**Supplemental Annex 1: Comparison of the different indices with food intakes**

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| **Supplemental Table S1.1. Association between the adapted Mediterranean Diet Score Z-score method for adolescents (zMDS\_A) and food intake (underreporters excluded)** |
|  | zMDS\_A (underreporters excluded) (N=1804) |
|  | β | 95% CI | *p*-value |
| **Beverages** |  |  |  |  |
| Water (g/d) | 0.0008 | 0.0005, | 0.0011 | <0.0001 |
| Coffee and tea (g/d) | 0.0007 | -0.0004, | 0.0022 | 0.125 |
| Soups / bouillon (g/d) | -0.0018 | -0.0039, | 0.0003 | 0.095 |
| **Bread and Cereals** |  |  |  |  |
| Bread and rolls (g/d) | 0.0140 | 0.0114, | 0.0166 | <0.0001 |
| Breakfast cereals (g/d) | 0.0342 | 0.0274, | 0.0409 | <0.0001 |
| **Potatoes & Grains** |  |  |  |  |
| Rice and other grains (g/d) | 0.0111 | 0.0074, | 0.0149 | <0.0001 |
| Starch roots, potatoes (g/d) | 0.0047 | 0.0012, | 0.0082 | 0.008 |
| Pasta (g/d) | 0.0053 | 0.0026, | 0.0081 | <0.0001 |
| **Vegetables (g/d)** | 0.0247 | 0.0225, | 0.0269 | <0.0001 |
| **Fruits (g/d)** | 0.0134 | 0.0121, | 0.0147 | <0.0001 |
| **Milk products** |  |  |  |  |
| Milk, yoghurt and milk beverages (g/d) | -0.0023 | -0.0040, | -0.0007 | 0.004 |
| Desserts and puddings milk based (g/d) | -0.0060 | -0.0114, | 0.0005 | 0.030 |
| **Cheese (g/d)** | 0.0114 | 0.0050, | 0.0177 | <0.0001 |
| **Meat/Fish/Egg/Meat alternative** |  |  |  |  |
| Meat (g/d) | -0.0103 | -0.0122, | -0.0084 | <0.0001 |
| Fish products (g/d) | 0.0413 | 0.0354, | 0.0473 | <0.0001 |
| Eggs (g/d) | 0.0175 | 0.0083, | 0.0266 | <0.0001 |
| Meat substitutes, nuts and pulses (g/d) | 0.0322 | 0.0278, | 0.0366 | <0.0001 |
| **Fat & Oil** |  |  |  |  |
| Margarine and vegetable oils (g/d) | 0.0257 | 0.0090, | 0.0424 | 0.003 |
| Butter and animal fats (g/d) | 0.0091 | -0.0037, | 0.0219 | 0.163 |
| **Non-recommended foods** |  |  |  |  |
| **Snacks & candy** |  |  |  |  |
| Cakes, pies, biscuits (g/d) | -0.0026 | -0.0062, | 0.0009 | 0.151 |
| Savoury snacks (g/d) | -0.0110 | -0.0199, | -0.0022 | 0.014 |
| Sugar, honey, jam, candies, chocolate (g/d) | 0.0095 | 0.0012, | 0.0178 | 0.025 |
| **Sauces & creams (g/d)** | -0.0044 | -0.0102, | 0.0014 | 0.140 |
| **Drinks** |  |  |  |  |
| Carbonated/soft/isotonic drinks (g/d) | -0.0012 | -0.0017, | -0.0007 | <0.0001 |
| Fruit and vegetable juices (g/d) | 0.0006 | -0.0002, | 0.0016 | 0.147 |
| Alcoholic beverages (g/d) | -0.0074 | -0.0089, | -0.058 | <0.0001 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0019. |
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| **Supplemental Table S1.2. Association between the adapted Mediterranean Diet Score Z-score method for adolescents excluding alcohol (zMDS\_A\_NA) and food intake (underreporters included)** |
|  | zMDS\_A\_NA (N=2330) |
|  | β | 95% CI | *p*-value |
| **Beverages** |  |  |  |  |
| Water (g/d) | 0.0006 | 0.0004, | 0.0009 | <0.0001 |
| Coffee and tea (g/d) | 0.0013 | 0.0001, | 0.0025 | 0.023 |
| Soups / bouillon (g/d) | -0.0009 | -0.0028, | 0.0008 | 0.307 |
| **Bread and Cereals** |  |  |  |  |
| Bread and rolls (g/d) | 0.0158 | 0.0136, | 0.0180 | <0.0001 |
| Breakfast cereals (g/d) | 0.0339 | 0.0280, | 0.0398 | <0.0001 |
| **Potatoes & Grains** |  |  |  |  |
| Rice and other grains (g/d) | 0.0120 | 0.0088, | 0.0153 | <0.0001 |
| Starch roots, potatoes (g/d) | 0.0053 | 0.0023, | 0.0083 | <0.0001 |
| Pasta (g/d) | 0.0055 | 0.0032, | 0.0078 | <0.0001 |
| **Vegetables (g/d)** | 0.0263 | 0.0245, | 0.0282 | <0.0001 |
| **Fruits (g/d)** | 0.0141 | 0.0130, | 0.0152 | <0.0001 |
| **Milk products** |  |  |  |  |
| Milk, yoghurt and milk beverages (g/d) | -0.0014 | -0.0028, | -0.0000 | 0.057 |
| Desserts and puddings milk based (g/d) | -0.0046 | -0.0095, | 0.0002 | 0.064 |
| **Cheese (g/d)** | 0.0166 | 0.0111, | 0.0222 | <0.0001 |
| **Meat/Fish/Egg/Meat alternative** |  |  |  |  |
| Meat (g/d) | -0.0089 | -0.0105, | -0.0072 | <0.0001 |
| Fish products (g/d) | 0.0437 | 0.0385, | 0.0490 | <0.0001 |
| Eggs (g/d) | 0.0185 | 0.0105, | 0.0265 | <0.0001 |
| Meat substitutes, nuts and pulses (g/d) | 0.0339 | 0.0302, | 0.0376 | <0.0001 |
| **Fat & Oil** |  |  |  |  |
| Margarine and vegetable oils (g/d) | 0.0401 | 0.0251, | 0.0550 | 0.003 |
| Butter and animal fats (g/d) | 0.0162 | 0.0047, | 0.0277 | 0.006 |
| **Non-recommended foods** |  |  |  |  |
| **Snacks & candy** |  |  |  |  |
| Cakes, pies, biscuits (g/d) | 0.0012 | -0.0018, | 0.0043 | 0.431 |
| Savoury snacks (g/d) | -0.0043 | -0.0122, | 0.0035 | 0.283 |
| Sugar, honey, jam, candies, chocolate (g/d) | 0.0126 | 0.0053, | 0.0199 | 0.025 |
| **Sauces & creams (g/d)** | -0.0001 | -0.0052, | 0.0049 | 0.950 |
| **Drinks** |  |  |  |  |
| Carbonated/soft/isotonic drinks (g/d) | -0.0010 | -0.0014, | -0.0005 | <0.0001 |
| Fruit and vegetable juices (g/d) | 0.0012 | 0.0004, | 0.0020 | 0.003 |
| Alcoholic beverages (g/d) | -0.00006 | -0.00141, | 0.00128 | 0.923 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0019. |
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| **Supplemental Table S1.3. Association between the adapted Mediterranean Diet Score Z-score method for adolescents excluding alcohol (zMDS\_A\_NA) and food intake (underreporters excluded)**  |
|  | zMDS\_A\_NA (underreporters excluded) (N=1804) |
|  | β | 95% CI | *p*-value |
| **Beverages** |  |  |  |  |
| Water (g/d) | 0.0007 | 0.0004, | 0.0009 | <0.0001 |
| Coffee and tea (g/d) | 0.0012 | 0.0000, | 0.0025 | 0.050 |
| Soups / bouillon (g/d) | -0.0017 | -0.0037, | 0.0003 | 0.096 |
| **Bread and Cereals** |  |  |  |  |
| Bread and rolls (g/d) | 0.0144 | 0.0120, | 0.0169 | <0.0001 |
| Breakfast cereals (g/d) | 0.0321 | 0.0258, | 0.0385 | <0.0001 |
| **Potatoes & Grains** |  |  |  |  |
| Rice and other grains (g/d) | 0.0119 | 0.0084, | 0.0154 | <0.0001 |
| Starch roots, potatoes (g/d) | 0.0047 | 0.0014, | 0.0080 | 0.004 |
| Pasta (g/d) | 0.0052 | 0.0026, | 0.0078 | <0.0001 |
| **Vegetables (g/d)** | 0.0248 | 0.0227, | 0.0268 | <0.0001 |
| **Fruits (g/d)** | 0.0135 | 0.0123, | 0.0147 | <0.0001 |
| **Milk products** |  |  |  |  |
| Milk, yoghurt and milk beverages (g/d) | -0.0021 | -0.0037, | -0.0005 | 0.005 |
| Desserts and puddings milk based (g/d) | -0.0063 | -0.0114, | -0.0012 | 0.016 |
| **Cheese (g/d)** | 0.0126 | 0.0067, | 0.0186 | <0.0001 |
| **Meat/Fish/Egg/Meat alternative** |  |  |  |  |
| Meat (g/d) | -0.0097 | -0.0115, | -0.0079 | <0.0001 |
| Fish products (g/d) | 0.0397 | 0.0341, | 0.0454 | <0.0001 |
| Eggs (g/d) | 0.0175 | 0.0088, | 0.0261 | <0.0001 |
| Meat substitutes, nuts and pulses (g/d) | 0.0319 | 0.0278, | 0.0360 | <0.0001 |
| **Fat & Oil** |  |  |  |  |
| Margarine and vegetable oils (g/d) | 0.0258 | 0.0101, | 0.415 | 0.001 |
| Butter and animal fats (g/d) | -0.0006 | -0.0004, | 0.0027 | 0.699 |
| **Non-recommended foods** |  |  |  |  |
| **Snacks & candy** |  |  |  |  |
| Cakes, pies, biscuits (g/d) | -0.0006 | -0.0040, | 0.0027 | 0.699 |
| Savoury snacks (g/d) | -0.0084 | -0.0167, | -0.0001 | 0.046 |
| Sugar, honey, jam, candies, chocolate (g/d) | 0.0086 | 0.0008, | 0.0164 | 0.031 |
| **Sauces & creams (g/d)** | -0.0030 | -0.0085, | 0.0025 | 0.286 |
| **Drinks** |  |  |  |  |
| Carbonated/soft/isotonic drinks (g/d) | -0.0011 | -0.0016, | -0.0006 | <0.0001 |
| Fruit and vegetable juices (g/d) | 0.0008 | -0.0000, | 0.0017 | 0.052 |
| Alcoholic beverages (g/d) | -0.0003 | -0.0017, | -0.0011 | 0.663 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0019. |
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| **Supplemental Table S1.4. Association between the adapted Mediterranean diet score for adolescents (MDS\_A) and food intake (underreporters included)** |
|  | MDS\_A (N=2330) |
|  | β | 95% CI | *p*-value |
| **Beverages** |  |  |  |  |
| Water (g/d) | 0.0003 | 0.0002, | 0.0004 | <0.0001 |
| Coffee and tea (g/d) | 0.0003 | -0.0001, | 0.0009 | 0.179 |
| Soups / bouillon (g/d) | -0.0003 | -0.0012, | 0.0005 | 0.426 |
