 | -0.048 | -0.052 |
| P-value | 0.001 | 0.004 | 0.007 | 0.004 | 0.003 | 0.049 | 0.047 | 0.031 |
| Mediterranean 1 |  |  |  |  |  |  |  |  |
| Q1 [0; 3] | 68.3 ± 0.5 | 25.7 ± 0.2 | 88.3 ± 0.5 | 99.9 ± 0.4 | 68.2 ± 0.5 | 25.5 ± 0.2 | 88.0 ± 0.5 | 99.6 ± 0.4 |
| Q2 [4; 4] | 65.4 ± 0.6 | 24.7 ± 0.2 | 86.1 ± 0.6 | 97.6 ± 0.5 | 65.5 ± 0.6 | 24.7 ± 0.2 | 86.1 ± 0.6 | 97.6 ± 0.5 |
| Q3 [5; 5] | 64.8 ± 0.7 | 24.6 ± 0.3 | 84.8 ± 0.7 | 97.5 ± 0.6 | 64.8 ± 0.7 | 24.7 ± 0.3 | 85.0 ± 0.7 | 97.7 ± 0.6 |
| Q4 [6; 8] | 65.0 ± 0.8 | 24.6 ± 0.3 | 84.9 ± 0.8 | 97.4 ± 0.7 | 65.2 ± 0.8 | 24.7 ± 0.3 | 85.3 ± 0.8 | 97.7 ± 0.7 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | -0.102 | -0.082 | -0.101 | -0.082 | -0.095 | -0.065 | -0.087 | -0.067 |
| P-value | <0.001 | 0.001 | <0.001 | 0.001 | <0.001 | 0.007 | <0.001 | 0.006 |
| Mediterranean 2 |  |  |  |  |  |  |  |  |
| Q1 [0; 3] | 67.9 ± 0.6 | 25.5 ± 0.2 | 88.2 ± 0.6 | 99.6 ± 0.5 | 67.8 ± 0.6 | 25.4 ± 0.2 | 88.0 ± 0.5 | 99.4 ± 0.5 |
| Q2 [4; 5] | 66.4 ± 0.5 | 25.1 ± 0.2 | 86.5 ± 0.5 | 98.7 ± 0.5 | 66.4 ± 0.5 | 25.0 ± 0.2 | 86.4 ± 0.5 | 98.6 ± 0.4 |
| Q3 [6; 6] | 65.7 ± 0.8 | 24.8 ± 0.3 | 85.3 ± 0.7 | 98.0 ± 0.6 | 65.7 ± 0.7 | 24.8 ± 0.3 | 85.4 ± 0.7 | 98.2 ± 0.6 |
| Q4 [7; 9] | 64.6 ± 0.7 | 24.5 ± 0.3 | 85.0 ± 0.7 | 96.6 ± 0.6 | 64.7 ± 0.7 | 24.6 ± 0.3 | 85.4 ± 0.7 | 96.9 ± 0.6 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | -0.108 | -0.090 | -0.118 | -0.110 | -0.103 | -0.072 | -0.098 | -0.092 |
| P-value | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.003 | <0.001 | <0.001 |
| Meat & fries |  |  |  |  |  |  |  |  |
| Q1 [-3.06; -1.02] | 66.0 ± 0.6 | 24.7 ± 0.2 | 85.9 ± 0.6 | 98.3 ± 0.6 | 66.1 ± 0.6 | 24.6 ± 0.2 | 85.6 ± 0.6 | 98.2 ± 0.5 |
| Q2 [-1.02; -0.47] | 65.9 ± 0.6 | 24.7 ± 0.2 | 85.6 ± 0.6 | 97.5 ± 0.6 | 66.0 ± 0.6 | 24.8 ± 0.2 | 85.8 ± 0.6 | 97.6 ± 0.5 |
| Q3 [-0.47; 0.17] | 66.6 ± 0.6 | 25.0 ± 0.2 | 86.5 ± 0.6 | 98.5 ± 0.6 | 66.4 ± 0.6 | 24.9 ± 0.2 | 86.3 ± 0.6 | 98.3 ± 0.5 |
| Q4 [0.17; 10.61] | 66.8 ± 0.6 | 25.6 ± 0.2 | 87.6 ± 0.6 | 99.1 ± 0.6 | 66.9 ± 0.6 | 25.6 ± 0.2 | 87.9 ± 0.6 | 99.4 ± 0.5 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | 0.055 | 0.105 | 0.082 | 0.063 | 0.055 | 0.105 | 0.095 | 0.074 |
| P-value | 0.029 | <0.001 | 0.001 | 0.013 | 0.030 | <0.001 | <0.001 | 0.003 |
| Fruits & vegetables |  |  |  |  |  |  |  |  |
| Q1 [-3.36; -0.7] | 67.7 ± 0.6 | 25.4 ± 0.2 | 87.7 ± 0.6 | 99.4 ± 0.6 | 67.6 ± 0.6 | 25.3 ± 0.2 | 87.5 ± 0.6 | 99.2 ± 0.5 |
| Q2 [-0.69; 0.14] | 66.6 ± 0.6 | 24.9 ± 0.2 | 85.9 ± 0.6 | 98.0 ± 0.6 | 66.5 ± 0.6 | 24.9 ± 0.2 | 86.0 ± 0.6 | 98.1 ± 0.5 |
| Q3 [0.14; 1.19] | 65.6 ± 0.6 | 24.8 ± 0.2 | 85.6 ± 0.6 | 98.1 ± 0.6 | 65.7 ± 0.6 | 24.9 ± 0.2 | 85.8 ± 0.6 | 98.3 ± 0.5 |
| Q4 [1.2; 10.17] | 65.5 ± 0.6 | 24.9 ± 0.2 | 86.4 ± 0.6 | 97.9 ± 0.6 | 65.6 ± 0.6 | 24.9 ± 0.2 | 86.3 ± 0.6 | 97.9 ± 0.5 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | -0.057 | -0.034 | -0.030 | -0.034 | -0.049 | -0.021 | -0.022 | -0.026 |
| P-value | 0.024 | 0.177 | 0.238 | 0.178 | 0.054 | 0.400 | 0.378 | 0.298 |
| Fatty & sugary |  |  |  |  |  |  |  |  |
| Q1 [-3.97; -1.01] | 67.2 ± 0.6 | 25.6 ± 0.2 | 87.5 ± 0.6 | 99.3 ± 0.5 | 67.3 ± 0.6 | 25.6 ± 0.2 | 87.7 ± 0.6 | 99.5 ± 0.5 |
| Q2 [-1.01; -0.18] | 67.1 ± 0.6 | 25.2 ± 0.2 | 86.7 ± 0.6 | 98.7 ± 0.6 | 67.0 ± 0.6 | 25.2 ± 0.2 | 86.4 ± 0.6 | 98.5 ± 0.5 |
| Q3 [-0.18; 0.77] | 65.4 ± 0.6 | 24.6 ± 0.2 | 85.5 ± 0.6 | 97.6 ± 0.5 | 65.4 ± 0.6 | 24.5 ± 0.2 | 85.6 ± 0.6 | 97.6 ± 0.5 |
| Q4 [0.77; 7.66] | 65.8 ± 0.6 | 24.6 ± 0.2 | 85.9 ± 0.6 | 97.9 ± 0.5 | 65.8 ± 0.6 | 24.6 ± 0.2 | 85.9 ± 0.6 | 97.9 ± 0.5 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | -0.028 | -0.053 | -0.025 | -0.023 | -0.034 | -0.060 | -0.330 | -0.033 |
| P-value | 0.271 | 0.038 | 0.315 | 0.364 | 0.180 | 0.014 | 0.173 | 0.173 |
| GRS 31 SNPs |  |  |  |  |  |  |  |  |
| Q1 [35; 50.5] | 64.8 ± 0.6 | 24.3 ± 0.2 | 84.7 ± 0.6 | 96.9 ± 0.5 | 65.0 ± 0.6 | 24.5 ± 0.2 | 85.3 ± 0.6 | 97.3 ± 0.5 |
| Q2 [50.5; 55.4] | 64.7 ± 0.6 | 24.5 ± 0.2 | 85.4 ± 0.6 | 97.3 ± 0.5 | 64.7 ± 0.6 | 24.5 ± 0.2 | 85.3 ± 0.6 | 97.3 ± 0.5 |
| Q3 [55.4; 60.6] | 66.6 ± 0.6 | 25.2 ± 0.2 | 86.8 ± 0.6 | 98.6 ± 0.5 | 66.7 ± 0.6 | 25.2 ± 0.2 | 86.9 ± 0.6 | 98.8 ± 0.5 |
| Q4 [60.6; 82.1] | 69.4 ± 0.6 | 26.1 ± 0.2 | 89.2 ± 0.6 | 100.9 ± 0.5 | 69.1 ± 0.6 | 25.9 ± 0.2 | 88.6 ± 0.6 | 100.3 ± 0.5 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | 0.128 | 0.125 | 0.114 | 0.125 | 0.116 | 0.101 | 0.082 | 0.095 |
| P-value | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | <0.001 |
| GRS 68 SNPs |  |  |  |  |  |  |  |  |
| Q1 [40.6; 57.8] | 63.9 ± 0.6 | 24.1 ± 0.2 | 84.1 ± 0.6 | 96.3 ± 0.5 | 64.0 ± 0.6 | 24.2 ± 0.2 | 84.5 ± 0.6 | 96.5 ± 0.5 |
| Q2 [57.8; 61.2] | 66.2 ± 0.6 | 25.1 ± 0.2 | 86.5 ± 0.6 | 98.3 ± 0.5 | 66.2 ± 0.6 | 25.0 ± 0.2 | 86.5 ± 0.6 | 98.3 ± 0.5 |
| Q3 [61.2; 64.4] | 66.1 ± 0.6 | 24.9 ± 0.2 | 86.5 ± 0.6 | 98.3 ± 0.5 | 66.1 ± 0.6 | 25.0 ± 0.2 | 86.6 ± 0.6 | 98.4 ± 0.5 |
| Q4 [64.4; 76.3] | 69.3 ± 0.6 | 26.1 ± 0.2 | 89.0 ± 0.6 | 100.9 ± 0.5 | 69.1 ± 0.6 | 26.0 ± 0.2 | 88.5 ± 0.6 | 100.5 ± 0.5 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | 0.153 | 0.153 | 0.134 | 0.145 | 0.146 | 0.140 | 0.117 | 0.130 |
| P-value | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |

BMI, body mass index; AHEI, alternative healthy eating index; GRS, genetic risk score; SNP, single nucleotide polymorphism. Sex-specific quartile boundaries are indicated in square brackets. Results are expressed as average ± standard error for univariate analysis and as estimated multivariate-adjusted average ± standard error. Statistical analyses performed using analysis of variance. Multivariate analysis adjusted for age (continuous); educational level (primary, apprenticeship, secondary and university); smoking status (never, former, current) and sedentary status (yes/no). §, standardized beta coefficient as obtained by linear regression, using dietary scores or patterns and GRS as continuous variables.