| **Bread and Cereals** |  |  |  |  |
| Bread and rolls (g/d) | 0.0052 | 0.0041, | 0.0063 | <0.0001 |
| Breakfast cereals (g/d) | 0.0123 | 0.0093, | 0.0152 | <0.0001 |
| **Potatoes & Grains** |  |  |  |  |
| Rice and other grains (g/d) | 0.0047 | 0.0031, | 0.0063 | <0.0001 |
| Starch roots, potatoes (g/d) | 0.0021 | 0.0006, | 0.0035 | 0.005 |
| Pasta (g/d) | 0.0022 | 0.0011, | 0.0034 | <0.0001 |
| **Vegetables (g/d)** | 0.0098 | 0.0088, | 0.0108 | <0.0001 |
| **Fruits (g/d)** | 0.0056 | 0.0050, | 0.0062 | <0.0001 |
| **Milk products** |  |  |  |  |
| Milk, yoghurt and milk beverages (g/d) | -0.0009 | -0.0016, | -0.0001 | 0.0130 |
| Desserts and puddings milk based (g/d) | -0.0029 | -0.0053, | -0.0005 | 0.017 |
| **Cheese (g/d)** | 0.0053 | 0.0025, | 0.0080 | <0.0001 |
| **Meat/Fish/Egg/Meat alternative** |  |  |  |  |
| Meat (g/d) | -0.0032 | -0.0040, | -0.0024 | <0.0001 |
| Fish products (g/d) | 0.0148 | 0.0121, | 0.0174 | <0.0001 |
| Eggs (g/d) | 0.0075 | 0.0035, | 0.0114 | <0.0001 |
| Meat substitutes, nuts and pulses (g/d) | 0.0061 | 0.0042, | 0.0080 | <0.0001 |
| **Fat & Oil** |  |  |  |  |
| Margarine and vegetable oils (g/d) | 0.0165 | 0.0091, | 0.0239 | <0.0001 |
| Butter and animal fats (g/d) | 0.0092 | 0.0035, | 0.0149 | 0.001 |
| **Non-recommended foods** |  |  |  |  |
| **Snacks & candy** |  |  |  |  |
| Cakes, pies, biscuits (g/d) | -0.0016 | -0.0032, | -0.0001 | 0.036 |
| Savoury snacks (g/d) | -0.0036 | -0.0075, | -0.0002 | 0.066 |
| Sugar, honey, jam, candies, chocolate (g/d) | 0.0071 | 0.0035, | 0.0107 | <0.0001 |
| **Sauces & creams (g/d)** | 0.0008 | -0.0016, | 0.0034 | 0.4900 |
| **Drinks** |  |  |  |  |
| Carbonated/soft/isotonic drinks (g/d) | -0.0004 | -0.0006, | -0.0002 | <0.0001 |
| Fruit and vegetable juices (g/d) | 0.0003 | -0.0000, | 0.0007 | 0.076 |
| Alcoholic beverages (g/d) | -0.0004 | -0.0011, | 0.0001 | 0.158 |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0019. |

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| **Supplemental Table S1.5. Association between the adapted Mediterranean diet score for adolescents (MDS\_A) and food intake  (underreporters excluded)** |
|  | MDS\_A (underreporters excluded) (N=1804) |
|  | β | 95% CI | *p*-value |
| **Beverages** |  |  |  |  |
| Water (g/d) | 0.0003 | 0.0002, | 0.0005 | <0.0001 |
| Coffee and tea (g/d) | 0.0004 | -0.0001, | 0.0010 | 0.170 |
| Soups / bouillon (g/d) | -0.0010 | -0.0020, | 0.0000 | <0.0001 |
| **Bread and Cereals** |  |  |  |  |
| Bread and rolls (g/d) | 0.0046 | 0.0034, | 0.0059 | <0.0001 |
| Breakfast cereals (g/d) | 0.0130 | 0.0098, | 0.0162 | <0.0001 |
| **Potatoes & Grains** |  |  |  |  |
| Rice and other grains (g/d) | 0.0043 | 0.0025, | 0.0061 | <0.0001 |
| Starch roots, potatoes (g/d) | 0.0010 | -0.0005, | 0.0027 | 0.208 |
| Pasta (g/d) | 0.0024 | 0.0011, | 0.0037 | <0.0001 |
| **Vegetables (g/d)** | 0.0091 | 0.0080, | 0.0102 | <0.0001 |
| **Fruits (g/d)** | 0.0053 | 0.0047, | 0.0060 | <0.0001 |
| **Milk products** |  |  |  |  |
| Milk, yoghurt and milk beverages (g/d) | -0.0009 | -0.0016, | -0.0001 | 0.019 |
| Desserts and puddings milk based (g/d) | -0.0039 | -0.0065, | -0.0013 | 0.003 |
| **Cheese (g/d)** | 0.0046 | 0.0016, | 0.0076 | 0.002 |
| **Meat/Fish/Egg/Meat alternative** |  |  |  |  |
| Meat (g/d) | -0.0035 | -0.0045, | -0.0026 | <0.0001 |
| Fish products (g/d) | 0.0121 | 0.0092, | 0.0150 | <0.0001 |
| Eggs (g/d) | 0.0045 | 0.0002, | 0.0089 | 0.038 |
| Meat substitutes, nuts and pulses (g/d) | 0.0060 | 0.0038, | 0.0081 | <0.0001 |
| **Fat & Oil** |  |  |  |  |
| Margarine and vegetable oils (g/d) | 0.0099 | 0.0020, | 0.0178 | 0.013 |
| Butter and animal fats (g/d) | 0.0032 | -0.0027, | 0.0093 | 0.292 |
| **Non-recommended foods** |  |  |  |  |
| **Snacks & candy** |  |  |  |  |
| Cakes, pies, biscuits (g/d) | -0.0020 | -0.0037, | -0.0003 | 0.017 |
| Savoury snacks (g/d) | -0.0045 | -0.0087, | -0.0003 | 0.033 |
| Sugar, honey, jam, candies, chocolate (g/d) | 0.0045 | 0.0006, | 0.0085 | 0.022 |
| **Sauces & creams (g/d)** | -0.0001 | -0.0029, | 0.0026 | 0.907 |
| **Drinks** |  |  |  |  |
| Carbonated/soft/isotonic drinks (g/d) | -0.0005 | -0.0007, | -0.0003 | <0.0001 |
| Fruit and vegetable juices (g/d) | 0.0001 | -0.0003, | 0.0005 | 0.579 |
| Alcoholic beverages (g/d) | -0.0007 | -0.0014, | 0.0000 | 0.061 |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0019. |
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| **Supplemental Table S1.6. Association between the adapted Mediterranean diet score for adolescents excluding alcohol (MDS\_A\_NA) and food intake (underreporters included)** |
|  | MDS\_A\_NA (N=2330) |
|  | β | 95% CI | *p*-value |
| **Beverages** |  |  |  |  |
| Water (g/d) | 0.0002 | 0.0001, | 0.0004 | <0.0001 |
| Coffee and tea (g/d) | 0.0003 | -0.0002, | 0.0008 | 0.275 |
| Soups / bouillon (g/d) | -0.00009 | -0.00098, | 0.00079 | 0.834 |
| **Bread and Cereals** |  |  |  |  |
| Bread and rolls (g/d) | 0.0054 | 0.0043, | 0.0065 | <0.0001 |
| Breakfast cereals (g/d) | 0.0125 | 0.0096, | 0.0153 | <0.0001 |
| **Potatoes & Grains** |  |  |  |  |
| Rice and other grains (g/d) | 0.0047 | 0.0032, | 0.0063 | <0.0001 |
| Starch roots, potatoes (g/d) | 0.0024 | 0.0010, | 0.0038 | 0.001 |
| Pasta (g/d) | 0.0023 | 0.0012, | 0.0034 | <0.0001 |
| **Vegetables (g/d)** | 0.0096 | 0.0086, | 0.0105 | <0.0001 |
| **Fruits (g/d)** | 0.0056 | 0.0051, | 0.0061 | <0.0001 |
| **Milk products** |  |  |  |  |
| Milk, yoghurt and milk beverages (g/d) | -0.0008 | -0.0015, | -0.0001 | 0.018 |
| Desserts and puddings milk based (g/d) | -0.0026 | -0.0050, | -0.0003 | 0.026 |
| **Cheese (g/d)** | 0.0055 | 0.0029, | 0.0082 | 0.001 |
| **Meat/Fish/Egg/Meat alternative** |  |  |  |  |
| Meat (g/d) | -0.0030 | -0.0038, | -0.0022 | <0.0001 |
| Fish products (g/d) | 0.0145 | 0.0119, | 0.0170 | <0.0001 |
| Eggs (g/d) | 0.0078 | 0.0040, | 0.0116 | <0.0001 |
| Meat substitutes, nuts and pulses (g/d) | 0.0062 | 0.0043, | 0.0081 | <0.0001 |
| **Fat & Oil** |  |  |  |  |
| Margarine and vegetable oils (g/d) | 0.0146 | 0.0074, | 0.0218 | <0.0001 |
| Butter and animal fats (g/d) | 0.0096 | 0.0041, | 0.0151 | 0.001 |
| **Non-recommended foods** |  |  |  |  |
| **Snacks & candy** |  |  |  |  |
| Cakes, pies, biscuits (g/d) | -0.0005 | -0.0020, | 0.0009 | 0.461 |
| Savoury snacks (g/d) | -0.0030 | -0.0068, | -0.0007 | 0.112 |
| Sugar, honey, jam, candies, chocolate (g/d) | 0.0075 | 0.0041, | 0.0110 | <0.0001 |
| **Sauces & creams (g/d)** | 0.0013 | -0.0010, | 0.0038 | 0.226 |
| **Drinks** |  |  |  |  |
| Carbonated/soft/isotonic drinks (g/d) | -0.0004 | -0.0006, | -0.0002 | <0.0001 |
| Fruit and vegetable juices (g/d) | 0.00047 | -0.00008, | 0.00085 | 0.017 |
| Alcoholic beverages (g/d) | -0.0003 | -0.0009, | 0.0003 | 0.352 |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0019. |

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| **Supplemental Table S1.7. Association between the adapted Mediterranean diet score for adolescents excluding alcohol (MDS\_A\_NA) and food intake (underreporters excluded)** |
|  | MDS\_A\_NA (underreporters excluded) (N=1804) |
|  | β | 95% CI | *p*-value |
| **Beverages** |  |  |  |  |
| Water (g/d) | 0.0003 | 0.0001, | 0.0004 | <0.0001 |
| Coffee and tea (g/d) | 0.0003 | -0.0002, | 0.0009 | 0.257 |
| Soups / bouillon (g/d) | -0.0008 | -0.0018, | 0.0000 | 0.076 |
| **Bread and Cereals** |  |  |  |  |
| Bread and rolls (g/d) | 0.0047 | 0.0035, | 0.0059 | <0.0001 |
| Breakfast cereals (g/d) | 0.0129 | 0.0098, | 0.0160 | <0.0001 |
| **Potatoes & Grains** |  |  |  |  |
| Rice and other grains (g/d) | 0.0045 | 0.0027, | 0.0062 | <0.0001 |
| Starch roots, potatoes (g/d) | 0.0014 | -0.0000, | 0.0030 | 0.087 |
| Pasta (g/d) | 0.0024 | 0.0012, | 0.0037 | <0.0001 |
| **Vegetables (g/d)** | 0.0091 | 0.0080, | 0.0102 | <0.0001 |
| **Fruits (g/d)** | 0.0053 | 0.0047, | 0.0059 | <0.0001 |
| **Milk products** |  |  |  |  |