**Online supplemental table 5**: cross-sectional analysis, obesity markers according to quartiles of dietary and genetic scores, males (N=1421), univariate and multivariate-adjusted, CoLaus study, Lausanne, Switzerland.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Bivariate** | | | | **Multivariable** | | | |
|  | **Weight (kg)** | **BMI (kg/m2)** | **Waist (cm)** | **Hip (cm)** | **Weight (kg)** | **BMI (kg/m2)** | **Waist (cm)** | **Hip (cm)** |
| AHEI |  |  |  |  |  |  |  |  |
| Q1 [3; 24] | 82.7 ± 0.7 | 26.9 ± 0.2 | 97.6 ± 0.6 | 101.1 ± 0.4 | 82.4 ± 0.7 | 26.8 ± 0.2 | 97.2 ± 0.5 | 100.9 ± 0.4 |
| Q2 [24.5; 30] | 82.1 ± 0.7 | 26.7 ± 0.2 | 96.6 ± 0.6 | 100.7 ± 0.5 | 82.1 ± 0.7 | 26.7 ± 0.2 | 96.6 ± 0.6 | 100.8 ± 0.4 |
| Q3 [30.5; 37.5] | 82.0 ± 0.7 | 26.6 ± 0.2 | 96.2 ± 0.6 | 101.0 ± 0.5 | 82.0 ± 0.7 | 26.6 ± 0.2 | 96.1 ± 0.6 | 101.0 ± 0.4 |
| Q4 [38; 69.5] | 79.9 ± 0.7 | 26.0 ± 0.2 | 94.7 ± 0.6 | 99.6 ± 0.5 | 80.2 ± 0.7 | 26.1 ± 0.2 | 95.2 ± 0.6 | 99.8 ± 0.4 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | -0.088 | -0.113 | -0.115 | -0.064 | -0.070 | -0.089 | -0.084 | -0.043 |
| P-value | 0.001 | <0.001 | <0.001 | 0.016 | 0.010 | <0.001 | 0.001 | 0.100 |
| Mediterranean 1 |  |  |  |  |  |  |  |  |
| Q1 [0; 3] | 82.8 ± 0.6 | 26.9 ± 0.2 | 97.5 ± 0.5 | 101.0 ± 0.4 | 82.6 ± 0.6 | 26.9 ± 0.2 | 97.4 ± 0.5 | 100.9 ± 0.4 |
| Q2 [4; 4] | 82.4 ± 0.7 | 26.7 ± 0.2 | 96.8 ± 0.6 | 101.2 ± 0.5 | 82.3 ± 0.7 | 26.6 ± 0.2 | 96.5 ± 0.6 | 101.2 ± 0.4 |
| Q3 [5; 5] | 80.4 ± 0.8 | 25.9 ± 0.2 | 95.1 ± 0.6 | 100.0 ± 0.5 | 80.6 ± 0.8 | 26.1 ± 0.2 | 95.6 ± 0.6 | 100.3 ± 0.5 |
| Q4 [6; 8] | 79.8 ± 0.8 | 26.4 ± 0.2 | 94.9 ± 0.7 | 99.7 ± 0.5 | 80.1 ± 0.8 | 26.4 ± 0.2 | 94.9 ± 0.7 | 99.7 ± 0.5 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | -0.083 | -0.065 | -0.089 | -0.055 | -0.071 | -0.059 | -0.082 | -0.049 |
| P-value | 0.002 | 0.015 | 0.001 | 0.040 | 0.008 | 0.024 | 0.001 | 0.059 |
| Mediterranean 2 |  |  |  |  |  |  |  |  |
| Q1 [0; 3] | 82.7 ± 0.6 | 26.9 ± 0.2 | 97.6 ± 0.5 | 101.0 ± 0.4 | 82.5 ± 0.6 | 26.8 ± 0.2 | 97.4 ± 0.5 | 100.9 ± 0.4 |
| Q2 [4; 5] | 81.6 ± 0.6 | 26.5 ± 0.2 | 96.1 ± 0.5 | 100.8 ± 0.4 | 81.6 ± 0.6 | 26.5 ± 0.2 | 96.0 ± 0.5 | 100.8 ± 0.4 |
| Q3 [6; 6] | 80.3 ± 0.8 | 26.2 ± 0.2 | 94.9 ± 0.7 | 99.7 ± 0.5 | 80.3 ± 0.8 | 26.2 ± 0.2 | 94.9 ± 0.7 | 99.7 ± 0.5 |
| Q4 [7; 9] | 81.7 ± 0.8 | 26.4 ± 0.2 | 96.1 ± 0.7 | 100.6 ± 0.5 | 81.9 ± 0.8 | 26.5 ± 0.2 | 96.7 ± 0.6 | 100.9 ± 0.5 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | -0.054 | -0.065 | -0.075 | -0.052 | -0.041 | -0.051 | -0.054 | -0.035 |
| P-value | 0.043 | 0.015 | 0.005 | 0.052 | 0.120 | 0.050 | 0.033 | 0.174 |
| Meat & fries |  |  |  |  |  |  |  |  |
| Q1 [-2.32; -0.49] | 80.7 ± 0.7 | 26.2 ± 0.2 | 95.7 ± 0.6 | 97.3 ± 0.6 | 80.7 ± 0.7 | 26.1 ± 0.2 | 95.1 ± 0.6 | 100.2 ± 0.4 |
| Q2 [-0.49; 0.09] | 82.3 ± 0.7 | 26.7 ± 0.2 | 96.3 ± 0.6 | 96.4 ± 0.6 | 82.5 ± 0.7 | 26.9 ± 0.2 | 96.6 ± 0.6 | 100.7 ± 0.4 |
| Q3 [0.10; 0.84] | 80.5 ± 0.7 | 26.2 ± 0.2 | 95.4 ± 0.6 | 95.9 ± 0.6 | 80.5 ± 0.7 | 26.2 ± 0.2 | 95.5 ± 0.6 | 99.9 ± 0.4 |
| Q4 [0.84; 70.75] | 83.6 ± 0.7 | 27.2 ± 0.2 | 97.9 ± 0.6 | 95.7 ± 0.6 | 83.6 ± 0.7 | 27.1 ± 0.2 | 98.1 ± 0.6 | 101.7 ± 0.4 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | 0.017 | 0.038 | 0.027 | 0.005 | 0.012 | 0.027 | 0.028 | 0.010 |
| P-value | 0.524 | 0.163 | 0.329 | 0.866 | 0.667 | 0.308 | 0.270 | 0.699 |
| Fruits & vegetables |  |  |  |  |  |  |  |  |
| Q1 [-4.05; -1.46] | 83.2 ± 0.7 | 27.1 ± 0.2 | 98.0 ± 0.6 | 101.3 ± 0.5 | 82.8 ± 0.7 | 26.9 ± 0.2 | 97.5 ± 0.6 | 101.1 ± 0.4 |
| Q2 [-1.46; -0.64] | 81.7 ± 0.7 | 26.5 ± 0.2 | 95.7 ± 0.6 | 100.3 ± 0.5 | 81.9 ± 0.7 | 26.6 ± 0.2 | 96.2 ± 0.6 | 100.6 ± 0.4 |
| Q3 [-0.63; 0.37] | 81.8 ± 0.7 | 26.5 ± 0.2 | 96.3 ± 0.6 | 100.7 ± 0.5 | 81.9 ± 0.7 | 26.6 ± 0.2 | 96.0 ± 0.6 | 100.5 ± 0.4 |
| Q4 [0.38; 12.79] | 80.5 ± 0.7 | 26.1 ± 0.2 | 95.3 ± 0.6 | 100.2 ± 0.5 | 80.7 ± 0.7 | 26.2 ± 0.2 | 95.6 ± 0.6 | 100.4 ± 0.4 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | -0.057 | -0.079 | -0.068 | -0.029 | -0.043 | -0.054 | -0.049 | -0.020 |
| P-value | 0.037 | 0.004 | 0.013 | 0.279 | 0.112 | 0.042 | 0.061 | 0.442 |
| Fatty & sugary |  |  |  |  |  |  |  |  |
| Q1 [-3.3; -0.79] | 83.1 ± 0.7 | 27.1 ± 0.2 | 97.0 ± 0.6 | 101.3 ± 0.5 | 83.2 ± 0.7 | 27.1 ± 0.2 | 97.3 ± 0.6 | 101.5 ± 0.4 |
| Q2 [-0.78; 0.09] | 82.1 ± 0.7 | 26.6 ± 0.2 | 96.5 ± 0.6 | 100.8 ± 0.5 | 82.2 ± 0.7 | 26.6 ± 0.2 | 96.4 ± 0.6 | 100.7 ± 0.4 |
| Q3 [0.09; 1.05] | 81.0 ± 0.7 | 26.3 ± 0.2 | 95.9 ± 0.6 | 100.2 ± 0.5 | 81.0 ± 0.7 | 26.4 ± 0.2 | 95.9 ± 0.6 | 100.2 ± 0.4 |
| Q4 [1.05; 9.67] | 81.0 ± 0.7 | 26.2 ± 0.2 | 96.0 ± 0.6 | 100.3 ± 0.5 | 80.8 ± 0.7 | 26.1 ± 0.2 | 95.7 ± 0.6 | 100.2 ± 0.4 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | -0.060 | -0.087 | -0.034 | -0.052 | -0.071 | -0.108 | -0.058 | -0.069 |
| P-value | 0.028 | 0.001 | 0.217 | 0.053 | 0.009 | <0.001 | 0.022 | 0.009 |
| Genetic score 31 SNPs |  |  |  |  |  |  |  |  |
| Q1 [28.1; 50.9] | 80.4 ± 0.7 | 26.0 ± 0.2 | 94.9 ± 0.6 | 99.8 ± 0.4 | 80.3 ± 0.7 | 26.0 ± 0.2 | 94.9 ± 0.6 | 99.8 ± 0.4 |
| Q2 [50.9; 55.6] | 81.2 ± 0.7 | 26.5 ± 0.2 | 96.2 ± 0.6 | 100.4 ± 0.4 | 81.1 ± 0.7 | 26.4 ± 0.2 | 96.1 ± 0.6 | 100.3 ± 0.4 |
| Q3 [55.7; 60.9] | 81.9 ± 0.7 | 26.7 ± 0.2 | 96.8 ± 0.6 | 100.8 ± 0.4 | 81.9 ± 0.7 | 26.7 ± 0.2 | 96.6 ± 0.6 | 100.6 ± 0.4 |
| Q4 [60.9; 76.9] | 83.2 ± 0.7 | 27.0 ± 0.2 | 97.5 ± 0.6 | 101.5 ± 0.4 | 83.4 ± 0.7 | 27.1 ± 0.2 | 97.8 ± 0.6 | 101.7 ± 0.4 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | 0.080 | 0.101 | 0.084 | 0.071 | 0.088 | 0.108 | 0.088 | 0.074 |
| P-value | 0.003 | <0.001 | 0.002 | 0.007 | <0.001 | <0.001 | <0.001 | 0.004 |
| Genetic score 68 SNPs |  |  |  |  |  |  |  |  |
| Q1 [45.2; 57.9] | 80.3 ± 0.7 | 26.1 ± 0.2 | 94.9 ± 0.6 | 99.4 ± 0.4 | 80.2 ± 0.7 | 26.1 ± 0.2 | 95.1 ± 0.6 | 99.5 ± 0.4 |
| Q2 [57.9; 61.2] | 82.0 ± 0.7 | 26.6 ± 0.2 | 96.8 ± 0.6 | 101.0 ± 0.4 | 82.0 ± 0.7 | 26.6 ± 0.2 | 96.7 ± 0.6 | 101.0 ± 0.4 |
| Q3 [61.2; 64.6] | 81.7 ± 0.7 | 26.6 ± 0.2 | 96.4 ± 0.6 | 100.6 ± 0.4 | 81.5 ± 0.7 | 26.5 ± 0.2 | 95.9 ± 0.6 | 100.4 ± 0.4 |
| Q4 [64.6; 78.9] | 82.8 ± 0.7 | 26.9 ± 0.2 | 97.3 ± 0.6 | 101.5 ± 0.4 | 83.0 ± 0.7 | 27.0 ± 0.2 | 97.6 ± 0.6 | 101.6 ± 0.4 |
|  |  |  |  |  |  |  |  |  |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | 0.071 | 0.074 | 0.074 | 0.073 | 0.077 | 0.076 | 0.071 | 0.070 |
| P-value | 0.008 | 0.005 | 0.005 | 0.006 | 0.003 | 0.003 | 0.004 | 0.006 |

BMI, body mass index; AHEI, alternative healthy eating index; GRS, genetic risk score; SNP, single nucleotide polymorphism. Sex-specific quartile boundaries are indicated in square brackets. Results are expressed as average ± standard error for univariate analysis and as estimated multivariate-adjusted average ± standard error. Statistical analyses performed using analysis of variance. Multivariate analysis adjusted for age (continuous); educational level (primary, apprenticeship, secondary and university); smoking status (never, former, current) and sedentary status (yes/no). §, standardized beta coefficient as obtained by linear regression, using dietary scores or patterns and GRS as continuous variables.