| Milk, yoghurt and milk beverages (g/d) | -0.0008 | -0.0016, | -0.0001 | 0.026 |
| Desserts and puddings milk based (g/d) | -0.0042 | -0.0068, | -0.0017 | 0.001 |
| **Cheese (g/d)** | 0.0051 | 0.0022, | 0.0080 | 0.001 |
| **Meat/Fish/Egg/Meat alternative** |  |  |  |  |
| Meat (g/d) | -0.0034 | -0.0043, | -0.0025 | <0.0001 |
| Fish products (g/d) | 0.0120 | 0.0091, | 0.0148 | <0.0001 |
| Eggs (g/d) | 0.0045 | 0.0003, | 0.0087 | 0.034 |
| Meat substitutes, nuts and pulses (g/d) | 0.0054 | 0.0033, | 0.0076 | <0.0001 |
| **Fat & Oil** |  |  |  |  |
| Margarine and vegetable oils (g/d) | 0.0086 | 0.0010, | 0.0163 | 0.027 |
| Butter and animal fats (g/d) | 0.0027 | -0.0031, | 0.0086 | 0.354 |
| **Non-recommended foods** |  |  |  |  |
| **Snacks & candy** |  |  |  |  |
| Cakes, pies, biscuits (g/d) | -0.0012 | -0.0028, | 0.0004 | 0.146 |
| Savoury snacks (g/d) | -0.0043 | -0.0083, | -0.0002 | 0.036 |
| Sugar, honey, jam, candies, chocolate (g/d) | 0.0046 | 0.0008, | 0.0084 | 0.017 |
| **Sauces & creams (g/d)** | 0.0003 | -0.0023, | 0.0030 | 0.822 |
| **Drinks** |  |  |  |  |
| Carbonated/soft/isotonic drinks (g/d) | -0.0005 | -0.0007, | -0.0002 | <0.0001 |
| Fruit and vegetable juices (g/d) | 0.00020 | -0.00021, | 0.00063 | 0.341 |
| Alcoholic beverages (g/d) | -0.0005 | -0.0012, | 0.0001 | 0.119 |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0019. |

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| **Supplemental Table S1.8. Association between the adapted Mediterranean Diet Score Z-score method energy adjusted for adolescents (zEnMDS\_A) and food intake (underreporters included)** |
|  | zEnMDS\_A (N=2330) |
|  | β | 95% CI | *p*-value |
| **Beverages** |  |  |  |  |
| Water (g/d) | 0.0008 | 0.0005, | 0.0011 | <0.0001 |
| Coffee and tea (g/d) | -0.0003 | -0.0015, | 0.0009 | 0.635 |
| Soups / bouillon (g/d) | -0.0034 | -0.0054, | -0.0013 | 0.001 |
| **Bread and Cereals** |  |  |  |  |
| Bread and rolls (g/d) | -0.0023 | -0.0048, | 0.0000 | 0.059 |
| Breakfast cereals (g/d) | 0.0177 | 0.0111, | 0.0242 | <0.0001 |
| **Potatoes & Grains** |  |  |  |  |
| Rice and other grains (g/d) | 0.0007 | -0.0028, | 0.0043 | 0.681 |
| Starch roots, potatoes (g/d) | -0.0019 | -0.0052, | 0.0012 | 0.237 |
| Pasta (g/d) | -0.0016 | -0.0041, | 0.0008 | 0.200 |
| **Vegetables (g/d)** | 0.0167 | 0.0145, | 0.0189 | <0.0001 |
| **Fruits (g/d)** | 0.0092 | 0.0079, | 0.0105 | <0.0001 |
| **Milk products** |  |  |  |  |
| Milk, yoghurt and milk beverages (g/d) | -0.0055 | -0.0070, | -0.0039 | 0.050 |
| Desserts and puddings milk based (g/d) | -0.0154 | -0.0207, | 0.0101 | <0.0001 |
| **Cheese (g/d)** | -0.0123 | -0.0184, | 0.0063 | <0.0001 |
| **Meat/Fish/Egg/Meat alternative** |  |  |  |  |
| Meat (g/d) | -0.0205 | -0.0221, | -0.0188 | <0.0001 |
| Fish products (g/d) | 0.0327 | 0.0269, | 0.0386 | <0.0001 |
| Eggs (g/d) | 0.0024 | -0.0062, | 0.0111 | 0.580 |
| Meat substitutes, nuts and pulses (g/d) | 0.0249 | 0.0208, | 0.0291 | <0.0001 |
| **Fat & Oil** |  |  |  |  |
| Margarine and vegetable oils (g/d) | 0.0035 | -0.0128, | 0.0198 | 0.674 |
| Butter and animal fats (g/d) | -0.0331 | 0.0455, | 0.0207 | <0.0001 |
| **Non-recommended foods** |  |  |  |  |
| **Snacks & candy** |  |  |  |  |
| Cakes, pies, biscuits (g/d) | -0.0206 | -0.0239, | -0.0173 | <0.0001 |
| Savoury snacks (g/d) | -0.0357 | -0.0442, | -0.0273 | <0.0001 |
| Sugar, honey, jam, candies, chocolate (g/d) | -0.0076 | -0.0156, | 0.0002 | 0.057 |
| **Sauces & creams (g/d)** | -0.0233 | -0.0287, | -0.0179 | <0.0001 |
| **Drinks** |  |  |  |  |
| Carbonated/soft/isotonic drinks (g/d) | -0.0030 | -0.0035, | -0.0026 | <0.0001 |
| Fruit and vegetable juices (g/d) | -0.0019 | 0.0028, | 0.0010 | <0.0001 |
| Alcoholic beverages (g/d) | -0.0089 | -0.0103, | -0.0074 | <0.0001 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0019. |
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| **Supplemental Table S1.9. Association between the adapted Mediterranean Diet Score Z-score method energy adjusted for adolescents (zEnMDS\_A) and food intake (underreporters excluded)** |
|  | zEnMDS\_A (underreporters excluded) (N=1804) |
|  | β | 95% CI | *p*-value |
| **Beverages** |  |  |  |  |
| Water (g/d) | 0.0008 | 0.0005, | 0.0010 | <0.0001 |
| Coffee and tea (g/d) | -0.0002 | -0.0010, | 0.0016 | 0.686 |
| Soups / bouillon (g/d) | -0.0028 | -0.0049, | -0.0006 | 0.010 |
| **Bread and Cereals** |  |  |  |  |
| Bread and rolls (g/d) | 0.0042 | 0.0015, | 0.0068 | 0.002 |
| Breakfast cereals (g/d) | 0.0259 | 0.0191, | 0.0327 | <0.0001 |
| **Potatoes & Grains** |  |  |  |  |
| Rice and other grains (g/d) | 0.0057 | 0.0020, | 0.0095 | 0.003 |
| Starch roots, potatoes (g/d) | 0.0015 | -0.0019, | 0.0050 | 0.382 |
| Pasta (g/d) | 0.0016 | -0.0010, | 0.0044 | 0.255 |
| **Vegetables (g/d)** | 0.0197 | 0.0174, | 0.0220 | <0.0001 |
| **Fruits (g/d)** | 0.0111 | 0.0098, | 0.0125 | <0.0001 |
| **Milk products** |  |  |  |  |
| Milk, yoghurt and milk beverages (g/d) | -0.0042 | -0.0058, | -0.0026 | <0.0001 |
| Desserts and puddings milk based (g/d) | -0.0110 | -0.0165, | 0.0056 | <0.0001 |
| **Cheese (g/d)** | -0.0063 | -0.0126, | -0.0000 | 0.050 |
| **Meat/Fish/Egg/Meat alternative** |  |  |  |  |
| Meat (g/d) | -0.0165 | -0.0183, | -0.0147 | <0.0001 |
| Fish products (g/d) | 0.0357 | 0.0297, | 0.0417 | <0.0001 |
| Eggs (g/d) | 0.0098 | 0.0007, | 0.0190 | 0.034 |
| Meat substitutes, nuts and pulses (g/d) | 0.0273 | 0.0229, | 0.0318 | <0.0001 |
| **Fat & Oil** |  |  |  |  |
| Margarine and vegetable oils (g/d) | 0.0096 | 0.0070, | 0.0263 | 0.255 |
| Butter and animal fats (g/d) | -0.0177 | 0.0304, | 0.0049 | 0.007 |
| **Non-recommended foods** |  |  |  |  |
| **Snacks & candy** |  |  |  |  |
| Cakes, pies, biscuits (g/d) | -0.0141 | -0.0177, | -0.0106 | <0.0001 |
| Savoury snacks (g/d) | -0.0280 | -0.0367, | -0.0193 | <0.0001 |
| Sugar, honey, jam, candies, chocolate (g/d) | -0.0020 | -0.0103, | 0.0062 | 0.635 |
| **Sauces & creams (g/d)** | -0.0159 | -0.0217, | -0.0101 | <0.0001 |
| **Drinks** |  |  |  |  |
| Carbonated/soft/isotonic drinks (g/d) | -0.0024 | -0.0029, | -0.0019 | <0.0001 |
| Fruit and vegetable juices (g/d) | -0.0006 | -0.0015, | 0.0002 | 0.156 |
| Alcoholic beverages (g/d) | -0.0079 | -0.0094, | -0.0064 | <0.0001 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0019. |
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| **Supplemental Table S1.10. Association between the adapted Mediterranean Diet Score Z-score method energy adjusted for adolescents excluding alcohol (zEnMDS\_A\_NA) and food intake (underreporters included)** |
|  | zEnMDS\_A\_NA (N=2330) |
|  | β | 95% CI | *p*-value |
| **Beverages** |  |  |  |  |
| Water (g/d) | 0.0007 | 0.0004, | 0.0009 | <0.0001 |
| Coffee and tea (g/d) | 0.00004 | -0.00112, | 0.00121 | 0.942 |
| Soups / bouillon (g/d) | -0.0033 | -0.0052, | -0.0015 | <0.0001 |
| **Bread and Cereals** |  |  |  |  |
| Bread and rolls (g/d) | -0.0018 | -0.0041, | 0.0004 | 0.121 |
| Breakfast cereals (g/d) | 0.0160 | 0.0099, | 0.0221 | <0.0001 |
| **Potatoes & Grains** |  |  |  |  |
| Rice and other grains (g/d) | 0.00167 | -0.00165, | 0.0049 | 0.324 |
| Starch roots, potatoes (g/d) | -0.0021 | -0.0051, | 0.0009 | 0.170 |
| Pasta (g/d) | -0.0017 | -0.0041, | 0.0005 | 0.133 |
| **Vegetables (g/d)** | 0.0166 | 0.0146, | 0.0187 | <0.0001 |
| **Fruits (g/d)** | 0.0093 | 0.0081, | 0.0105 | <0.0001 |
| **Milk products** |  |  |  |  |
| Milk, yoghurt and milk beverages (g/d) | -0.0053 | -0.0068, | -0.0039 | <0.0001 |
| Desserts and puddings milk based (g/d) | -0.0151 | -0.0200, | -0.0102 | <0.0001 |
| **Cheese (g/d)** | -0.0116 | -0.0172, | -0.0060 | <0.0001 |
| **Meat/Fish/Egg/Meat alternative** |  |  |  |  |
| Meat (g/d) | -0.0199 | -0.0214, | -0.0184 | <0.0001 |
| Fish products (g/d) | 0.0323 | 0.0268, | 0.0377 | <0.0001 |
| Eggs (g/d) | 0.0023 | -0.0057, | 0.0104 | 0.569 |
| Meat substitutes, nuts and pulses (g/d) | 0.0258 | 0.0219, | 0.0296 | <0.0001 |
| **Fat & Oil** |  |  |  |  |
| Margarine and vegetable oils (g/d) | 0.0030 | -0.0120, | 0.0182 | 0.689 |
| Butter and animal fats (g/d) | -0.0348 | -0.0463, | -0.0232 | <0.0001 |
| **Non-recommended foods** |  |  |  |  |
| **Snacks & candy** |  |  |  |  |
| Cakes, pies, biscuits (g/d) | -0.0189 | -0.0220, | -0.0159 | <0.0001 |
| Savoury snacks (g/d) | -0.0304 | -0.0383, | -0.0225 | <0.0001 |
| Sugar, honey, jam, candies, chocolate (g/d) | -0.0093 | -0.0167, | -0.0020 | 0.013 |
| **Sauces & creams (g/d)** | -0.0223 | -0.0274, | -0.0173 | <0.0001 |
| **Drinks** |  |  |  |  |
| Carbonated/soft/isotonic drinks (g/d) | -0.0028 | -0.0033, | -0.0024 | <0.0001 |
| Fruit and vegetable juices (g/d) | -0.0017 | -0.0025, | -0.0009 | <0.0001 |
| Alcoholic beverages (g/d) | -0.0010 | -0.0023, | -0.0003 | 0.142 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0019. |
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| **Supplemental Table S1.11. Association between the adapted Mediterranean Diet Score Z-score method energy adjusted for adolescents excluding alcohol (zEnMDS\_A\_NA) and food intake (underreporters excluded)** |
|  | zEnMDS\_A\_NA (underreporters excluded) (N=1804) |
|  | β | 95% CI | *p*-value |
| **Beverages** |  |  |  |  |
| Water (g/d) | 0.0006 | 0.0004, | 0.0009 | <0.0001 |
| Coffee and tea (g/d) | 0.0006 | -0.0005, | 0.0019 | 0.300 |
| Soups / bouillon (g/d) | -0.0027 | -0.0047, | -0.0007 | <0.0001 |
| **Bread and Cereals** |  |  |  |  |
| Bread and rolls (g/d) | 0.0046 | 0.0021, | 0.0071 | <0.0001 |
| Breakfast cereals (g/d) | 0.0239 | 0.0176, | 0.0302 | <0.0001 |
| **Potatoes & Grains** |  |  |  |  |
| Rice and other grains (g/d) | 0.0065 | 0.0030, | 0.0100 | <0.0001 |
| Starch roots, potatoes (g/d) | 0.0015 | 0.0016, | 0.0048 | 0.339 |
| Pasta (g/d) | 0.0015 | -0.0009, | 0.0040 | 0.229 |
| **Vegetables (g/d)** | 0.0198 | 0.0177, | 0.0219 | <0.0001 |
| **Fruits (g/d)** | 0.0112 | 0.0100, | 0.0125 | <0.0001 |
| **Milk products** |  |  |  |  |
| Milk, yoghurt and milk beverages (g/d) | -0.0040 | -0.0055, | -0.0025 | <0.0001 |
| Desserts and puddings milk based (g/d) | -0.0113 | -0.0164, | -0.0063 | <0.0001 |
| **Cheese (g/d)** | -0.0051 | -0.0109, | 0.0007 | 0.089 |
| **Meat/Fish/Egg/Meat alternative** |  |  |  |  |
| Meat (g/d) | -0.0159 | -0.0176, | -0.0142 | <0.0001 |
| Fish products (g/d) | 0.0342 | 0.0286, | 0.0397 | <0.0001 |
| Eggs (g/d) | 0.0098 | 0.0013, | 0.0013 | 0.023 |
| Meat substitutes, nuts and pulses (g/d) | 0.0270 | 0.0229, | 0.0311 | <0.0001 |
| **Fat & Oil** |  |  |  |  |
| Margarine and vegetable oils (g/d) | 0.0097 | -0.0057, | 0.0252 | 0.216 |
| Butter and animal fats (g/d) | -0.0202 | -0.0320, | -0.0084 | 0.001 |
| **Non-recommended foods** |  |  |  |  |
| **Snacks & candy** |  |  |  |  |
| Cakes, pies, biscuits (g/d) | -0.0121 | -0.0154, | -0.0089 | <0.0001 |
| Savoury snacks (g/d) | -0.0254 | -0.0335, | -0.0173 | <0.0001 |
| Sugar, honey, jam, candies, chocolate (g/d) | -0.0028 | -0.0105, | 0.0048 | 0.470 |
| **Sauces & creams (g/d)** | -0.0145 | -0.0199, | -0.0091 | <0.0001 |
| **Drinks** |  |  |  |  |
| Carbonated/soft/isotonic drinks (g/d) | -0.0023 | -0.0027, | -0.0018 | <0.0001 |
| Fruit and vegetable juices (g/d) | -0.0004 | -0.0013, | 0.0003 | 0.269 |
| Alcoholic beverages (g/d) | -0.0008 | -0.0022, | 0.0006 | 0.257 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0019. |
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**Supplemental Annex 2: Comparison of the different indices with nutrient intakes**

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| **Supplemental Table S2.1. Association between the adapted Mediterranean Diet Score Z-score method for adolescents (zMDS\_A) and usual intake of macro and micronutrients (underreporters excluded)** |
|  | zMDS\_A (underreporters excluded) (N=1804) |
|  | β | 95% CI | *p*-value |
| **Macronutrients** |  |  |  |  |
| Energy (kcal/d) | 0.0011 | 0.0009, | 0.0013 | <0.0001 |
| Protein (g/d) | 0.0187 | 0.0136, | 0.0238 | <0.0001 |
| Carbohydrates (g/d) | 0.0104 | 0.0089, | 0.0120 | <0.0001 |
| Total fat (g/d) | 0.000012 | 0.000008, | 0.000017 | <0.0001 |
| Water (g/d) | 0.0016 | 0.0014, | 0.0017 | <0.0001 |
| Fiber (g/d) | 0.2421 | 0.2240, | 0.2603 | <0.0001 |
| **Carbohydrates**  |  |  |  |  |
| Monosaccharides (g/d) | 0.000012 | 0.000007, | 0.000017 | <0.0001 |
| Disaccharides (g/d) | 0.000009 | 0.000005, | 0.000012 | <0.0001 |
| Polysaccharides (g/d) | 0.000022 | 0.000019, | 0.000025 | <0.0001 |
| **Fats** |  |  |  |  |
| Saturated fatty acids (mg/d) | 0.000009 | -0.000002, | 0.000020 | 0.095 |
| Mono-unsaturated fatty acids (mg/d) | 0.00005 | 0.00003, | 0.00006 | <0.0001 |
| Poly-unsaturated fatty acids (mg/d) | 0.00007 | 0.00004, | 0.00010 | <0.0001 |
| **Cholesterol (mg/d)** | 0.0004 | -0.0007, | 0.0016 | 0.462 |
| **Minerals** |  |  |  |  |
| Sodium (mg/d) † | 5.009 | 3.904, | 6.113 | <0.0001 |
| Potassium (mg/d)  | 0.0014 | 0.0013, | 0.0016 | <0.0001 |
| Chlorine (mg/d) | 0.0006 | 0.0005, | 0.0007 | <0.0001 |
| Calcium (mg/d) | 0.0026 | 0.0023, | 0.0030 | <0.0001 |
| Magnesium (mg/d) | 0.0117 | 0.0104, | 0.0131 | <0.0001 |
| Iron (µg/d) | 0.00019 | 0.00015, | 0.00022 | <0.0001 |
| Copper (µg/d) | 0.0012 | 0.0010, | 0.0014 | <0.0001 |
| Zinc (µg/d) | 0.00018 | 0.00014, | 0.00022 | <0.0001 |
| Fluorine (µg/d) | 0.0028 | 0.0022, | 0.0034 | <0.0001 |
| Iodine (µg/d) | 0.0358 | 0.0321, | 0.0395 | <0.0001 |
| Phosphor (mg/d) | 0.0024 | 0.0021, | 0.0027 | <0.0001 |
| Manganese (µg/d) | 0.0007 | 0.0006, | 0.0007 | <0.0001 |
| **Vitamins** |  |  |  |  |
| Thiamine (µg/d) | 0.0014 | 0.0011, | 0.0018 | <0.0001 |
| Riboflavin (µg/d) | 0.0018 | 0.0015, | 0.0020 | <0.0001 |
| Niacin (µg/d) | 0.00003 | 0.00001, | 0.00006 | <0.0001 |
| Pantothenic (µg/d) | 0.0006 | 0.0005, | 0.0007 | <0.0001 |
| Pyridoxine (µg/d) | 0.0015 | 0.0012, | 0.0017 | <0.0001 |
| Biotin (µg/d) | 0.0867 | 0.0775, | 0.0960 | <0.0001 |
| Total folic acid (µg/d) | 0.0225 | 0.0208, | 0.0243 | <0.0001 |
| Cobalamin (µg/d) | 0.1356 | 0.0757, | 0.1955 | <0.0001 |
| Vitamin C (g/d) | 0.000019 | 0.000017, | 0.000021 | <0.0001 |
| Retinol Equivalents (µg/d) | 0.0011 | 0.0008, | 0.0013 | <0.0001 |
| Vitamin D (µg/d) | 0.7693 | 0.6276, | 0.9109 | <0.0001 |
| Vitamin E (µg/d) | 0.00033 | 0.00029, | 0.00036 | <0.0001 |
| Vitamin K (µg/d) | 0.0119 | 0.0104, | 0.0133 | <0.0001 |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0013.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S2.2. Association between the adapted Mediterranean Diet Score Z-score method for adolescents excluding alcohol (zMDS\_A\_NA) and usual intake of macro and micronutrients**  |
|  | zMDS\_A\_NA (N=2330) |
|  | β | 95% CI | *p*-value |
| **Macronutrients** |  |  |  |  |
| Energy (kcal/d) | 0.0013 | 0.0011, | 0.0014 | <0.0001 |
| Protein (g/d) | 0.0222 | 0.0178, | 0.0265 | <0.0001 |
| Carbohydrates (g/d) | 0.0114 | 0.0102, | 0.0126 | <0.0001 |
| Total fat (g/d) | 0.000018 | 0.000015, | 0.000022 | <0.0001 |
| Water (g/d) | 0.0017 | 0.0015, | 0.0019 | <0.0001 |
| Fiber (g/d) | 0.2466 | 0.2324, | 0.2609 | <0.0001 |
| **Carbohydrates**  |  |  |  |  |
| Monosaccharides (g/d) | 0.000018 | 0.000014, | 0.000022 | <0.0001 |
| Disaccharides (g/d) | 0.000014 | 0.000011, | 0.000017 | <0.0001 |
| Polysaccharides (g/d) | 0.000023 | 0.000021, | 0.000025 | <0.0001 |
| **Fats** |  |  |  |  |
| Saturated fatty acids (mg/d) | 0.000026 | 0.000017, | 0.000034 | <0.0001 |
| Mono-unsaturated fatty acids (mg/d) | 0.000064 | 0.000054, | 0.000074 | <0.0001 |
| Poly-unsaturated fatty acids (mg/d) | 0.00010 | 0.00008, | 0.00012 | <0.0001 |
| **Cholesterol (mg/d)** | 0.0018 | 0.0008, | 0.0028 | <0.0001 |
| **Minerals** |  |  |  |  |
| Sodium (mg/d) † | 5.558 | 4.770, | 6.347 | <0.0001 |
| Potassium (mg/d)  | 0.0015 | 0.0014, | 0.0016 | <0.0001 |
| Chlorine (mg/d) | 0.0007 | 0.0006, | 0.0008 | <0.0001 |