**Online supplemental table 6**: cross-sectional analysis, p-values of the interaction between quartiles of genetic risk scores and quartiles of dietary scores for obesity markers, overall and by sex, CoLaus study, Lausanne, Switzerland.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **All participants (N=3033)** | | | | **Females (N=1612)** | | | | **Males (N=1421)** | | | |
|  | **Weight** | **BMI** | **Waist** | **Hip** | **Weight** | **BMI** | **Waist** | **Hip** | **Weight** | **BMI** | **Waist** | **Hip** |
| **GRS 31 SNPs** |  |  |  |  |  |  |  |  |  |  |  |  |
| AHEI |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.498 | 0.469 | 0.256 | 0.373 | 0.327 | 0.398 | 0.219 | 0.326 | 0.124 | 0.012 | 0.021 | 0.096 |
| Multivariate | 0.378 | 0.264 | 0.325 | 0.244 | 0.355 | 0.408 | 0.191 | 0.248 | 0.128 | 0.018 | 0.040 | 0.131 |
| Mediterranean 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.790 | 0.871 | 0.703 | 0.731 | 0.534 | 0.571 | 0.566 | 0.720 | 0.721 | 0.660 | 0.691 | 0.762 |
| Multivariate | 0.679 | 0.707 | 0.430 | 0.521 | 0.631 | 0.677 | 0.603 | 0.822 | 0.625 | 0.600 | 0.490 | 0.643 |
| Mediterranean 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.743 | 0.959 | 0.634 | 0.674 | 0.967 | 0.840 | 0.685 | 0.661 | 0.259 | 0.133 | 0.220 | 0.484 |
| Multivariate | 0.863 | 0.919 | 0.621 | 0.678 | 0.942 | 0.850 | 0.831 | 0.718 | 0.368 | 0.364 | 0.472 | 0.670 |
| Meat & fries |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.324 | 0.667 | 0.558 | 0.568 | 0.871 | 0.860 | 0.805 | 0.923 | 0.883 | 0.200 | 0.631 | 0.420 |
| Multivariate | 0.410 | 0.742 | 0.591 | 0.529 | 0.885 | 0.909 | 0.888 | 0.969 | 0.744 | 0.157 | 0.531 | 0.237 |
| Fruits & vegetables |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.340 | 0.417 | 0.124 | 0.346 | 0.747 | 0.855 | 0.635 | 0.587 | 0.574 | 0.358 | 0.076 | 0.250 |
| Multivariate | 0.328 | 0.343 | 0.101 | 0.448 | 0.904 | 0.936 | 0.765 | 0.735 | 0.502 | 0.412 | 0.078 | 0.268 |
| Fatty & sugary |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.598 | 0.506 | 0.411 | 0.094 | 0.981 | 0.948 | 0.915 | 0.934 | 0.518 | 0.050 | 0.571 | 0.217 |
| Multivariate | 0.594 | 0.525 | 0.522 | 0.137 | 0.972 | 0.941 | 0.875 | 0.954 | 0.739 | 0.071 | 0.850 | 0.433 |
| **GRS 68 SNPs** |  |  |  |  |  |  |  |  |  |  |  |  |
| AHEI |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.296 | 0.275 | 0.283 | 0.265 | 0.433 | 0.549 | 0.456 | 0.512 | 0.095 | 0.067 | 0.055 | 0.084 |
| Multivariate | 0.138 | 0.214 | 0.259 | 0.291 | 0.402 | 0.451 | 0.339 | 0.356 | 0.097 | 0.150 | 0.119 | 0.171 |
| Mediterranean 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.276 | 0.415 | 0.072 | 0.527 | 0.694 | 0.905 | 0.519 | 0.882 | 0.355 | 0.436 | 0.169 | 0.430 |
| Multivariate | 0.628 | 0.611 | 0.333 | 0.613 | 0.578 | 0.842 | 0.520 | 0.722 | 0.312 | 0.302 | 0.097 | 0.426 |
| Mediterranean 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.438 | 0.600 | 0.149 | 0.548 | 0.740 | 0.719 | 0.626 | 0.675 | 0.834 | 0.612 | 0.218 | 0.456 |
| Multivariate | 0.788 | 0.677 | 0.232 | 0.462 | 0.731 | 0.735 | 0.458 | 0.462 | 0.930 | 0.933 | 0.724 | 0.795 |
| Meat & fries |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.984 | 0.949 | 0.825 | 0.746 | 0.741 | 0.789 | 0.538 | 0.527 | 0.298 | 0.192 | 0.408 | 0.156 |
| Multivariate | 0.989 | 0.962 | 0.807 | 0.741 | 0.785 | 0.789 | 0.559 | 0.628 | 0.367 | 0.254 | 0.356 | 0.118 |
| Fruits & vegetables |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.847 | 0.574 | 0.679 | 0.455 | 0.218 | 0.528 | 0.468 | 0.674 | 0.161 | 0.103 | 0.271 | 0.340 |
| Multivariate | 0.089 | 0.362 | 0.122 | 0.096 | 0.160 | 0.403 | 0.243 | 0.288 | 0.131 | 0.159 | 0.190 | 0.204 |
| Fatty & sugary |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.329 | 0.549 | 0.315 | 0.603 | 0.816 | 0.988 | 0.941 | 0.954 | 0.260 | 0.091 | 0.241 | 0.548 |
| Multivariate | 0.116 | 0.186 | 0.194 | 0.316 | 0.651 | 0.750 | 0.686 | 0.736 | 0.243 | 0.085 | 0.230 | 0.585 |

BMI, body mass index; AHEI, alternative healthy eating index; GRS, genetic risk score; SNP, single nucleotide polymorphism. Statistical analyses performed using analysis of variance. Multivariate analysis adjusted for age (continuous); educational level (primary, apprenticeship, secondary and university); smoking status (never, former, current) and sedentary status (yes/no). For all participants, a further adjustment on sex was performed.

**Online supplemental table 7**: cross-sectional analysis, p-values of the interaction between genetic risk scores (continuous) and quartiles of dietary scores for obesity markers, overall and by sex, CoLaus study, Lausanne, Switzerland.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **All participants (N=3033)** | | | | **Females (N=1612)** | | | | **Males (N=1421)** | | | |
|  | **Weight** | **BMI** | **Waist** | **Hip** | **Weight** | **BMI** | **Waist** | **Hip** | **Weight** | **BMI** | **Waist** | **Hip** |
| **GRS 31 SNPs** |  |  |  |  |  |  |  |  |  |  |  |  |
| AHEI |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.297 | 0.095 | 0.158 | 0.128 | 0.360 | 0.517 | 0.267 | 0.356 | 0.149 | 0.020 | 0.040 | 0.104 |
| Multivariate | 0.186 | 0.091 | 0.125 | 0.166 | 0.353 | 0.363 | 0.128 | 0.209 | 0.148 | 0.050 | 0.082 | 0.187 |
| Mediterranean 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.309 | 0.549 | 0.579 | 0.488 | 0.635 | 0.697 | 0.834 | 0.678 | 0.442 | 0.243 | 0.231 | 0.337 |
| Multivariate | 0.400 | 0.497 | 0.532 | 0.497 | 0.642 | 0.666 | 0.752 | 0.608 | 0.421 | 0.171 | 0.175 | 0.384 |
| Mediterranean 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.583 | 0.862 | 0.672 | 0.745 | 0.779 | 0.777 | 0.568 | 0.696 | 0.523 | 0.441 | 0.493 | 0.234 |
| Multivariate | 0.827 | 0.958 | 0.859 | 0.894 | 0.812 | 0.810 | 0.701 | 0.857 | 0.694 | 0.691 | 0.714 | 0.271 |
| Meat & fries |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.981 | 0.697 | 0.745 | 0.480 | 0.255 | 0.115 | 0.105 | 0.066 | 0.892 | 0.641 | 0.881 | 0.899 |
| Multivariate | 0.823 | 0.610 | 0.454 | 0.391 | 0.262 | 0.088 | 0.089 | 0.063 | 0.713 | 0.563 | 0.657 | 0.611 |
| Fruits & vegetables |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.405 | 0.185 | 0.219 | 0.267 | 0.487 | 0.797 | 0.689 | 0.570 | 0.122 | 0.025 | 0.041 | 0.063 |
| Multivariate | 0.133 | 0.095 | 0.051 | 0.175 | 0.410 | 0.904 | 0.441 | 0.512 | 0.181 | 0.040 | 0.061 | 0.101 |
| Fatty & sugary |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.402 | 0.468 | 0.456 | 0.163 | 0.880 | 0.802 | 0.901 | 0.892 | 0.047 | 0.160 | 0.142 | 0.030 |
| Multivariate | 0.134 | 0.503 | 0.444 | 0.156 | 0.765 | 0.587 | 0.972 | 0.768 | 0.032 | 0.166 | 0.120 | 0.031 |
| **GRS 68 SNPs** |  |  |  |  |  |  |  |  |  |  |  |  |
| AHEI |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.164 | 0.202 | 0.269 | 0.148 | 0.174 | 0.525 | 0.471 | 0.640 | 0.209 | 0.114 | 0.078 | 0.047 |
| Multivariate | 0.065 | 0.121 | 0.152 | 0.089 | 0.130 | 0.290 | 0.228 | 0.283 | 0.190 | 0.229 | 0.124 | 0.065 |
| Mediterranean 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.676 | 0.640 | 0.761 | 0.319 | 0.321 | 0.634 | 0.754 | 0.560 | 0.926 | 0.732 | 0.741 | 0.546 |
| Multivariate | 0.278 | 0.325 | 0.309 | 0.143 | 0.231 | 0.451 | 0.509 | 0.357 | 0.954 | 0.657 | 0.752 | 0.556 |
| Mediterranean 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.466 | 0.774 | 0.375 | 0.808 | 0.850 | 0.949 | 0.697 | 0.947 | 0.771 | 0.753 | 0.751 | 0.524 |
| Multivariate | 0.781 | 0.919 | 0.781 | 0.727 | 0.818 | 0.929 | 0.638 | 0.788 | 0.882 | 0.935 | 0.961 | 0.506 |
| Meat & fries |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.981 | 0.811 | 0.633 | 0.526 | 0.256 | 0.082 | 0.060 | 0.050 | 0.706 | 0.656 | 0.588 | 0.584 |
| Multivariate | 0.955 | 0.825 | 0.626 | 0.701 | 0.257 | 0.042 | 0.048 | 0.048 | 0.498 | 0.501 | 0.356 | 0.387 |
| Fruits & vegetables |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.569 | 0.533 | 0.410 | 0.530 | 0.594 | 0.678 | 0.432 | 0.493 | 0.287 | 0.131 | 0.250 | 0.377 |
| Multivariate | 0.351 | 0.344 | 0.239 | 0.286 | 0.376 | 0.325 | 0.151 | 0.142 | 0.313 | 0.183 | 0.172 | 0.322 |
| Fatty & sugary |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.350 | 0.726 | 0.440 | 0.363 | 0.737 | 0.959 | 0.625 | 0.784 | 0.068 | 0.120 | 0.368 | 0.153 |
| Multivariate | 0.077 | 0.363 | 0.344 | 0.179 | 0.747 | 0.809 | 0.812 | 0.882 | 0.025 | 0.052 | 0.088 | 0.039 |

BMI, body mass index; AHEI, alternative healthy eating index; GRS, genetic risk score; SNP, single nucleotide polymorphism. Statistical analyses performed using analysis of covariance. Multivariate analysis adjusted for age (continuous); educational level (primary, apprenticeship, secondary and university); smoking status (never, former, current) and sedentary status (yes/no). For all participants, a further adjustment on sex was performed.

**Online supplemental table 8**: cross-sectional analysis, p-values of the interaction between sex and quartiles of dietary scores for obesity markers, CoLaus study (N=3033), Lausanne, Switzerland.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Weight** | **BMI** | **Waist** | **Hip** |
| AHEI | 0.483 | 0.534 | 0.378 | 0.534 |
| Mediterranean 1 | 0.208 | 0.237 | 0.544 | 0.047 |
| Mediterranean 2 | 0.336 | 0.756 | 0.546 | 0.096 |
| Meat & fries | 0.182 | 0.377 | 0.083 | 0.107 |
| Fruits & vegetables | 0.283 | 0.453 | 0.531 | 0.332 |
| Fatty & sugary | 0.331 | 0.258 | 0.795 | 0.340 |

BMI, body mass index; AHEI, alternative healthy eating index. Univariate statistical analysis performed using analysis of variance.

**Online supplemental table 9**: characteristics of included and excluded participants for the prospective analysis, CoLaus study, Lausanne, Switzerland.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Included** | **Excluded** | **P value** |
| Sample size | 2542 | 2522 |  |
| Females (%) | 1391 (54.7) | 1316 (52.2) | 0.070 |
| Age (years) | 58.0 ± 10.4 | 57.6 ± 10.7 | 0.147 |
| Body mass index (kg/m2) | 25.6 ± 4.3 | 26.8 ± 4.8 | <0.001 |
| Body mass index categories (%) |  |  | <0.001 |
| Normal + underweight | 1240 (48.8) | 940 (38.3) |  |
| Overweight | 956 (37.6) | 1004 (40.9) |  |
| Obese | 346 (13.6) | 513 (20.9) |  |
| Waist circumference (cm) | 90.6 ± 12.6 | 93.4 ± 13.2 | <0.001 |
| Smoking categories (%) |  |  | <0.001 |
| Never | 1072 (42.2) | 963 (39.1) |  |
| Former | 975 (38.4) | 908 (36.8) |  |
| Current | 495 (19.5) | 594 (24.1) |  |
| Sedentary (%) | 1435 (56.5) | 970 (59.2) | 0.081 |
| Educational level (%) |  |  | <0.001 |
| University | 560 (22.0) | 519 (20.6) |  |
| Secondary | 683 (26.9) | 623 (24.8) |  |
| Apprenticeship | 946 (37.2) | 850 (33.8) |  |
| Primary | 353 (13.9) | 525 (20.9) |  |
| Total energy intake (kcal) | 1766 [1390 - 2218] | 1678 [1267 - 2179] | <0.001 1 |
| Alcohol drinker (%) | 2026 (79.7) | 1757 (69.7) | <0.001 |

Results are expressed as number of participants (percentage) for categorical variables and as average±standard deviation for continuous variables. Univariate between-group comparisons were performed using chi-square for categorical variables and Student’s t-test or nonparametric Kruskal-Wallis test (1) for continuous variables.

**Online supplemental table 10**: prospective analysis, changes in obesity markers according to quartiles of dietary and genetic scores, females (N=1391), univariate and multivariate-adjusted, CoLaus study, Lausanne, Switzerland.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Bivariate** | | | | **Multivariable** | | | |
|  | **Weight (kg)** | **BMI (kg/m2)** | **Waist (cm)** | **Hip (cm)** | **Weight (kg)** | **BMI (kg/m2)** | **Waist (cm)** | **Hip (cm)** |
| AHEI |  |  |  |  |  |  |  |  |
| Q1 [5; 26] | 0.45 ± 0.25 | 0.44 ± 0.09 | -0.14 ± 0.38 | 3.62 ± 0.34 | 0.49 ± 0.25 | 0.45 ± 0.09 | 0.09 ± 0.37 | 4.02 ± 0.29 |
| Q2 [27; 33] | 0.42 ± 0.25 | 0.38 ± 0.09 | -0.37 ± 0.37 | 3.55 ± 0.33 | 0.39 ± 0.24 | 0.37 ± 0.09 | -0.42 ± 0.36 | 3.45 ± 0.29 |
| Q3 [33.5; 40] | 0.25 ± 0.25 | 0.27 ± 0.09 | -0.85 ± 0.37 | 3.76 ± 0.33 | 0.24 ± 0.24 | 0.26 ± 0.09 | -0.95 ± 0.36 | 3.63 ± 0.29 |
| Q4 [40.5; 67.5] | 0.66 ± 0.26 | 0.46 ± 0.10 | -0.75 ± 0.39 | 4.00 ± 0.35 | 0.65 ± 0.26 | 0.46 ± 0.10 | -0.83 ± 0.38 | 3.81 ± 0.30 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | 0.012 | 0.000 | -0.045 | 0.024 | 0.010 | -0.003 | -0.049 | 0.011 |
| P-value | 0.643 | 0.990 | 0.093 | 0.371 | 0.699 | 0.909 | 0.075 | 0.672 |
| Mediterranean 1 |  |  |  |  |  |  |  |  |
| Q1 [0; 3] | 0.28 ± 0.20 | 0.36 ± 0.08 | -0.46 ± 0.30 | 3.36 ± 0.27 | 0.34 ± 0.20 | 0.38 ± 0.08 | -0.20 ± 0.29 | 3.75 ± 0.24 |
| Q2 [4; 4] | 0.64 ± 0.25 | 0.45 ± 0.09 | -0.76 ± 0.37 | 3.72 ± 0.33 | 0.70 ± 0.25 | 0.46 ± 0.09 | -0.81 ± 0.36 | 3.60 ± 0.29 |
| Q3 [5; 5] | 0.25 ± 0.28 | 0.29 ± 0.10 | -0.56 ± 0.41 | 3.72 ± 0.37 | 0.15 ± 0.27 | 0.26 ± 0.10 | -0.82 ± 0.40 | 3.38 ± 0.32 |
| Q4 [6; 8] | 0.75 ± 0.32 | 0.47 ± 0.12 | -0.24 ± 0.48 | 4.65 ± 0.43 | 0.67 ± 0.32 | 0.44 ± 0.12 | -0.47 ± 0.46 | 4.32 ± 0.37 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | 0.018 | 0.006 | -0.004 | 0.059 | 0.013 | 0.001 | -0.006 | 0.050 |
| P-value | 0.501 | 0.822 | 0.886 | 0.027 | 0.620 | 0.960 | 0.827 | 0.054 |
| Mediterranean 2 |  |  |  |  |  |  |  |  |
| Q1 [0; 3] | 0.54 ± 0.23 | 0.43 ± 0.09 | -0.16 ± 0.35 | 3.20 ± 0.31 | 0.61 ± 0.23 | 0.45 ± 0.09 | 0.14 ± 0.34 | 3.57 ± 0.27 |
| Q2 [4; 5] | -0.07 ± 0.21 | 0.22 ± 0.08 | -0.79 ± 0.32 | 3.37 ± 0.29 | -0.06 ± 0.21 | 0.23 ± 0.08 | -0.77 ± 0.31 | 3.45 ± 0.25 |
| Q3 [6; 6] | 0.86 ± 0.30 | 0.52 ± 0.11 | -0.36 ± 0.45 | 4.56 ± 0.40 | 0.83 ± 0.29 | 0.51 ± 0.11 | -0.62 ± 0.43 | 4.35 ± 0.34 |
| Q4 [7; 9] | 0.81 ± 0.29 | 0.48 ± 0.11 | -0.76 ± 0.43 | 4.39 ± 0.38 | 0.71 ± 0.28 | 0.45 ± 0.11 | -1.00 ± 0.41 | 3.87 ± 0.33 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | 0.035 | 0.021 | -0.010 | 0.088 | 0.025 | 0.012 | -0.016 | 0.070 |
| P-value | 0.192 | 0.440 | 0.699 | 0.001 | 0.358 | 0.668 | 0.562 | 0.006 |
| Meat & fries |  |  |  |  |  |  |  |  |
| Q1 [-3.06; -1.04] | 0.15 ± 0.26 | 0.31 ± 0.10 | -0.66 ± 0.38 | 3.03 ± 0.34 | 0.36 ± 0.25 | 0.36 ± 0.10 | -0.68 ± 0.37 | 3.31 ± 0.3 |
| Q2 [-1.04; -0.49] | 0.53 ± 0.26 | 0.42 ± 0.10 | 0.06 ± 0.38 | 4.52 ± 0.34 | 0.52 ± 0.25 | 0.42 ± 0.09 | -0.07 ± 0.37 | 4.32 ± 0.3 |
| Q3 [-0.49; 0.13] | 0.44 ± 0.26 | 0.40 ± 0.10 | -0.64 ± 0.38 | 3.70 ± 0.34 | 0.39 ± 0.25 | 0.38 ± 0.09 | -0.66 ± 0.37 | 3.65 ± 0.30 |
| Q4 [0.13; 10.61] | 0.81 ± 0.26 | 0.48 ± 0.10 | -0.77 ± 0.38 | 3.92 ± 0.34 | 0.66 ± 0.25 | 0.45 ± 0.10 | -0.6 ± 0.37 | 3.88 ± 0.30 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | 0.061 | 0.047 | -0.004 | 0.047 | 0.036 | 0.029 | -0.011 | 0.018 |
| P-value | 0.024 | 0.083 | 0.891 | 0.086 | 0.185 | 0.298 | 0.687 | 0.488 |
| Fruits & vegetables |  |  |  |  |  |  |  |  |
| Q1 [-3.36; -0.67] | 0.37 ± 0.26 | 0.41 ± 0.10 | 0.16 ± 0.38 | 3.13 ± 0.34 | 0.38 ± 0.25 | 0.41 ± 0.09 | 0.35 ± 0.37 | 3.41 ± 0.30 |
| Q2 [-0.66; 0.14] | 0.29 ± 0.26 | 0.34 ± 0.10 | -0.70 ± 0.38 | 4.19 ± 0.34 | 0.21 ± 0.25 | 0.31 ± 0.09 | -0.80 ± 0.37 | 3.98 ± 0.30 |
| Q3 [0.14; 1.21] | 0.59 ± 0.26 | 0.4 ± 0.10 | -0.66 ± 0.38 | 3.98 ± 0.34 | 0.59 ± 0.25 | 0.41 ± 0.09 | -0.75 ± 0.37 | 3.88 ± 0.30 |
| Q4 [1.21; 7.31] | 0.66 ± 0.26 | 0.45 ± 0.10 | -0.81 ± 0.38 | 3.87 ± 0.34 | 0.75 ± 0.25 | 0.47 ± 0.10 | -0.82 ± 0.37 | 3.90 ± 0.30 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | 0.033 | 0.023 | -0.044 | 0.044 | 0.045 | 0.031 | -0.042 | 0.053 |
| P-value | 0.223 | 0.398 | 0.107 | 0.107 | 0.100 | 0.253 | 0.128 | 0.042 |
| Fatty & sugary |  |  |  |  |  |  |  |  |
| Q1 [-3.97; -1.01] | 0.95 ± 0.26 | 0.56 ± 0.10 | -0.22 ± 0.38 | 3.95 ± 0.34 | 0.92 ± 0.25 | 0.56 ± 0.09 | -0.03 ± 0.37 | 4.10 ± 0.30 |
| Q2 [-1.01; -0.18] | 0.42 ± 0.26 | 0.39 ± 0.10 | -0.38 ± 0.38 | 3.78 ± 0.34 | 0.46 ± 0.25 | 0.40 ± 0.09 | -0.33 ± 0.37 | 3.93 ± 0.30 |
| Q3 [-0.18; 0.72] | 0.13 ± 0.26 | 0.26 ± 0.10 | -0.59 ± 0.38 | 3.67 ± 0.34 | 0.15 ± 0.25 | 0.27 ± 0.09 | -0.75 ± 0.37 | 3.55 ± 0.30 |
| Q4 [0.73; 7.66] | 0.42 ± 0.26 | 0.39 ± 0.10 | -0.81 ± 0.38 | 3.76 ± 0.34 | 0.38 ± 0.25 | 0.38 ± 0.09 | -0.89 ± 0.37 | 3.59 ± 0.30 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | -0.038 | -0.032 | -0.031 | -0.009 | -0.040 | -0.034 | -0.031 | -0.007 |
| P-value | 0.166 | 0.234 | 0.262 | 0.752 | 0.140 | 0.208 | 0.256 | 0.795 |
| GRS 31 SNPs |  |  |  |  |  |  |  |  |
| Q1 [35; 50.5] | 0.34 ± 0.25 | 0.33 ± 0.09 | -0.50 ± 0.38 | 4.09 ± 0.34 | 0.20 ± 0.25 | 0.29 ± 0.09 | -0.76 ± 0.36 | 3.56 ± 0.29 |
| Q2 [50.6; 55.4] | 0.76 ± 0.25 | 0.50 ± 0.09 | -0.15 ± 0.38 | 3.79 ± 0.34 | 0.74 ± 0.25 | 0.49 ± 0.09 | -0.37 ± 0.36 | 3.50 ± 0.29 |
| Q3 [55.4; 60.5] | 0.52 ± 0.25 | 0.40 ± 0.09 | -0.97 ± 0.38 | 3.75 ± 0.34 | 0.52 ± 0.25 | 0.41 ± 0.09 | -0.96 ± 0.36 | 3.74 ± 0.29 |
| Q4 [60.6; 79.9] | 0.14 ± 0.25 | 0.31 ± 0.09 | -0.47 ± 0.38 | 3.27 ± 0.34 | 0.30 ± 0.25 | 0.35 ± 0.09 | 0.00 ± 0.37 | 4.10 ± 0.29 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | -0.021 | -0.010 | 0.000 | -0.048 | -0.004 | 0.002 | 0.004 | -0.018 |
| P-value | 0.428 | 0.712 | 0.972 | 0.073 | 0.875 | 0.154 | 0.876 | 0.480 |
| GRS 68 SNPs |  |  |  |  |  |  |  |  |
| Q1 [40.6; 57.7] | 0.38 ± 0.25 | 0.36 ± 0.09 | -0.55 ± 0.38 | 4.16 ± 0.34 | 0.25 ± 0.25 | 0.32 ± 0.09 | -0.90 ± 0.36 | 3.55 ± 0.29 |
| Q2 [57.7; 61.2] | 0.51 ± 0.25 | 0.40 ± 0.09 | -0.61 ± 0.38 | 4.08 ± 0.34 | 0.47 ± 0.25 | 0.39 ± 0.09 | -0.73 ± 0.36 | 3.90 ± 0.29 |
| Q3 [61.2; 64.4] | 0.69 ± 0.25 | 0.45 ± 0.09 | -0.61 ± 0.38 | 3.65 ± 0.34 | 0.76 ± 0.25 | 0.46 ± 0.09 | -0.50 ± 0.36 | 3.77 ± 0.29 |
| Q4 [64.4; 76.3] | 0.18 ± 0.25 | 0.34 ± 0.09 | -0.33 ± 0.38 | 3.01 ± 0.34 | 0.27 ± 0.25 | 0.36 ± 0.09 | 0.03 ± 0.37 | 3.68 ± 0.29 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | -0.023 | -0.015 | -0.007 | -0.073 | -0.014 | -0.008 | -0.004 | -0.057 |
| P-value | 0.384 | 0.577 | 0.796 | 0.006 | 0.598 | 0.764 | 0.874 | 0.026 |