| Calcium (mg/d) | 0.0029 | 0.0026, | 0.0032 | <0.0001 |
| Magnesium (mg/d) | 0.0127 | 0.0117, | 0.0138 | <0.0001 |
| Iron (µg/d) | 0.00021 | 0.00019, | 0.00024 | <0.0001 |
| Copper (µg/d) | 0.0014 | 0.0012, | 0.0016 | <0.0001 |
| Zinc (µg/d) | 0.00022 | 0.00019, | 0.00025 | <0.0001 |
| Fluorine (µg/d) | 0.0032 | 0.0027, | 0.0036 | <0.0001 |
| Iodine (µg/d) | 0.0391 | 0.0361, | 0.0421 | <0.0001 |
| Phosphor (mg/d) | 0.0026 | 0.0024, | 0.0029 | <0.0001 |
| Manganese (µg/d) | 0.0007 | 0.0006, | 0.0008 | <0.0001 |
| **Vitamins** |  |  |  |  |
| Thiamine (µg/d) | 0.0018 | 0.0015, | 0.0021 | <0.0001 |
| Riboflavin (µg/d) | 0.0019 | 0.0017, | 0.0021 | <0.0001 |
| Niacin (µg/d) | 0.00006 | 0.00004, | 0.00008 | <0.0001 |
| Pantothenic (µg/d) | 0.00069 | 0.00062, | 0.00076 | <0.0001 |
| Pyridoxine (µg/d) | 0.0017 | 0.0015, | 0.0019 | <0.0001 |
| Biotin (µg/d) | 0.0922 | 0.0848, | 0.0995 | <0.0001 |
| Total folic acid (µg/d) | 0.0235 | 0.0221, | 0.0248 | <0.0001 |
| Cobalamin (µg/d) | 0.1838 | 0.1341, | 0.2334 | <0.0001 |
| Vitamin C (g/d) | 0.000021 | 0.000019, | 0.000023 | <0.0001 |
| Retinol Equivalents (µg/d) | 0.0012 | 0.0010, | 0.0014 | <0.0001 |
| Vitamin D (µg/d) | 0.9158 | 0.7962, | 1.035 | <0.0001 |
| Vitamin E (µg/d) | 0.00035 | 0.00032 | 0.00038 | <0.0001 |
| Vitamin K (µg/d) | 0.0132 | 0.0120, | 0.0143 | <0.0001 |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0013.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S2.3. Association between the adapted Mediterranean Diet Score Z-score method for adolescents excluding alcohol (zMDS\_A\_NA) and usual intake of macro and micronutrients (underreporters excluded)**  |
|  | zMDS\_A\_NA (underreporters excluded) (N=1804) |
|  | β | 95% CI | *p*-value |
| **Macronutrients** |  |  |  |  |
| Energy (kcal/d) | 0.0012 | 0.0010, | 0.0014 | <0.0001 |
| Protein (g/d) | 0.0207 | 0.0158, | 0.0255 | <0.0001 |
| Carbohydrates (g/d) | 0.0114 | 0.0100, | 0.0129 | <0.0001 |
| Total fat (g/d) | 0.000014 | 0.000000, | 0.000018 | <0.0001 |
| Water (g/d) | 0. 0017 | 0.0015, | 0.0019 | <0.0001 |
| Fiber (g/d) | 0. 2450 | 0.2284, | 0.2615 | <0.0001 |
| **Carbohydrates**  |  |  |  |  |
| Monosaccharides (g/d) | 0.000015 | 0.000010, | 0.000019 | <0.0001 |
| Disaccharides (g/d) | 0.000010 | 0.000006, | 0.000013 | <0.0001 |
| Polysaccharides (g/d) | 0.000023 | 0.000021, | 0.000026 | <0.0001 |
| **Fats** |  |  |  |  |
| Saturated fatty acids (mg/d) | 0.000012 | 0.000001, | 0.000022 | 0.027 |
| Mono-unsaturated fatty acids (mg/d) | 0.000055 | 0.000043, | 0.000066 | <0.0001 |
| Poly-unsaturated fatty acids (mg/d) | 0.000078 | 0.000053, | 0.000104 | <0.0001 |
| **Cholesterol (mg/d)** | 0.0007 | -0.0003, | 0.0018 | 0.159 |
| **Minerals** |  |  |  |  |
| Sodium (mg/d) † | 5.170 | 4.133, | 6.207 | <0.0001 |
| Potassium (mg/d)  | 0.0015 | 0.0013, | 0.0016 | <0.0001 |
| Chlorine (mg/d) | 0.0006 | 0.0005, | 0.0007 | <0.0001 |
| Calcium (mg/d) | 0.0026 | 0.0023, | 0.0030 | <0.0001 |
| Magnesium (mg/d) | 0.0123 | 0.0111, | 0.0136 | <0.0001 |
| Iron (µg/d) | 0.00021 | 0.00017, | 0.00024 | <0.0001 |
| Copper (µg/d) | 0.0013 | 0.0011, | 0.0014 | <0.0001 |
| Zinc (µg/d) | 0.00020 | 0.00016, | 0.00024 | <0.0001 |
| Fluorine (µg/d) | 0.0030 | 0.0025, | 0.0035 | <0.0001 |
| Iodine (µg/d) | 0.0360 | 0.0326, | 0.0394 | <0.0001 |
| Phosphor (mg/d) | 0.0026 | 0.0022, | 0.0029 | <0.0001 |
| Manganese (µg/d) | 0.0007 | 0.0006, | 0.0008 | <0.0001 |
| **Vitamins** |  |  |  |  |
| Thiamine (µg/d) | 0.0016 | 0.0012, | 0.0019 | <0.0001 |
| Riboflavin (µg/d) | 0.0018 | 0.0016, | 0.0021 | <0.0001 |
| Niacin (µg/d) | 0.00005 | 0.00002, | 0.00007 | <0.0001 |
| Pantothenic (µg/d) | 0.0006 | 0.0005, | 0.0007 | <0.0001 |
| Pyridoxine (µg/d) | 0.0016 | 0.0014, | 0.0018 | <0.0001 |
| Biotin (µg/d) | 0.0896 | 0.0811, | 0.0982 | <0.0001 |
| Total folic acid (µg/d) | 0.0234 | 0.0218, | 0.0250 | <0.0001 |
| Cobalamin (µg/d) | 0.1528 | 0.0965, | 0.2092 | <0.0001 |
| Vitamin C (g/d) | 0.000019 | 0.000017, | 0.000022 | <0.0001 |
| Retinol Equivalents (µg/d) | 0.0011 | 0.0009, | 0.0013 | <0.0001 |
| Vitamin D (µg/d) | 0.7947 | 0.6619, | 0.9275 | <0.0001 |
| Vitamin E (µg/d) | 0.00034 | 0.00030, | 0.00037 | <0.0001 |
| Vitamin K (µg/d) | 0.0122 | 0.0109, | 0.0136 | <0.0001 |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0013.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S2.4. Association between the adapted Mediterranean diet score for adolescents (MDS\_A) and usual intake of macro and micronutrients** |
|  | MDS\_A (N=2330) |
|  | β | 95% CI | *p*-value |
| **Macronutrients** |  |  |  |  |
| Energy (kcal/d) | 0.0004 | 0.0003, | 0.0005 | <0.0001 |
| Protein (g/d) | 0.0072 | 0.0051, | 0.0092 | <0.0001 |
| Carbohydrates (g/d) | 0.0037 | 0.0031, | 0.0044 | <0.0001 |
| Total fat (g/d) | 0.000006 | 0.000004, | 0.000008 | <0.0001 |
| Water (g/d) | 0.0006 | 0.0005, | 0.0007 | <0.0001 |
| Fiber (g/d) | 0.0037 | 0.0031, | 0.0044 | <0.0001 |
| **Carbohydrates**  |  |  |  |  |
| Monosaccharides (g/d) | 0.0849 | 0.0770, | 0.0928 | <0.0001 |
| Disaccharides (g/d) | 0.000005 | 0.000003, | 0.000006 | <0.0001 |
| Polysaccharides (g/d) | 0.000008 | 0.000006, | 0.000009 | <0.0001 |
| **Fats** |  |  |  |  |
| Saturated fatty acids (mg/d) | 0.000007 | 0.000003, | 0.000012 | 0.001 |
| Mono-unsaturated fatty acids (mg/d) | 0.00002 | 0.000015, | 0.000025 | <0.0001 |
| Poly-unsaturated fatty acids (mg/d) | 0.00003 | 0.00002, | 0.00046 | <0.0001 |
| Cholesterol (mg/d) | 0.0004 | -0.00016, | 0.00094 | 0.058 |
| **Minerals** |  |  |  |  |
| Sodium (mg/d) † | 2.019 | 1.622, | 2.416 | <0.0001 |
| Potassium (mg/d)  | 0.0005 | 0.0004, | 0.0005 | <0.0001 |
| Chlorine (mg/d) | 0.00025 | 0.00020, | 0.00030 | <0.0001 |
| Calcium (mg/d) | 0.0009 | 0.0007, | 0.0010 | <0.0001 |
| Magnesium (mg/d) | 0.0042 | 0.0037, | 0.0048 | <0.0001 |
| Iron (µg/d) | 0.00007 | 0.00005, | 0.00008 | <0.0001 |
| Copper (µg/d) | 0.0005 | 0.0004, | 0.00005 | <0.0001 |
| Zinc (µg/d) | 0.00007 | 0.00005, | 0.00008 | <0.0001 |
| Fluorine (µg/d) | 0.0011 | 0.0009, | 0.0013 | <0.0001 |
| Iodine (µg/d) | 0.0130 | 0.0114, | 0.0146 | <0.0001 |
| Phosphor (mg/d) | 0.0008 | 0.0007, | 0.0009 | <0.0001 |
| Manganese (µg/d) | 0.00027 | 0.00023, | 0.0030 | <0.0001 |
| **Vitamins** |  |  |  |  |
| Thiamine (µg/d) | 0.0005 | 0.0004, | 0.0007 | <0.0001 |
| Riboflavin (µg/d) | 0.00002 | 0.00001, | 0.00006 | <0.0001 |
| Niacin (µg/d) | 0.0006 | 0.0005, | 0.0007 | <0.0001 |
| Pantothenic (µg/d) | 0.00023 | 0.00020, | 0.00027 | <0.0001 |
| Pyridoxine (µg/d) | 0.0005 | 0.0004, | 0.0006 | <0.0001 |
| Biotin (µg/d) | 0.0316 | 0.0277, | 0.0354 | <0.0001 |
| Total folic acid (µg/d) | 0.0079 | 0.0071, | 0.0086 | <0.0001 |
| Cobalamin (µg/d) | 0.0562 | 0.0315, | 0.0809 | <0.0001 |
| Vitamin C (g/d) | 0.000007 | 0.000006, | 0.000008 | <0.0001 |
| Retinol Equivalents (µg/d) | 0.0004 | 0.0003, | 0.0005 | <0.0001 |
| Vitamin D (µg/d) | 0.3283 | 0.2678, | 0.3888 | <0.0001 |
| Vitamin E (µg/d) | 0.00011 | 0.00010, | 0.00013 | <0.0001 |
| Vitamin K (µg/d) | 0.0041 | 0.0035, | 0.0047 | <0.0001 |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0013. † Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S2.5. Association between the adapted Mediterranean diet score for adolescents (MDS\_A) and usual intake of macro and micronutrients (underreporters excluded)** |
|  | MDS\_A (underreporters excluded) (N=1804) |
|  | β | 95% CI | *p*-value |
| **Macronutrients** |  |  |  |  |
| Energy (kcal/d) | 0.0003 | 0.0002, | 0.0004 | <0.0001 |
| Protein (g/d) | 0.0050 | 0.0026, | 0.0075 | <0.0001 |
| Carbohydrates (g/d) | 0.0037 | 0.00289, | 0.0045 | <0.0001 |
| Total fat (g/d) | 0.000003 | 0.000001, | 0.000005 | 0.015 |
| Water (g/d) | 0.0006 | 0.0005, | 0.0007 | <0.0001 |
| Fiber (g/d) | 0.0853 | 0.0760, | 0.0945 | <0.0001 |
| **Carbohydrates**  |  |  |  |  |
| Monosaccharides (g/d) | 0.000004 | 0.000002, | 0.000007 | <0.0001 |