BMI, body mass index; AHEI, alternative healthy eating index; GRS, genetic risk score; SNP, single nucleotide polymorphism. Sex-specific quartile boundaries are indicated in square brackets. Results are expressed as average ± standard error for univariate analysis and as estimated multivariate-adjusted average ± standard error. Statistical analyses performed using analysis of variance. Multivariate analysis adjusted for age (continuous); educational level (primary, apprenticeship, secondary and university); smoking status (never, former, current), sedentary status (yes/no) and baseline obesity value (continuous). §, standardized beta coefficient as obtained by linear regression, using dietary scores or patterns and GRS as continuous variables.

**Online supplemental table 11**: prospective analysis, changes in obesity markers according to quartiles of dietary and genetic scores, males (N=1151), univariate and multivariate -adjusted, CoLaus study, Lausanne, Switzerland.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Bivariate** | | | | **Multivariable** | | | |
|  | **Weight (kg)** | **BMI (kg/m2)** | **Waist (cm)** | **Hip (cm)** | **Weight (kg)** | **BMI (kg/m2)** | **Waist (cm)** | **Hip (cm)** |
| AHEI |  |  |  |  |  |  |  |  |
| Q1 [3; 24] | 0.57 ± 0.26 | 0.34 ± 0.08 | 1.95 ± 0.32 | 2.67 ± 0.32 | 0.50 ± 0.26 | 0.32 ± 0.08 | 2.02 ± 0.32 | 2.62 ± 0.28 |
| Q2 [24.5; 30] | 0.54 ± 0.27 | 0.29 ± 0.09 | 1.42 ± 0.34 | 2.02 ± 0.34 | 0.54 ± 0.27 | 0.30 ± 0.09 | 1.44 ± 0.33 | 2.07 ± 0.29 |
| Q3 [30.5; 38] | 0.15 ± 0.26 | 0.24 ± 0.09 | 0.98 ± 0.32 | 1.54 ± 0.32 | 0.25 ± 0.26 | 0.26 ± 0.09 | 1.00 ± 0.32 | 1.78 ± 0.28 |
| Q4 [38.5; 62.5] | 0.54 ± 0.28 | 0.33 ± 0.09 | 0.98 ± 0.34 | 1.97 ± 0.34 | 0.52 ± 0.28 | 0.32 ± 0.09 | 0.85 ± 0.34 | 1.72 ± 0.30 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | 0.010 | 0.014 | -0.039 | -0.031 | 0.021 | 0.024 | -0.035 | -0.033 |
| P-value | 0.740 | 0.640 | 0.184 | 0.292 | 0.474 | 0.429 | 0.241 | 0.259 |
| Mediterranean 1 |  |  |  |  |  |  |  |  |
| Q1 [0; 3] | 0.56 ± 0.22 | 0.33 ± 0.07 | 1.71 ± 0.27 | 2.25 ± 0.28 | 0.54 ± 0.22 | 0.33 ± 0.07 | 1.84 ± 0.27 | 2.31 ± 0.24 |
| Q2 [4; 4] | 0.43 ± 0.27 | 0.32 ± 0.09 | 1.27 ± 0.33 | 2.09 ± 0.33 | 0.46 ± 0.27 | 0.31 ± 0.09 | 1.21 ± 0.33 | 2.29 ± 0.29 |
| Q3 [5; 5] | 0.52 ± 0.29 | 0.33 ± 0.09 | 0.88 ± 0.36 | 1.58 ± 0.36 | 0.47 ± 0.29 | 0.31 ± 0.09 | 0.90 ± 0.35 | 1.44 ± 0.31 |
| Q4 [6; 8] | 0.14 ± 0.32 | 0.19 ± 0.10 | 1.27 ± 0.39 | 2.19 ± 0.39 | 0.21 ± 0.31 | 0.21 ± 0.10 | 1.07 ± 0.39 | 1.97 ± 0.34 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | -0.025 | -0.022 | -0.039 | -0.018 | -0.010 | -0.012 | -0.039 | -0.006 |
| P-value | 0.400 | 0.455 | 0.190 | 0.535 | 0.745 | 0.694 | 0.195 | 0.828 |
| Mediterranean 2 |  |  |  |  |  |  |  |  |
| Q1 [0; 3] | 0.64 ± 0.26 | 0.35 ± 0.08 | 1.57 ± 0.31 | 2.36 ± 0.32 | 0.61 ± 0.25 | 0.35 ± 0.08 | 1.69 ± 0.31 | 2.47 ± 0.27 |
| Q2 [4; 5] | 0.44 ± 0.23 | 0.30 ± 0.07 | 1.53 ± 0.28 | 1.92 ± 0.28 | 0.51 ± 0.22 | 0.32 ± 0.07 | 1.52 ± 0.27 | 2.08 ± 0.24 |
| Q3 [6; 6] | 0.40 ± 0.31 | 0.28 ± 0.10 | 1.09 ± 0.38 | 2.04 ± 0.38 | 0.32 ± 0.31 | 0.25 ± 0.1 | 0.86 ± 0.38 | 1.65 ± 0.33 |
| Q4 [7; 9] | 0.21 ± 0.31 | 0.24 ± 0.10 | 0.90 ± 0.38 | 1.89 ± 0.38 | 0.20 ± 0.31 | 0.24 ± 0.1 | 0.98 ± 0.38 | 1.79 ± 0.33 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | -0.023 | -0.021 | -0.050 | -0.012 | -0.016 | -0.016 | -0.047 | -0.013 |
| P-value | 0.438 | 0.467 | 0.093 | 0.684 | 0.590 | 0.582 | 0.116 | 0.662 |
| Meat & fries |  |  |  |  |  |  |  |  |
| Q1 [-2.32; -0.49] | 0.31 ± 0.27 | 0.26 ± 0.09 | 1.13 ± 0.33 | 1.31 ± 0.34 | 0.47 ± 0.27 | 0.29 ± 0.09 | 1.04 ± 0.33 | 1.61 ± 0.29 |
| Q2 [-0.49; 0.08] | 0.59 ± 0.27 | 0.35 ± 0.09 | 1.83 ± 0.33 | 2.88 ± 0.34 | 0.61 ± 0.27 | 0.36 ± 0.09 | 1.89 ± 0.33 | 2.84 ± 0.29 |
| Q3 [0.08; 0.8] | 0.38 ± 0.27 | 0.26 ± 0.09 | 1.23 ± 0.33 | 2.18 ± 0.34 | 0.30 ± 0.27 | 0.24 ± 0.09 | 1.20 ± 0.33 | 1.92 ± 0.29 |
| Q4 [0.8; 70.75] | 0.75 ± 0.27 | 0.39 ± 0.09 | 1.33 ± 0.33 | 2.09 ± 0.34 | 0.65 ± 0.27 | 0.37 ± 0.09 | 1.39 ± 0.33 | 2.10 ± 0.29 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | 0.052 | 0.050 | 0.046 | 0.029 | 0.042 | 0.043 | 0.043 | 0.017 |
| P-value | 0.086 | 0.097 | 0.124 | 0.336 | 0.162 | 0.155 | 0.156 | 0.569 |
| Fruits & vegetables |  |  |  |  |  |  |  |  |
| Q1 [-4.05; -1.42] | 0.51 ± 0.27 | 0.29 ± 0.09 | 1.59 ± 0.33 | 2.33 ± 0.34 | 0.42 ± 0.27 | 0.27 ± 0.09 | 1.60 ± 0.33 | 2.40 ± 0.29 |
| Q2 [-1.42; -0.6] | 0.69 ± 0.27 | 0.38 ± 0.09 | 1.84 ± 0.33 | 2.40 ± 0.34 | 0.67 ± 0.27 | 0.38 ± 0.09 | 1.86 ± 0.33 | 2.38 ± 0.29 |
| Q3 [-0.6; 0.38] | 0.39 ± 0.27 | 0.30 ± 0.09 | 1.17 ± 0.34 | 2.16 ± 0.34 | 0.50 ± 0.27 | 0.33 ± 0.09 | 1.19 ± 0.33 | 2.20 ± 0.29 |
| Q4 [0.39; 12.79] | 0.43 ± 0.27 | 0.29 ± 0.09 | 0.91 ± 0.33 | 1.57 ± 0.34 | 0.44 ± 0.27 | 0.29 ± 0.09 | 0.87 ± 0.33 | 1.47 ± 0.29 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | 0.000 | 0.012 | -0.050 | -0.040 | 0.017 | 0.026 | -0.042 | -0.028 |
| P-value | 0.990 | 0.691 | 0.095 | 0.180 | 0.571 | 0.387 | 0.176 | 0.340 |
| Fatty & sugary |  |  |  |  |  |  |  |  |
| Q1 [-3.14; -0.72] | 0.69 ± 0.27 | 0.38 ± 0.09 | 1.54 ± 0.33 | 2.31 ± 0.34 | 0.68 ± 0.27 | 0.39 ± 0.09 | 1.62 ± 0.33 | 2.38 ± 0.29 |
| Q2 [-0.72; 0.12] | 0.51 ± 0.27 | 0.33 ± 0.09 | 1.64 ± 0.34 | 2.03 ± 0.34 | 0.55 ± 0.27 | 0.34 ± 0.09 | 1.66 ± 0.33 | 2.05 ± 0.29 |
| Q3 [0.12; 1.05] | 0.45 ± 0.27 | 0.30 ± 0.09 | 1.09 ± 0.33 | 1.96 ± 0.34 | 0.43 ± 0.27 | 0.29 ± 0.09 | 1.08 ± 0.33 | 1.87 ± 0.29 |
| Q4 [1.05; 9.67] | 0.37 ± 0.27 | 0.25 ± 0.09 | 1.24 ± 0.33 | 2.15 ± 0.34 | 0.36 ± 0.27 | 0.24 ± 0.09 | 1.15 ± 0.33 | 2.15 ± 0.29 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | -0.018 | -0.027 | -0.020 | -0.007 | -0.016 | -0.028 | -0.024 | 0.007 |
| P-value | 0.539 | 0.363 | 0.508 | 0.814 | 0.591 | 0.350 | 0.423 | 0.804 |
| GRS 31 SNPs |  |  |  |  |  |  |  |  |
| Q1 [28.3; 50.9] | 0.55 ± 0.27 | 0.35 ± 0.09 | 1.43 ± 0.33 | 1.93 ± 0.33 | 0.40 ± 0.26 | 0.30 ± 0.09 | 1.26 ± 0.33 | 1.56 ± 0.29 |
| Q2 [51; 55.7] | 0.66 ± 0.27 | 0.34 ± 0.09 | 1.54 ± 0.33 | 1.94 ± 0.33 | 0.68 ± 0.26 | 0.35 ± 0.09 | 1.57 ± 0.32 | 1.98 ± 0.29 |
| Q3 [55.7; 60.9] | 0.13 ± 0.27 | 0.21 ± 0.09 | 1.34 ± 0.33 | 2.08 ± 0.33 | 0.24 ± 0.26 | 0.24 ± 0.09 | 1.35 ± 0.33 | 2.26 ± 0.29 |
| Q4 [60.9; 76.9] | 0.45 ± 0.27 | 0.30 ± 0.09 | 1.07 ± 0.33 | 2.28 ± 0.33 | 0.46 ± 0.26 | 0.31 ± 0.09 | 1.20 ± 0.33 | 2.42 ± 0.29 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | -0.032 | -0.030 | -0.018 | 0.021 | -0.022 | -0.022 | -0.013 | 0.028 |
| P-value | 0.283 | 0.306 | 0.539 | 0.470 | 0.460 | 0.448 | 0.661 | 0.328 |
| GRS 68 SNPs |  |  |  |  |  |  |  |  |
| Q1 [45.5; 57.7] | 0.82 ± 0.27 | 0.42 ± 0.09 | 1.67 ± 0.33 | 2.46 ± 0.33 | 0.71 ± 0.26 | 0.40 ± 0.09 | 1.58 ± 0.33 | 2.05 ± 0.29 |
| Q2 [57.7; 61.1] | 0.46 ± 0.27 | 0.30 ± 0.09 | 1.28 ± 0.33 | 1.72 ± 0.33 | 0.43 ± 0.26 | 0.29 ± 0.09 | 1.29 ± 0.32 | 1.77 ± 0.29 |
| Q3 [61.1; 64.6] | 0.42 ± 0.27 | 0.28 ± 0.09 | 1.36 ± 0.33 | 1.89 ± 0.33 | 0.50 ± 0.26 | 0.30 ± 0.09 | 1.32 ± 0.32 | 2.07 ± 0.29 |
| Q4 [64.6; 78.9] | 0.09 ± 0.27 | 0.2 ± 0.09 | 1.08 ± 0.33 | 2.17 ± 0.33 | 0.15 ± 0.26 | 0.22 ± 0.09 | 1.19 ± 0.33 | 2.34 ± 0.29 |
| Test for trend |  |  |  |  |  |  |  |  |
| Beta coefficient § | -0.040 | -0.041 | -0.016 | -0.006 | -0.030 | -0.034 | -0.012 | -0.006 |
| P-value | 0.170 | 0.160 | 0.594 | 0.837 | 0.306 | 0.248 | 0.674 | 0.844 |

BMI, body mass index; AHEI, alternative healthy eating index; GRS, genetic risk score; SNP, single nucleotide polymorphism. Sex-specific quartile boundaries are indicated in square brackets. Results are expressed as average ± standard error for univariate analysis and as estimated multivariate-adjusted average ± standard error. Statistical analyses performed using analysis of variance. Multivariate analysis adjusted for age (continuous); educational level (primary, apprenticeship, secondary and university); smoking status (never, former, current), sedentary status (yes/no) and baseline obesity value (continuous). §, standardized beta coefficient as obtained by linear regression, using dietary scores or patterns and GRS as continuous variables.

**Online supplemental table 12:** prospective analysis, p-values of the interaction between quartiles of genetic risk scores and quartiles of dietary scores for changes in obesity markers, overall and by sex, CoLaus study, Lausanne, Switzerland.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **All participants (N=2542)** | | | | **Females (N=1391)** | | | | **Males (N=1151)** | | | |
|  | **Weight** | **BMI** | **Waist** | **Hip** | **Weight** | **BMI** | **Waist** | **Hip** | **Weight** | **BMI** | **Waist** | **Hip** |
| **GRS 31 SNPs** |  |  |  |  |  |  |  |  |  |  |  |  |
| AHEI |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.233 | 0.186 | 0.333 | 0.685 | 0.028 | 0.080 | 0.409 | 0.592 | 0.197 | 0.114 | 0.443 | 0.518 |
| Multivariate | 0.198 | 0.190 | 0.262 | 0.874 | 0.022 | 0.073 | 0.256 | 0.721 | 0.190 | 0.135 | 0.342 | 0.386 |
| Mediterranean 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.892 | 0.838 | 0.666 | 0.353 | 0.563 | 0.487 | 0.615 | 0.525 | 0.235 | 0.272 | 0.364 | 0.229 |
| Multivariate | 0.213 | 0.873 | 0.878 | 0.560 | 0.652 | 0.534 | 0.597 | 0.553 | 0.190 | 0.250 | 0.358 | 0.014 |
| Mediterranean 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.925 | 0.861 | 0.093 | 0.358 | 0.799 | 0.660 | 0.355 | 0.276 | 0.926 | 0.833 | 0.533 | 0.320 |
| Multivariate | 0.927 | 0.873 | 0.242 | 0.186 | 0.863 | 0.735 | 0.575 | 0.309 | 0.911 | 0.812 | 0.493 | 0.170 |
| Meat & fries |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.175 | 0.110 | 0.128 | 0.407 | 0.221 | 0.139 | 0.702 | 0.195 | 0.102 | 0.197 | 0.069 | 0.026 |
| Multivariate | 0.171 | 0.091 | 0.285 | 0.585 | 0.255 | 0.149 | 0.574 | 0.326 | 0.223 | 0.280 | 0.159 | 0.432 |
| Fruits & vegetables |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.395 | 0.230 | 0.982 | 0.907 | 0.246 | 0.150 | 0.794 | 0.538 | 0.107 | 0.121 | 0.358 | 0.541 |
| Multivariate | 0.255 | 0.164 | 0.986 | 0.632 | 0.179 | 0.109 | 0.801 | 0.479 | 0.056 | 0.099 | 0.292 | 0.131 |
| Fatty & sugary |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.638 | 0.607 | 0.806 | 0.030 | 0.342 | 0.290 | 0.740 | 0.089 | 0.726 | 0.715 | 0.544 | 0.153 |
| Multivariate | 0.624 | 0.542 | 0.969 | 0.108 | 0.334 | 0.297 | 0.865 | 0.092 | 0.784 | 0.779 | 0.644 | 0.322 |
| **GRS 68 SNPs** |  |  |  |  |  |  |  |  |  |  |  |  |
| AHEI |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.053 | 0.131 | 0.704 | 0.218 | 0.087 | 0.124 | 0.545 | 0.688 | 0.128 | 0.133 | 0.938 | 0.265 |
| Multivariate | 0.030 | 0.103 | 0.682 | 0.211 | 0.044 | 0.081 | 0.507 | 0.295 | 0.115 | 0.132 | 0.909 | 0.412 |
| Mediterranean 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.891 | 0.855 | 0.693 | 0.471 | 0.255 | 0.511 | 0.475 | 0.096 | 0.490 | 0.342 | 0.637 | 0.389 |
| Multivariate | 0.833 | 0.809 | 0.897 | 0.253 | 0.235 | 0.504 | 0.429 | 0.063 | 0.288 | 0.226 | 0.615 | 0.116 |
| Mediterranean 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.432 | 0.488 | 0.490 | 0.646 | 0.900 | 0.912 | 0.422 | 0.768 | 0.270 | 0.165 | 0.447 | 0.099 |
| Multivariate | 0.391 | 0.476 | 0.492 | 0.560 | 0.895 | 0.905 | 0.374 | 0.761 | 0.312 | 0.184 | 0.420 | 0.167 |
| Meat & fries |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.720 | 0.316 | 0.257 | 0.322 | 0.246 | 0.113 | 0.506 | 0.077 | 0.201 | 0.145 | 0.060 | 0.461 |
| Multivariate | 0.714 | 0.310 | 0.424 | 0.284 | 0.215 | 0.106 | 0.729 | 0.216 | 0.244 | 0.169 | 0.094 | 0.503 |
| Fruits & vegetables |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.887 | 0.939 | 0.800 | 0.805 | 0.602 | 0.812 | 0.414 | 0.285 | 0.330 | 0.450 | 0.960 | 0.495 |
| Multivariate | 0.923 | 0.950 | 0.859 | 0.767 | 0.520 | 0.750 | 0.441 | 0.120 | 0.210 | 0.336 | 0.961 | 0.133 |
| Fatty & sugary |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.537 | 0.698 | 0.585 | 0.191 | 0.103 | 0.151 | 0.179 | 0.188 | 0.187 | 0.105 | 0.316 | 0.694 |
| Multivariate | 0.665 | 0.826 | 0.872 | 0.110 | 0.191 | 0.260 | 0.228 | 0.182 | 0.249 | 0.167 | 0.463 | 0.421 |

BMI, body mass index; AHEI, alternative healthy eating index; GRS, genetic risk score; SNP, single nucleotide polymorphism. Statistical analyses performed using analysis of variance. Multivariate analysis adjusted for age (continuous); educational level (primary, apprenticeship, secondary and university); smoking status (never, former, current) and sedentary status (yes/no). For all participants, a further adjustment on sex was performed.