| Disaccharides (g/d) | 0.000003 | 0.000002, | 0.000005 | <0.0001 |
| Polysaccharides (g/d) | 0.000008 | 0.000006, | 0.000009 | <0.0001 |
| **Fats** |  |  |  |  |
| Saturated fatty acids (mg/d) | 0.000000 | -0.000005, | 0.000005 | 0.999 |
| Mono-unsaturated fatty acids (mg/d) | 0.00001 | 0.00000, | 0.00002 | <0.0001 |
| Poly-unsaturated fatty acids (mg/d) | 0.000017 | 0.000005, | 0.000030 | 0.007 |
| **Cholesterol (mg/d)** | -0.0002 | -0.0007, | 0.0003 | 0.437 |
| **Minerals** |  |  |  |  |
| Sodium (mg/d) † | 1.739 | 1.211, | 2.267 | <0.0001 |
| Potassium (mg/d)  | 0.00047 | 0.00040, | 0.0005 | <0.0001 |
| Chlorine (mg/d) | 0.0002 | 0.0001, | 0.0002 | <0.0001 |
| Calcium (mg/d) | 0.0008 | 0.0006, | 0.0010 | <0.0001 |
| Magnesium (mg/d) | 0.0039 | 0.0033, | 0.0046 | <0.0001 |
| Iron (µg/d) | 0.00006 | 0.00004, | 0.00008 | <0.0001 |
| Copper (µg/d) | 0.0004 | 0.0003, | 0.0005 | <0.0001 |
| Zinc (µg/d) | 0.00005 | 0.00003, | 0.00007 | <0.0001 |
| Fluorine (µg/d) | 0.0009 | 0.0006, | 0.0012 | <0.0001 |
| Iodine (µg/d) | 0.0113 | 0.0095, | 0.0132 | <0.0001 |
| Phosphor (mg/d) | 0.0007 | 0.0006, | 0.0009 | <0.0001 |
| Manganese (µg/d) | 0.00025 | 0.00021, | 0.00030 | <0.0001 |
| **Vitamins** |  |  |  |  |
| Thiamine (µg/d) | 0.0004 | 0.0002, | 0.0006 | <0.0001 |
| Riboflavin (µg/d) | 0.0006 | 0.0004, | 0.0007 | <0.0001 |
| Niacin (µg/d) | 0.00001 | 0.00000, | 0.00002 | <0.0001 |
| Pantothenic (µg/d) | 0.00021 | 0.00016, | 0.00025 | <0.0001 |
| Pyridoxine (µg/d) | 0.0005 | 0.0003, | 0.0006 | <0.0001 |
| Biotin (µg/d) | 0.0289 | 0.0243, | 0.0335 | <0.0001 |
| Total folic acid (µg/d) | 0.0076 | 0.0067, | 0.0085 | <0.0001 |
| Cobalamin (µg/d) | 0.0328 | 0.0043, | 0.0612 | 0.024 |
| Vitamin C (g/d) | 0.000006 | 0.000005, | 0.000007 | <0.0001 |
| Retinol Equivalents (µg/d) | 0.0003 | 0.0002, | 0.0004 | <0.0001 |
| Vitamin D (µg/d) | 0.2536 | 0.1854, | 0.3217 | <0.0001 |
| Vitamin E (µg/d) | 0.0001 | 0.0000, | 0.0001 | <0.0001 |
| Vitamin K (µg/d) | 0.0036 | 0.0029, | 0.0043 | <0.0001 |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0013.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S2.6. Association between the adapted Mediterranean diet score for adolescents excluding alcohol (MDS\_A\_NA) and usual intake of macro and micronutrients**  |
|  | MDS\_A\_NA (N=2330) |
|  | β | 95% CI | *p*-value |
| **Macronutrients** |  |  |  |  |
| Energy (kcal/d) | 0.0004 | 0.0003, | 0.0005 | <0.0001 |
| Protein (g/d) | 0.0079 | 0.0059, | 0.0099 | <0.0001 |
| Carbohydrates (g/d) | 0.0040 | 0.0034, | 0.0046 | <0.0001 |
| Total fat (g/d) | 0.000006 | 0.000005, | 0.000008 | <0.0001 |
| Water (g/d) | 0.0006 | 0.0005, | 0.0007 | <0.0001 |
| Fiber (g/d) | 0.0865 | 0.0789, | 0.0941 | <0.0001 |
| **Carbohydrates**  |  |  |  |  |
| Monosaccharides (g/d) | 0.000007 | 0.000005, | 0.000009 | <0.0001 |
| Disaccharides (g/d) | 0.000005 | 0.000004, | 0.000007 | <0.0001 |
| Polysaccharides (g/d) | 0.000008 | 0.000007, | 0.000009 | <0.0001 |
| **Fats** |  |  |  |  |
| Saturated fatty acids (mg/d) | 0.000008 | 0.000005, | 0.000013 | <0.0001 |
| Mono-unsaturated fatty acids (mg/d) | 0.000022 | 0.000017, | 0.000027 | <0.0001 |
| Poly-unsaturated fatty acids (mg/d) | 0.000038 | 0.000027, | 0.000049 | 0.001 |
| Cholesterol (mg/d) | 0.0006 | -0.0002, | 0.0011 | 0.003 |
| **Minerals** |  |  |  |  |
| Sodium (mg/d) † | 2.141 | 1.758, | 2.523 | <0.0001 |
| Potassium (mg/d)  | 0.00053 | 0.00047, | 0.00059 | <0.0001 |
| Chlorine (mg/d) | 0.00026 | 0.00022, | 0.00031 | <0.0001 |
| Calcium (mg/d) | 0.0009 | 0.0007, | 0.0010 | <0.0001 |
| Magnesium (mg/d) | 0.0044 | 0.0038, | 0.0049 | <0.0001 |
| Iron (µg/d) | 0.00007 | 0.00006, | 0.00008 | <0.0001 |
| Copper (µg/d) | 0.0005 | 0.0004, | 0.0006 | <0.0001 |
| Zinc (µg/d) | 0.00007 | 0.00006, | 0.00009 | <0.0001 |
| Fluorine (µg/d) | 0.0011 | 0.0009, | 0.0013 | <0.0001 |
| Iodine (µg/d) | 0.0129 | 0.0114, | 0.0144 | <0.0001 |
| Phosphor (mg/d) | 0.0008 | 0.0007, | 0.0010 | <0.0001 |
| Manganese (µg/d) | 0.00027 | 0.00024, | 0.00031 | <0.0001 |
| **Vitamins** |  |  |  |  |
| Thiamine (µg/d) | 0.0006 | 0.0004, | 0.0007 | <0.0001 |
| Riboflavin (µg/d) | 0.00002 | 0.00001, | 0.00003 | <0.0001 |
| Niacin (µg/d) | 0.0006 | 0.0005, | 0.0007 | <0.0001 |
| Pantothenic (µg/d) | 0.00024 | 0.00021, | 0.00028 | <0.0001 |
| Pyridoxine (µg/d) | 0.0006 | 0.0005, | 0.0007 | <0.0001 |
| Biotin (µg/d) | 0.0324 | 0.0287, | 0.0361 | <0.0001 |
| Total folic acid (µg/d) | 0.0080 | 0.0072, | 0.0087 | <0.0001 |
| Cobalamin (µg/d) | 0.0587 | 0.0349, | 0.0826 | <0.0001 |
| Vitamin C (g/d) | 0.000007 | 0.000006, | 0.000008 | <0.0001 |
| Retinol Equivalents (µg/d) | 0.0004 | 0.0003, | 0.0005 | <0.0001 |
| Vitamin D (µg/d) | 0.3511 | 0.2930, | 0.4092 | <0.0001 |
| Vitamin E (µg/d) | 0.00012 | 0.00011, | 0.00014 | <0.0001 |
| Vitamin K (µg/d) | 0.0042 | 0.0036, | 0.0048 | <0.0001 |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0013. † Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S2.7. Association the adapted Mediterranean diet score for adolescents excluding alcohol (MDS\_A\_NA) and usual intake of macro and micronutrients (underreporters excluded)** |
|  | MDS\_A\_NA (underreporters excluded) (N=1804) |
|  | β | 95% CI | *p*-value |
| **Macronutrients** |  |  |  |  |
| Energy (kcal/d) | 0.0004 | 0.0003, | 0.0005 | <0.0001 |
| Protein (g/d) | 0.0059 | 0.0035, | 0.0082 | <0.0001 |
| Carbohydrates (g/d) | 0.0040 | 0.0032, | 0.0047 | <0.0001 |
| Total fat (g/d) | 0.000004 | 0.000001, | 0.000006 | 0.002 |
| Water (g/d) | 0.0006 | 0.0005, | 0.0007 | <0.0001 |
| Fiber (g/d) | 0.0860 | 0.0771, | 0.0950 | <0.0001 |
| **Carbohydrates**  |  |  |  |  |
| Monosaccharides (g/d) | 0.000005 | 0.0000003, | 0.000007 | <0.0001 |
| Disaccharides (g/d) | 0.000004 | 0.000002, | 0.000005 | <0.0001 |
| Polysaccharides (g/d) | 0.000008 | 0.000007, | 0.000010 | <0.0001 |
| **Fats** |  |  |  |  |
| Saturated fatty acids (mg/d) | 0.000001 | -0.000003, | 0.000006 | 0.558 |
| Mono-unsaturated fatty acids (mg/d) | 0.000016 | 0.000010, | 0.000022 | <0.0001 |
| Poly-unsaturated fatty acids (mg/d) | 0.000021 | 0.000009, | 0.000033 | 0.001 |
| Cholesterol (mg/d) | -0.000042 | -0.00057, | 0.00049 | 0.879 |
| **Minerals** |  |  |  |  |
| Sodium (mg/d) † | 1.781 | 1.268, | 2.294 | <0.0001 |
| Potassium (mg/d)  | 0.00049 | 0.00042, | 0.00057 | <0.0001 |
| Chlorine (mg/d) | 0.00021 | 0.00016, | 0.00026 | <0.0001 |
| Calcium (mg/d) | 0.0008 | 0.0007, | 0.0010 | <0.0001 |
| Magnesium (mg/d) | 0.0041 | 0.0034, | 0.0047 | <0.0001 |
| Iron (µg/d) | 0.00006 | 0.00005, | 0.00008 | <0.0001 |
| Copper (µg/d) | 0.0004 | 0.0003, | 0.0005 | <0.0001 |
| Zinc (µg/d) | 0.00006 | 0.00004, | 0.00008 | <0.0001 |
| Fluorine (µg/d) | 0.0009 | 0.0007, | 0.0012 | <0.0001 |
| Iodine (µg/d) | 0.0113 | 0.0095, | 0.0131 | <0.0001 |
| Phosphor (mg/d) | 0.0008 | 0.0006, | 0.0009 | <0.0001 |
| Manganese (µg/d) | 0.00026 | 0.00022, | 0.00030 | <0.0001 |
| **Vitamins** |  |  |  |  |
| Thiamine (µg/d) | 0.0004 | 0.0003, | 0.0006 | <0.0001 |
| Riboflavin (µg/d) | 0.0006 | 0.0005, | 0.0007 | <0.0001 |
| Niacin (µg/d) | 0.00001 | 0.00000, | 0.00003 | 0.005 |
| Pantothenic (µg/d) | 0.00022 | 0.00018, | 0.00026 | <0.0001 |
| Pyridoxine (µg/d) | 0.0005 | 0.0004, | 0.0006 | <0.0001 |
| Biotin (µg/d) | 0.0300 | 0.0256, | 0.0344 | <0.0001 |
| Total folic acid (µg/d) | 0.0077 | 0.0069, | 0.0086 | <0.0001 |
| Cobalamin (µg/d) | 0.0396 | 0.0119, | 0.0673 | 0.005 |
| Vitamin C (g/d) | 0.000006 | 0.000005, | 0.000008 | <0.0001 |
| Retinol Equivalents (µg/d) | 0.0003 | 0.0002, | 0.0004 | <0.0001 |
| Vitamin D (µg/d) | 0.2664 | 0.2003, | 0.3525 | <0.0001 |
| Vitamin E (µg/d) | 0.00011 | 0.00009, | 0.00012 | <0.0001 |
| Vitamin K (µg/d) | 0.0037 | 0.0030, | 0.0044 | <0.0001 |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0013. † Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S2.8. Association between the adapted Mediterranean Diet Score Z-score method energy adjusted for adolescents (zEnMDS\_A) and usual intake of macro and micronutrients**  |
|  | zEnMDS\_A (N=2330) |
|  | β | 95% CI | *p*-value |
| **Macronutrients** |  |  |  |  |
| Energy (kcal/d) | -0.0015 | -0.0017, | -0.0013 | <0.0001 |
| Protein (g/d) | -0.0344 | -0.0388, | -0.0301 | <0.0001 |
| Carbohydrates (g/d) | -0.0083 | -0.0097, | -0.0070 | <0.0001 |
| Total fat (g/d) | -0.000036 | -0.000040, | -0.000032 | <0.0001 |
| Water (g/d) | -0.000095 | -0.000313, | 0.000124 | 0.395 |
| Fiber (g/d) | 0.0359 | 0.0170, | 0.0548 | <0.0001 |
| **Carbohydrates**  |  |  |  |  |
| Monosaccharides (g/d) | -0.000017 | -0.000021, | -0.000012 | <0.0001 |
| Disaccharides (g/d) | -0.000019 | -0.000022, | -0.000016 | <0.0001 |
| Polysaccharides (g/d) | -0.000009 | -0.000012, | -0.000006 | <0.0001 |
| **Fats** |  |  |  |  |
| Saturated fatty acids (mg/d) | -0.000092 | -0.000101, | -0.000083 | <0.0001 |
| Mono-unsaturated fatty acids (mg/d) | -0.000078 | -0.000089, | -0.000068 | <0.0001 |
| Poly-unsaturated fatty acids (mg/d) | -0.000155 | -0.000179, | -0.000131 | <0.0001 |
| **Cholesterol (mg/d)** | -0.0088 | -0.0098, | -0.0078 | <0.0001 |
| **Minerals** |  |  |  |  |
| Sodium (mg/d) † | -4.333 | -5.206, | -3.460 | <0.0001 |
| Potassium (mg/d)  | -0.0002 | -0.0004, | -0.0001 | <0.0001 |
| Chlorine (mg/d) | -0.0004 | -0.0005, | -0.0003 | <0.0001 |
| Calcium (mg/d) | -0.0002 | -0.0006, | 0.0000 | 0.102 |
| Magnesium (mg/d) | -0.0035 | -0.0048, | -0.0022 | <0.0001 |
| Iron (µg/d) | -0.00014 | -0.00017, | -0.00011 | <0.0001 |
| Copper (µg/d) | -0.0008 | -0.0001, | -0.0006 | <0.0001 |
| Zinc (µg/d) | -0.00023 | -0.00027, | -0.0001 | <0.0001 |
| Fluorine (µg/d) | -0.0017 | -0.0022, | -0.0012 | <0.0001 |
| Iodine (µg/d) | 0.0092 | 0.0055, | 0.0128 | <0.0001 |
| Phosphor (mg/d) | -0.0012 | -0.0015, | -0.0009 | <0.0001 |
| Manganese (µg/d) | -0.000098 | -0.000182, | -0.000013 | <0.0001 |
| **Vitamins** |  |  |  |  |
| Thiamine (µg/d) | -0.0015 | -0.0018, | -0.0012 | <0.0001 |
| Riboflavin (µg/d) | -0.0007 | -0.0009, | -0.0004 | <0.0001 |
| Niacin (µg/d) | -0.0001 | -0.0002, | -0.0001 | <0.0001 |
| Pantothenic (µg/d) | -0.00029 | -0.00037, | -0.00021 | <0.0001 |
| Pyridoxine (µg/d) | -0.00089 | -0.00112, | -0.00067 | <0.0001 |
| Biotin (µg/d) | -0.0081 | -0.0170, | 0.0007 | 0.073 |
| Total folic acid (µg/d) | 0.0030 | 0.0012, | 0.0048 | 0.001 |
| Cobalamin (µg/d) | -0.2356 | -0.2893, | -0.1820 | <0.0001 |
| Vitamin C (g/d) | 0.000006 | 0.000004, | 0.000009 | <0.0001 |
| Retinol Equivalents (µg/d) | -0.00021 | -0.00043, | 0.00001 | 0.068 |
| Vitamin D (µg/d) | -0.0467 | -0.1826, | 0.0891 | 0.500 |
| Vitamin E (µg/d) | -0.00005 | -0.00009, | 0.00002 | 0.001 |
| Vitamin K (µg/d) | 0.0016 | 0.0002, | 0.0029 | 0.023 |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0013. † Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S2.9. Association between the adapted Mediterranean Diet Score Z-score method energy adjusted for adolescents (zEnMDS\_A) and usual intake of macro and micronutrients (underreporters excluded)** |
|  | zEnMDS\_A (underreporters excluded) (N=1804) |
|  | β | 95% CI | *p*-value |
| **Macronutrients** |  |  |  |  |
| Energy (kcal/d) | -0.0008 | -0.0011, | -0.0006 | <0.0001 |
| Protein (g/d) | -0.0184 | -0.0235, | -0.0132 | <0.0001 |
| Carbohydrates (g/d) | -0.0027 | -0.0044, | -0.0011 | 0.001 |
| Total fat (g/d) | -0.000024 | -0.000028, | -0.000019 | <0.0001 |
| Water (g/d) | -0.0005 | -0.0002, | 0.0007 | <0.0001 |
| Fiber (g/d) | 0.1138 | 0.0932, | 0.1344 | <0.0001 |
| **Carbohydrates**  |  |  |  |  |
| Monosaccharides (g/d) | -0.000006 | -0.000011, | -0.000001 | 0.017 |
| Disaccharides (g/d) | -0.000011 | -0.000015, | -0.000008 | <0.0001 |
| Polysaccharides (g/d) | -0.000002 | -0.000001, | -0.000005 | 0.105 |
| **Fats** |  |  |  |  |
| Saturated fatty acids (mg/d) | -0.000068 | -0.000078, | -0.000058 | <0.0001 |
| Mono-unsaturated fatty acids (mg/d) | -0.000043 | -0.000056, | -0.000030 | <0.0001 |
| Poly-unsaturated fatty acids (mg/d) | -0.000080 | -0.00010, | -0.000053 | <0.0001 |
| **Cholesterol (mg/d)** | -0.0058 | -0.0069, | -0.0046 | <0.0001 |
| **Minerals** |  |  |  |  |
| Sodium (mg/d) † | -1.549 | -2.673, | -0.426 | 0.007 |
| Potassium (mg/d)  | 0.0003 | 0.0001, | 0.0005 | <0.0001 |
| Chlorine (mg/d) | -0.00009 | -0.00021, | 0.00002 | 0.127 |
| Calcium (mg/d) | 0.0007 | 0.0003, | 0.0011 | 0.102 |
| Magnesium (mg/d) | 0.0017 | 0.0002, | 0.0031 | 0.021 |
| Iron (µg/d) | -0.00003 | -0.00006, | 0.00000 | 0.069 |
| Copper (µg/d) | -0.0001 | -0.0003, | 0.0000 | 0.133 |
| Zinc (µg/d) | -0.00010 | -0.00015, | -0.0000 | <0.0001 |
| Fluorine (µg/d) | -0.0002 | -0.0008, | 0.0003 | 0.436 |
| Iodine (µg/d) | 0.0182 | 0.0143, | 0.0222 | <0.0001 |
| Phosphor (mg/d) | -0.00007 | -0.00041, | -0.00027 | 0.686 |
| Manganese (µg/d) | 0.00019 | 0.00010, | 0.00029 | <0.0001 |
| **Vitamins** |  |  |  |  |
| Thiamine (µg/d) | -0.0004 | -0.0008, | -0.0001 | 0.008 |
| Riboflavin (µg/d) | -0.0001 | -0.0000, | -0.0004 | 0.192 |
| Niacin (µg/d) | -0.00013 | -0.00010, | -0.00007 | <0.0001 |
| Pantothenic (µg/d) | 0.00003 | -0.00005, | 0.00013 | 0.423 |
| Pyridoxine (µg/d) | -0.00003 | -0.00029, | 0.00022 | 0.780 |
| Biotin (µg/d) | 0.0293 | 0.0194, | 0.0393 | <0.0001 |
| Total folic acid (µg/d) | 0.0106 | 0.0087, | 0.0126 | 0.001 |
| Cobalamin (µg/d) | -0.0933 | -0.1532, | -0.0334 | 0.002 |
| Vitamin C (g/d) | 0.000012 | 0.000010, | 0.000015 | <0.0001 |
| Retinol Equivalents (µg/d) | 0.00029 | -0.00005, | 0.00054 | 0.018 |
| Vitamin D (µg/d) | 0.2691 | 0.1241, | 0.4141 | <0.0001 |
| Vitamin E (µg/d) | 0.00008 | 0.00004, | 0.00012 | <0.0001 |
| Vitamin K (µg/d) | 0.0052 | 0.0037, | 0.0067 | <0.0001 |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0013.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S2.10. Association between the adapted Mediterranean Diet Score Z-score method energy adjusted for adolescents excluding alcohol (zEnMDS\_A\_NA) and usual intake of macro and micronutrients**  |
|  | zEnMDS\_A\_NA (N=2330) |
|  | β | 95% CI | *p*-value |
| **Macronutrients** |  |  |  |  |
| Energy (kcal/d) | -0.0014 | -0.0015, | -0.0012 | <0.0001 |
| Protein (g/d) | -0.0323 | -0.0363, | -0.0282 | <0.0001 |
| Carbohydrates (g/d) | -0.0074 | -0.0086, | -0.0061 | <0.0001 |
| Total fat (g/d) | -0.000034 | -0.000038, | -0.000031 | <0.0001 |
| Water (g/d) | 0.000019 | -0.000184, | 0.000222 | 0.854 |
| Fiber (g/d) | 0.0395 | 0.0220, | 0.0571 | <0.0001 |
| **Carbohydrates**  |  |  |  |  |
| Monosaccharides (g/d) | -0.000014 | -0.000018, | -0.000010 | <0.0001 |
| Disaccharides (g/d) | -0.000018 | -0.000021, | -0.000015 | <0.0001 |
| Polysaccharides (g/d) | -0.000008 | -0.000010, | -0.000005 | <0.0001 |
| **Fats** |  |  |  |  |
| Saturated fatty acids (mg/d) | -0.000090 | -0.000098, | -0.000082 | <0.0001 |
| Mono-unsaturated fatty acids (mg/d) | -0.000074 | -0.000084, | -0.000064 | <0.0001 |
| Poly-unsaturated fatty acids (mg/d) | -0.00014 | -0.00017, | -0.00012 | <0.0001 |
| **Cholesterol (mg/d)** | -0.0084 | -0.0093, | -0.0075 | <0.0001 |
| **Minerals** |  |  |  |  |
| Sodium (mg/d) † | -4.220 | -5.030, | -3.410 | <0.0001 |
| Potassium (mg/d)  | -0.00019 | -0.00033, | -0.00006 | 0.004 |
| Chlorine (mg/d) | -0.0003 | -0.0004, | -0.0002 | <0.0001 |
| Calcium (mg/d) | -0.0003 | -0.0006, | 0.0000 | 0.066 |
| Magnesium (mg/d) | -0.0029 | -0.0041, | -0.007 | <0.0001 |
| Iron (µg/d) | -0.00012 | -0.00015, | -0.00009 | <0.0001 |
| Copper (µg/d) | -0.0007 | -0.0009, | -0.0005 | <0.0001 |
| Zinc (µg/d) | -0.00022 | -0.00025, | -0.00018 | <0.0001 |
| Fluorine (µg/d) | -0.0015 | -0.0020, | -0.0010 | <0.0001 |
| Iodine (µg/d) | 0.0095 | 0.0060, | 0.0129 | <0.0001 |
| Phosphor (mg/d) | -0.0011 | -0.0014, | -0.0008 | <0.0001 |
| Manganese (µg/d) | -0.00007 | -0.00014, | -0.00000 | 0.078 |
| **Vitamins** |  |  |  |  |
| Thiamine (µg/d) | -0.0014 | -0.0017, | -0.0011 | <0.0001 |