**Online supplemental table 13:** prospective analysis, p-values of the interaction between genetic risk scores (continuous) and quartiles of dietary scores for changes in obesity markers, overall and by sex, CoLaus study, Lausanne, Switzerland.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **All participants (N=2542)** | | | | **Females (N=1391)** | | | | **Males (N=1151)** | | | |
|  | **Weight** | **BMI** | **Waist** | **Hip** | **Weight** | **BMI** | **Waist** | **Hip** | **Weight** | **BMI** | **Waist** | **Hip** |
| **GRS 31 SNPs** |  |  |  |  |  |  |  |  |  |  |  |  |
| AHEI |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.273 | 0.336 | 0.365 | 0.158 | 0.708 | 0.886 | 0.796 | 0.394 | 0.079 | 0.039 | 0.183 | 0.516 |
| Multivariate | 0.219 | 0.306 | 0.446 | 0.448 | 0.692 | 0.860 | 0.875 | 0.622 | 0.052 | 0.030 | 0.133 | 0.321 |
| Mediterranean 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.867 | 0.873 | 0.559 | 0.672 | 0.508 | 0.614 | 0.864 | 0.759 | 0.591 | 0.549 | 0.251 | 0.752 |
| Multivariate | 0.953 | 0.951 | 0.753 | 0.961 | 0.561 | 0.672 | 0.698 | 0.601 | 0.618 | 0.544 | 0.374 | 0.651 |
| Mediterranean 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.792 | 0.712 | 0.720 | 0.780 | 0.782 | 0.706 | 0.703 | 0.561 | 0.859 | 0.681 | 0.897 | 0.989 |
| Multivariate | 0.796 | 0.741 | 0.632 | 0.427 | 0.714 | 0.660 | 0.776 | 0.185 | 0.793 | 0.606 | 0.862 | 0.606 |
| Meat & fries |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.112 | 0.073 | 0.554 | 0.639 | 0.175 | 0.092 | 0.515 | 0.231 | 0.408 | 0.615 | 0.939 | 0.981 |
| Multivariate | 0.080 | 0.047 | 0.622 | 0.482 | 0.123 | 0.067 | 0.427 | 0.289 | 0.307 | 0.563 | 0.927 | 0.996 |
| Fruits & vegetables |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.588 | 0.552 | 0.824 | 0.563 | 0.786 | 0.693 | 0.987 | 0.166 | 0.634 | 0.616 | 0.452 | 0.709 |
| Multivariate | 0.532 | 0.510 | 0.917 | 0.798 | 0.743 | 0.650 | 0.942 | 0.174 | 0.521 | 0.567 | 0.568 | 0.769 |
| Fatty & sugary |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.331 | 0.361 | 0.587 | 0.056 | 0.327 | 0.226 | 0.588 | 0.184 | 0.381 | 0.329 | 0.452 | 0.321 |
| Multivariate | 0.396 | 0.369 | 0.642 | 0.081 | 0.277 | 0.214 | 0.567 | 0.128 | 0.580 | 0.429 | 0.556 | 0.381 |
| **GRS 68 SNPs** |  |  |  |  |  |  |  |  |  |  |  |  |
| AHEI |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.745 | 0.853 | 0.933 | 0.419 | 0.790 | 0.786 | 0.825 | 0.821 | 0.650 | 0.554 | 0.652 | 0.443 |
| Multivariate | 0.782 | 0.884 | 0.812 | 0.778 | 0.885 | 0.861 | 0.840 | 0.869 | 0.461 | 0.428 | 0.632 | 0.783 |
| Mediterranean 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.982 | 0.948 | 0.769 | 0.507 | 0.422 | 0.574 | 0.355 | 0.293 | 0.528 | 0.448 | 0.379 | 0.925 |
| Multivariate | 0.996 | 0.974 | 0.960 | 0.819 | 0.535 | 0.662 | 0.391 | 0.449 | 0.516 | 0.444 | 0.444 | 0.971 |
| Mediterranean 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.451 | 0.331 | 0.478 | 0.817 | 0.714 | 0.717 | 0.605 | 0.620 | 0.707 | 0.510 | 0.681 | 0.780 |
| Multivariate | 0.569 | 0.429 | 0.413 | 0.694 | 0.717 | 0.713 | 0.697 | 0.445 | 0.782 | 0.571 | 0.686 | 0.798 |
| Meat & fries |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.886 | 0.756 | 0.714 | 0.703 | 0.334 | 0.177 | 0.333 | 0.060 | 0.393 | 0.624 | 0.235 | 0.735 |
| Multivariate | 0.701 | 0.587 | 0.932 | 0.504 | 0.316 | 0.165 | 0.602 | 0.128 | 0.363 | 0.603 | 0.256 | 0.885 |
| Fruits & vegetables |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.773 | 0.927 | 0.879 | 0.790 | 0.903 | 0.919 | 0.502 | 0.240 | 0343 | 0.335 | 0.701 | 0.684 |
| Multivariate | 0.794 | 0.920 | 0.719 | 0.738 | 0.920 | 0.919 | 0.520 | 0.335 | 0.283 | 0.320 | 0.727 | 0.388 |
| Fatty & sugary |  |  |  |  |  |  |  |  |  |  |  |  |
| Univariate | 0.973 | 0.993 | 0.708 | 0.104 | 0.849 | 0.851 | 0.217 | 0.092 | 0.887 | 0.785 | 0.835 | 0.791 |
| Multivariate | 0.977 | 0.981 | 0.597 | 0.074 | 0.948 | 0.921 | 0.249 | 0.098 | 0.949 | 0.844 | 0.928 | 0.788 |

BMI, body mass index; AHEI, alternative healthy eating index; GRS, genetic risk score; SNP, single nucleotide polymorphism. Statistical analyses performed using analysis of covariance. Multivariate analysis adjusted for age (continuous); educational level (primary, apprenticeship, secondary and university); smoking status (never, former, current) and sedentary status (yes/no). For all participants, a further adjustment on sex was performed.

**Online supplemental table 14**: prospective analysis, association between quartiles of dietary and genetic scores and increases in weight>5 kg and waist >5 cm, females (N=1391), bivariate and multivariate adjusted, CoLaus study, Lausanne, Switzerland.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Univariate** | | **Multivariate** | |
|  | **Weight** | **Waist** | **Weight** | **Waist** |
| AHEI |  |  |  |  |
| Q1 [5; 26] | 1 (ref.) | 1 (ref.) | 1 (ref.) | 1 (ref.) |
| Q2 [27; 33] | 0.72 (0.46, 1.14) | 0.75 (0.53, 1.08) | 0.84 (0.53 , 1.33) | 0.72 (0.50 , 1.02) |
| Q3 [33.5; 40] | 0.70 (0.44, 1.10) | 0.60 (0.42, 0.87) | 0.90 (0.57 , 1.42) | 0.60 (0.42 , 0.86) |
| Q4 [40.5; 67.5] | 0.74 (0.48, 1.16) | 0.69 (0.48, 0.99) | 0.84 (0.52 , 1.36) | 0.71 (0.49 , 1.02) |
| Test for trend |  |  |  |  |
| OR (95%) § | 0.99 (0.97 - 1.01) | 0.98 (0.97 - 0.99) | 0.99 (0.97 - 1.01) | 0.98 (0.97 - 0.99) |
| P-value | 0.178 | 0.005 | 0.228 | 0.003 |
| Mediterranean 1 |  |  |  |  |
| Q1 [0; 3] | 1 (ref.) | 1 (ref.) | 1 (ref.) | 1 (ref.) |
| Q2 [4; 4] | 0.99 (0.66, 1.47) | 0.69 (0.49, 0.97) | 1.00 (0.66 , 1.52) | 0.68 (0.48 , 0.96) |
| Q3 [5; 5] | 0.72 (0.45, 1.14) | 0.93 (0.67, 1.31) | 0.68 (0.42 , 1.10) | 0.89 (0.63 , 1.26) |
| Q4 [6; 8] | 0.84 (0.52, 1.38) | 0.77 (0.52, 1.14) | 0.81 (0.48 , 1.35) | 0.73 (0.49 , 1.09) |
| Test for trend |  |  |  |  |
| OR (95%) § | 0.93 (0.83 - 1.03) | 0.93 (0.85 - 1.01) | 0.92 (0.82 - 1.03) | 0.92 (0.84 - 1.00) |
| P-value | 0.163 | 0.100 | 0.148 | 0.059 |
| Mediterranean 2 |  |  |  |  |
| Q1 [0; 3] | 1 (ref.) | 1 (ref.) | 1 (ref.) | 1 (ref.) |
| Q2 [4; 5] | 0.68 (0.45, 1.03) | 0.95 (0.69, 1.30) | 0.66 (0.43 , 1.00) | 0.92 (0.67 , 1.27) |
| Q3 [6; 6] | 0.91 (0.57, 1.45) | 0.87 (0.59, 1.28) | 0.89 (0.55 , 1.44) | 0.83 (0.56 , 1.22) |
| Q4 [7; 9] | 0.77 (0.48, 1.23) | 0.66 (0.44, 0.97) | 0.74 (0.45 , 1.20) | 0.62 (0.41 , 0.92) |
| Test for trend |  |  |  |  |
| OR (95%) § | 0.95 (0.87 - 1.03) | 0.94 (0.88 - 1.01) | 0.94 (0.86 - 1.02) | 0.93 (0.87 - 1) |
| P-value | 0.204 | 0.080 | 0.142 | 0.038 |
| Meat & fries |  |  |  |  |
| Q1 [-3.06; -1.04] | 1 (ref.) | 1 (ref.) | 1 (ref.) | 1 (ref.) |
| Q2 [-1.04; -0.49] | 1.74 (1.13, 2.68) | 1.19 (0.86, 1.66) | 1.45 (0.88 , 2.39) | 1.18 (0.82 - 1.70) |
| Q3 [-0.49; 0.13] | 1.30 (0.80, 2.11) | 1.12 (0.78, 1.61) | 1.13 (0.67 , 1.89) | 0.88 (0.60 , 1.28) |
| Q4 [0.13; 10.61] | 1.81 (1.11, 2.96) | 0.99 (0.66, 1.47) | 1.32 (0.79 , 2.18) | 0.93 (0.63 , 1.36) |
| Test for trend |  |  |  |  |
| OR (95%) § | 1.24 (1.08 - 1.41) | 1.02 (0.90 - 1.15) | 1.17 (1.01 - 1.35) | 0.99 (0.87 - 1.12) |
| P-value | 0.002 | 0.807 | 0.035 | 0.824 |
| Fruits & vegetables |  |  |  |  |
| Q1 [-3.36; -0.67] | 1 (ref.) | 1 (ref.) | 1 (ref.) | 1 (ref.) |
| Q2 [-0.66; 0.14] | 0.74 (0.45, 1.23) | 0.74 (0.49, 1.10) | 0.58 (0.36 , 0.93) | 0.76 (0.54 , 1.09) |
| Q3 [0.14; 1.21] | 0.53 (0.32, 0.89) | 0.66 (0.44, 0.97) | 0.61 (0.38 , 0.99) | 0.58 (0.40 , 0.84) |
| Q4 [1.21; 7.31] | 0.77 (0.48, 1.22) | 0.63 (0.43, 0.92) | 0.90 (0.57 , 1.41) | 0.66 (0.46 , 0.96) |
| Test for trend |  |  |  |  |
| OR (95%) § | 1.01 (0.91 - 1.13) | 0.91 (0.83 - 0.99) | 1.05 (0.93 - 1.17) | 0.91 (0.83 - 0.99) |
| P-value | 0.835 | 0.045 | 0.436 | 0.042 |
| Fatty & sugary |  |  |  |  |
| Q1 [-3.97; -1.01] | 1 (ref.) | 1 (ref.) | 1 (ref.) | 1 (ref.) |
| Q2 [-1.01; -0.18] | 0.78 (0.50, 1.20) | 0.71 (0.50, 1.01) | 0.70 (0.44 , 1.12) | 0.80 (0.56 , 1.15) |
| Q3 [-0.18; 0.72] | 0.60 (0.37, 0.97) | 0.64 (0.45, 0.93) | 0.57 (0.35 , 0.92) | 0.64 (0.44 - 0.94) |
| Q4 [0.73; 7.66] | 0.96 (0.62, 1.50) | 0.83 (0.58, 1.18) | 0.79 (0.50 , 1.24) | 0.79 (0.55 , 1.14) |
| Test for trend |  |  |  |  |
| OR (95%) § | 0.97 (0.86 - 1.09) | 0.95 (0.86 - 1.04) | 0.96 (0.85 - 1.09) | 0.95 (0.86 - 1.04) |
| P-value | 0.569 | 0.287 | 0.520 | 0.271 |
| GRS 31 SNPs |  |  |  |  |
| Q1 [35; 50.5] | 1 (ref.) | 1 (ref.) | 1 (ref.) | 1 (ref.) |
| Q2 [50.6; 55.4] | 0.86 (0.54, 1.37) | 0.96 (0.67, 1.36) | 0.99 (0.62 , 1.60) | 0.96 (0.67 , 1.37) |
| Q3 [55.4; 60.5] | 0.98 (0.63, 1.53) | 0.71 (0.50, 1.03) | 1.05 (0.65 , 1.67) | 0.77 (0.53 , 1.11) |
| Q4 [60.6; 79.9] | 1.03 (0.65, 1.61) | 0.96 (0.68, 1.37) | 1.22 (0.77 , 1.95) | 0.99 (0.69 , 1.42) |
| Test for trend |  |  |  |  |
| OR (95%) § | 1.00 (0.98 - 1.02) | 1.00 (0.98 - 1.02) | 1.01 (0.98 - 1.03) | 1.00 (0.98 - 1.02) |
| P-value | 0.900 | 0.992 | 0.513 | 0.836 |
| GRS 68 SNPs |  |  |  |  |
| Q1 [40.6; 57.7] | 1 (ref.) | 1 (ref.) | 1 (ref.) | 1 (ref.) |
| Q2 [57.7; 61.2] | 1.49 (0.92, 2.40) | 1.06 (0.74, 1.53) | 1.58 (0.97 , 2.58) | 1.06 (0.74 , 1.54) |
| Q3 [61.2; 64.4] | 1.44 (0.89, 2.33) | 1.11 (0.77, 1.59) | 1.65 (1.00 , 2.71) | 1.14 (0.79 , 1.64) |
| Q4 [64.4; 76.3] | 1.42 (0.87, 2.30) | 1.08 (0.75, 1.56) | 1.59 (0.97 , 2.60) | 1.10 (0.76 , 1.58) |
| Test for trend |  |  |  |  |
| OR (95%) § | 1.01 (0.98 - 1.05) | 1.00 (0.97 - 1.02) | 1.02 (0.98 - 1.05) | 1.00 (0.97 - 1.03) |
| P-value | 0.461 | 0.876 | 0.316 | 0.990 |

AHEI, alternative healthy eating index; GRS, genetic risk score; SNP, single nucleotide polymorphism. Sex -specific quartile boundaries are indicated in square brackets. Results are expressed as univariate or multivariate-adjusted odds ratio and (95% confidence interval). Statistical analysis performed separately for each score using by logistic regression, simple or adjusted for age (continuous), educational level (primary, apprenticeship, secondary and university); smoking status (never, former, current) and sedentary status (yes/no). §, OR and 95% CI for one unit increase, using dietary scores or patterns and GRS as continuous variables.

**Online supplemental table 15**: prospective analysis, association between quartiles of dietary and genetic scores and increases in weight>5 kg and waist >5 cm, males (N=1151), bivariate and multivariable adjusted, CoLaus study, Lausanne, Switzerland.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Univariate** | | **Multivariate** | |
|  | **Weight** | **Waist** | **Weight** | **Waist** |
| AHEI |  |  |  |  |
| Q1 [3; 24] | 1 (ref.) | 1 (ref.) | 1 (ref.) | 1 (ref.) |
| Q2 [24.5; 30] | 0.82 (0.53, 1.27) | 0.54 (0.38, 0.77) | 0.87 (0.54 , 1.39) | 0.63 (0.44 , 0.92) |
| Q3 [30.5; 38] | 0.68 (0.42, 1.10) | 0.64 (0.44, 0.92) | 0.76 (0.47 , 1.23) | 0.60 (0.41 , 0.87) |
| Q4 [38.5; 62.5] | 0.59 (0.35, 1.00) | 0.61 (0.41, 0.90) | 0.63 (0.38 , 1.06) | 0.57 (0.38 , 0.83) |
| Test for trend |  |  |  |  |
| OR (95%) § | 0.98 (0.97 - 1.00) | 0.98 (0.97 - 0.99) | 0.99 (0.97 - 1.01) | 0.98 (0.97 - 0.99) |
| P-value | 0.080 | 0.011 | 0.173 | 0.017 |
| Mediterranean 1 |  |  |  |  |
| Q1 [0; 3] | 1 (ref.) | 1 (ref.) | 1 (ref.) | 1 (ref.) |
| Q2 [4; 4] | 0.72 (0.46, 1.12) | 0.82 (0.58, 1.16) | 0.70 (0.45 , 1.10) | 0.79 (0.56 , 1.12) |
| Q3 [5; 5] | 0.89 (0.57, 1.38) | 0.65 (0.44, 0.94) | 0.90 (0.57 , 1.41) | 0.65 (0.44 , 0.95) |
| Q4 [6; 8] | 0.29 (0.15, 0.57) | 0.70 (0.47, 1.04) | 0.31 (0.16 , 0.61) | 0.69 (0.46 , 1.03) |
| Test for trend |  |  |  |  |
| OR (95%) § | 0.84 (0.75 - 0.94) | 0.9 (0.82 - 0.98) | 0.85 (0.75 - 0.95) | 0.90 (0.82 - 0.98) |
| P-value | 0.003 | 0.022 | 0.006 | 0.022 |
| Mediterranean 2 |  |  |  |  |
| Q1 [0; 3] | 1 (ref.) | 1 (ref.) | 1 (ref.) | 1 (ref.) |
| Q2 [4; 5] | 0.83 (0.54, 1.27) | 0.79 (0.57, 1.11) | 0.87 (0.56 , 1.34) | 0.79 (0.57 , 1.11) |
| Q3 [6; 6] | 0.95 (0.58, 1.55) | 0.78 (0.52, 1.15) | 0.97 (0.59 , 1.59) | 0.76 (0.51 , 1.13) |
| Q4 [7; 9] | 0.49 (0.27, 0.87) | 0.50 (0.33, 0.77) | 0.50 (0.28 , 0.90) | 0.51 (0.33 , 0.79) |
| Test for trend |  |  |  |  |
| OR (95%) § | 0.92 (0.84 - 1.01) | 0.90 (0.84 - 0.96) | 0.93 (0.85 - 1.02) | 0.90 (0.84 - 0.97) |
| P-value | 0.070 | 0.003 | 0.112 | 0.004 |
| Meat & fries |  |  |  |  |
| Q1 [-2.32; -0.49] | 1 (ref.) | 1 (ref.) | 1 (ref.) | 1 (ref.) |
| Q2 [-0.49; 0.08] | 1.00 (0.54, 1.85) | 1.36 (0.85, 2.18) | 0.92 (0.54 , 1.56) | 1.21 (0.83 , 1.77) |
| Q3 [0.08; 0.8] | 0.96 (0.53, 1.73) | 1.07 (0.68, 1.69) | 1.16 (0.70 , 1.92) | 0.76 (0.51 , 1.14) |
| Q4 [0.8; 70.75] | 1.24 (0.71, 2.15) | 1.09 (0.70, 1.70) | 1.04 (0.62 , 1.75) | 0.92 (0.62 , 1.37) |
| Test for trend |  |  |  |  |
| OR (95%) § | 1.13 (0.97 - 1.31) | 1.06 (0.97 - 1.15) | 1.08 (0.97 - 1.2) | 1.05 (0.97 - 1.13) |
| P-value | 0.113 | 0.205 | 0.150 | 0.219 |
| Fruits & vegetables |  |  |  |  |
| Q1 [-4.05; -1.42] | 1 (ref.) | 1 (ref.) | 1 (ref.) | 1 (ref.) |
| Q2 [-1.42; -0.60] | 0.86 (0.56, 1.34) | 0.90 (0.64, 1.26) | 0.79 (0.48 , 1.29) | 0.93 (0.64 , 1.36) |
| Q3 [-0.60; 0.38] | 0.59 (0.35, 0.99) | 0.52 (0.35, 0.78) | 0.74 (0.44 , 1.25) | 0.82 (0.55 , 1.21) |
| Q4 [0.39; 12.79] | 1.01 (0.61, 1.66) | 0.70 (0.46, 1.06) | 1.02 (0.63 , 1.65) | 0.71 (0.48 , 1.06) |
| Test for trend |  |  |  |  |
| OR (95%) § | 1.02 (0.91 - 1.15) | 0.92 (0.83 - 1.02) | 1.07 (0.95 - 1.20) | 0.94 (0.85 - 1.04) |
| P-value | 0.700 | 0.101 | 0.297 | 0.211 |
| Fatty & sugary |  |  |  |  |
| Q1 [-3.14; -0.72] | 1 (ref.) | 1 (ref.) | 1 (ref.) | 1 (ref.) |
| Q2 [-0.72; 0.12] | 0.64 (0.38, 1.07) | 1.16 (0.78, 1.73) | 0.83 (0.50 , 1.37) | 1.04 (0.71 , 1.52) |
| Q3 [0.12; 1.05] | 0.57 (0.34, 0.95) | 0.88 (0.59, 1.32) | 0.76 (0.45 , 1.26) | 0.83 (0.56 , 1.23) |
| Q4 [1.05; 9.67] | 0.88 (0.55, 1.39) | 0.89 (0.60, 1.32) | 1.00 (0.62 , 1.62) | 0.88 (0.60 , 1.30) |
| Test for trend |  |  |  |  |
| OR (95%) § | 1.02 (0.90 - 1.15) | 0.96 (0.87 - 1.06) | 1.01 (0.89 - 1.14) | 0.95 (0.86 - 1.05) |
| P-value | 0.774 | 0.390 | 0.894 | 0.300 |
| GRS 31 SNPs |  |  |  |  |
| Q1 [28.3; 50.9] | 1 (ref.) | 1 (ref.) | 1 (ref.) | 1 (ref.) |
| Q2 [51.0; 55.7] | 1.04 (0.63, 1.70) | 1.28 (0.87, 1.87) | 1.01 (0.61 , 1.67) | 1.27 (0.87 , 1.85) |
| Q3 [55.7; 60.9] | 0.86 (0.52, 1.45) | 1.05 (0.71, 1.55) | 0.99 (0.60 , 1.65) | 1.07 (0.73 , 1.58) |
| Q4 [60.9; 76.9] | 1.22 (0.76, 1.97) | 0.97 (0.66, 1.43) | 1.26 (0.78 , 2.04) | 0.99 (0.67 , 1.46) |
| Test for trend |  |  |  |  |
| OR (95%) § | 1.00 (0.98 - 1.03) | 1.00 (0.98 - 1.02) | 1.01 (0.98 - 1.03) | 1.00 (0.98 - 1.02) |
| P-value | 0.766 | 0.777 | 0.543 | 0.852 |
| GRS 68 SNPs |  |  |  |  |
| Q1 [45.5; 57.7] | 1 (ref.) | 1 (ref.) | 1 (ref.) | 1 (ref.) |
| Q2 [57.7; 61.1] | 1.19 (0.73, 1.94) | 1.26 (0.86, 1.84) | 1.23 (0.74 , 2.03) | 1.23 (0.84 , 1.81) |
| Q3 [61.1; 64.6] | 1.23 (0.75, 2.02) | 1.15 (0.78, 1.70) | 1.33 (0.81 , 2.19) | 1.20 (0.82 , 1.77) |
| Q4 [64.6; 78.9] | 1.05 (0.64, 1.73) | 1.07 (0.73, 1.58) | 1.18 (0.71 , 1.96) | 1.06 (0.72 , 1.58) |
| Test for trend |  |  |  |  |
| OR (95%) § | 1.01 (0.98 - 1.05) | 1.01 (0.98 - 1.04) | 1.02 (0.98 - 1.05) | 1.01 (0.99 - 1.04) |
| P-value | 0.460 | 0.407 | 0.318 | 0.379 |

AHEI, alternative healthy eating index; GRS, genetic risk score; SNP, single nucleotide polymorphism. Sex -specific quartile boundaries are indicated in square brackets. Results are expressed as univariate or multivariable-adjusted odds ratio and (95% confidence interval). Statistical analysis performed separately for each score using by logistic regression, simple or adjusted for age (continuous), educational level (primary, apprenticeship, secondary and university); smoking status (never, former, current) and sedentary status (yes/no). §, OR and 95% CI for one unit increase, using dietary scores or patterns and GRS as continuous variables.