| Riboflavin (µg/d) | -0.0006 | -0.0008, | -0.0004 | <0.0001 |
| Niacin (µg/d) | -0.00016 | -0.00018, | -0.00014 | <0.0001 |
| Pantothenic (µg/d) | -0.0002 | -0.0003, | -0.0001 | <0.0001 |
| Pyridoxine (µg/d) | -0.0007 | -0.0009, | -0.0005 | <0.0001 |
| Biotin (µg/d) | -0.0044 | -0.0127, | 0.0038 | 0.295 |
| Total folic acid (µg/d) | 0.0040 | 0.0023, | 0.0056 | <0.0001 |
| Cobalamin (µg/d) | -0.2182 | -0.2680, | -0.11683 | <0.0001 |
| Vitamin C (g/d) | 0.000007 | 0.000005, | 0.000009 | <0.0001 |
| Retinol Equivalents (µg/d) | -0.00018 | -0.00039, | 0.00002 | 0.091 |
| Vitamin D (µg/d) | -0.0086 | -0.1349, | 0.1176 | 0.893 |
| Vitamin E (µg/d) | -0.00004 | -0.00007, | 0.00001 | 0.007 |
| Vitamin K (µg/d) | 0.0019 | 0.0006, | 0.0032 | 0.003 |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0013. † Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S2.11. Association between the adapted Mediterranean Diet Score Z-score method energy adjusted for adolescents excluding alcohol (zEnMDS\_A\_NA) and usual intake of macro and micronutrients (underreporters excluded)** |
|  | zEnMDS\_A\_NA (underreporters excluded) (N=1804) |
|  | β | 95% CI | *p*-value |
| **Macronutrients** |  |  |  |  |
| Energy (kcal/d) | -0.0007 | -0.0009, | -0.005 | <0.0001 |
| Protein (g/d) | -0.0164 | -0.0212, | -0.0116 | <0.0001 |
| Carbohydrates (g/d) | -0.0017 | -0.0032, | -0.0002 | 0.023 |
| Total fat (g/d) | -0.000022 | -0.000027, | -0.000018 | <0.0001 |
| Water (g/d) | 0.0006 | 0.0004, | 0.0008 | <0.0001 |
| Fiber (g/d) | 0.1166 | 0.0976, | 0.1355 | <0.0001 |
| **Carbohydrates**  |  |  |  |  |
| Monosaccharides (g/d) | -0.000004 | -0.00008, | 0.000001 | 0.114 |
| Disaccharides (g/d) | -0.000014 | -0.000011, | -0.000008 | <0.0001 |
| Polysaccharides (g/d) | 0.000004 | 0.000001, | 0.000007 | 0.008 |
| **Fats** |  |  |  |  |
| Saturated fatty acids (mg/d) | -0.00006 | -0.00007, | -0.00005 | <0.0001 |
| Mono-unsaturated fatty acids (mg/d) | -0.00003 | -0.00005, | -0.00002 | <0.0001 |
| Poly-unsaturated fatty acids (mg/d) | -0.00007 | -0.00010, | -0.00005 | <0.0001 |
| **Cholesterol (mg/d)** | -0.0054 | -0.0065, | -0.0044 | <0.0001 |
| **Minerals** |  |  |  |  |
| Sodium (mg/d) † | -1.395 | -2.437, | -0.353 | 0.009 |
| Potassium (mg/d)  | 0.0004 | 0.0002, | 0.0005 | 0.004 |
| Chlorine (mg/d) | -0.00006 | -0.00017, | 0.00004 | 0.239 |
| Calcium (mg/d) | 0.0007 | 0.0003, | 0.0011 | 0.066 |
| Magnesium (mg/d) | 0.0022 | 0.0009, | 0.0036 | 0.001 |
| Iron (µg/d) | -0.000015 | -0.000047, | 0.000018 | 0.373 |
| Copper (µg/d) | -0.0001 | -0.0003, | -0.0000 | 0.230 |
| Zinc (µg/d) | -0.00009 | -0.00013, | -0.00005 | <0.0001 |
| Fluorine (µg/d) | -0.0000 | -0.0005, | 0.0005 | 0.981 |
| Iodine (µg/d) | 0.0185 | 0.0148, | 0.0221 | <0.0001 |
| Phosphor (mg/d) | 0.0000 | -0.0002, | 0.0003 | 0.676 |
| Manganese (µg/d) | 0.0002 | 0.0001, | 0.0003 | <0.0001 |
| **Vitamins** |  |  |  |  |
| Thiamine (µg/d) | -0.0003 | -0.0006, | -0.0000 | <0.031 |
| Riboflavin (µg/d) | 0.0002 | 0.0000, | 0.0005 | 0.041 |
| Niacin (µg/d) | -0.00008 | -0.00012, | -0.00006 | <0.0001 |
| Pantothenic (µg/d) | -0.00008 | -0.00000, | -0.00016 | 0.066 |
| Pyridoxine (µg/d) | 0.00008 | -0.00015, | 0.00032 | 0.480 |
| Biotin (µg/d) | 0.0322 | 0.0230, | 0.0414 | <0.0001 |
| Total folic acid (µg/d) | 0.0115 | 0.0097, | 0.0133 | <0.0001 |
| Cobalamin (µg/d) | -0.0758 | -0.1314, | -0.0202 | 0.007 |
| Vitamin C (g/d) | 0.000013 | 0.000010, | 0.000015 | <0.0001 |
| Retinol Equivalents (µg/d) | 0.0003 | 0.0001, | 0.0005 | 0.005 |
| Vitamin D (µg/d) | 0.2947 | 0.1603, | 0.4290 | <0.0001 |
| Vitamin E (µg/d) | 0.00009 | 0.00005, | 0.00012 | <0.0001 |
| Vitamin K (µg/d) | 0.0056 | 0.0042, | 0.0070 | <0.0001 |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.0013. † Variable was log-transformed to obtain a normal distribution. |
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**Supplemental Annex 3: Comparison of the different indices with nutritional biomarker levels**

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| **Supplemental Table S3.1. Association between the adapted Mediterranean Diet Score Z-score method for adolescents (zMDS\_A) and nutritional biomarkers (underreporters excluded)** |
|  | zMDS\_A (underreporters excluded) (N=552) |
|  | Β | 95% CI | *p*-value |
|  |  |  |  |  |
| Vitamin D (nmol/L) | 0.0164 | 0.0049, | 0.0280 | 0.005 |
| Vitamin C (mg/dL) | 0.1444 | 0.0606, | 0.2281 | 0.001 |
| Plasma folate (nmol/L) | 0.0435 | 0.0171, | 0.0698 | 0.001 |
| Holo-Transcobalamin (TC-II/B12) (pmol/L)† | 1.054 | -0.387, | 2.496 | 0.151 |
| Total homocysteine (µmol/L) | -0.0300 | -0.1020, | 0.0419 | 0.413 |
| Beta carotene (ng/ml) | 0.0018 | 0.0003, | 0.0033 | 0.018 |
| Retinol (ng/ml) | 0.0038 | -0.0019, | 0.0036 | 0.544 |
| Triglycerides (mg/dL) | 0.0026 | -0.0058, | 0.0111 | 0.548 |
| ω-3 fatty acids (µmol/L) | 0.0074 | 0.0016, | 0.0132 | 0.012 |
| Trans-Fatty acids (µmol/L) | -0.423 | -0.766, | 0.081 | 0.015 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.005.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S3.2. Association between the adapted Mediterranean Diet Score Z-score method for adolescents excluding alcohol (zMDS\_A\_NA) and nutritional biomarkers**  |
|  | zMDS\_A\_NA (N=697) |
|  | Β | 95% CI | *p*-value |
|  |  |  |  |  |
| Vitamin D (nmol/L) | 0.0164 | 0.0066, | 0.0262 | 0.001 |
| Vitamin C (mg/dL) | 0.1445 | 0.0430, | 0.1859 | 0.002 |
| Plasma folate (nmol/L) | 0.0417 | 0.0186, | 0.0648 | <0.001 |
| Holo-Transcobalamin (TC-II/B12) (pmol/L)† | 1.626 | 0.3977, | 2.855 | 0.010 |
| Total homocysteine (µmol/L) | -0.0537 | -0.1128, | 0.0052 | 0.074 |
| Beta carotene (ng/ml) | 0.0020 | 0.0007, | 0.0033 | 0.002 |
| Retinol (ng/ml) | 0.0010 | -0.0012, | 0.0034 | 0.373 |
| Triglycerides (mg/dL) | 0.0028 | -0.0037, | 0.0094 | 0.393 |
| ω-3 fatty acids (µmol/L) | 0.0077 | 0.0029, | 0.0125 | 0.002 |
| Trans-Fatty acids (µmol/L) | -0.2647 | -0.5446 | 0.0251 | 0.073 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.005.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S3.3. Association between the adapted Mediterranean Diet Score Z-score method for adolescents excluding alcohol (zMDS\_A\_NA) and nutritional biomarkers (underreporters excluded)**  |
|  | zMDS\_A\_NA (underreporters excluded) (N=552) |
|  | Β | 95% CI | *p*-value |
|  |  |  |  |  |
| Vitamin D (nmol/L) | 0.0173 | 0.0066, | 0.0280 | 0.002 |
| Vitamin C (mg/dL) | 0.1433 | 0.0656, | 0.2210 | <0.001 |
| Plasma folate (nmol/L) | 0.0432 | 0.0188, | 0.0676 | 0.001 |
| Holo-Transcobalamin (TC-II/B12) (pmol/L)† | 1.181 | -1.155, | 2.518 | 0.083 |
| Total homocysteine (µmol/L) | -0.0391 | -0.1059, | 0.0277 | 0.251 |
| Beta carotene (ng/ml) | 0.0017 | 0.0003, | 0.0032 | 0.013 |
| Retinol (ng/ml) | 0.0009 | -0.0012, | 0.0035 | 0.460 |
| Triglycerides (mg/dL) | 0.0015 | -0.0063, | 0.0094 | 0.706 |
| ω-3 fatty acids (µmol/L) | 0.0072 | 0.0018, | 0.0126 | 0.008 |
| Trans-Fatty acids (µmol/L) | -0.268 | -0.586, | 0.049 | 0.098 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.005.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S3.4. Association between the adapted KIDMED for adolescents: 15 components (not including pulses) and nutritional biomarkers**  |
|  | KIDMED\_A\_NP (N=552) |
|  | Β | 95% CI | *p*-value |
|  |  |  |  |  |
| Vitamin D (nmol/L) | 0.0140 | 0.0047, | 0.0233 | 0.003 |
| Vitamin C (mg/dL) | 0.1023 | 0.0309, | 0.1737 | 0.005 |
| Plasma folate (nmol/L) | 0.0338 | 0.0102, | 0.0575 | 0.005 |
| Holo-Transcobalamin (TC-II/B12) (pmol/L)† | 1.9085 | 0.6906, | 3.1265 | 0.002 |
| Total homocysteine (µmol/L) | -0.1037 | -0.1728 | -0.0345 | 0.003 |
| Beta carotene (ng/ml) | 0.0022 | 0.0008, | 0.0035 | 0.002 |
| Retinol (ng/ml) | 0.0005 | -0.0018, | 0.0029 | 0.661 |
| Triglycerides (mg/dL) | 0.0006 | -0.0052 | 0.0065 | 0.827 |
| ω-3 fatty acids (µmol/L) | 0.0064 | 0.0014, | 0.0114 | 0.011 |
| Trans-Fatty acids (µmol/L) | -0.4011 | -0.7151, | -0.0870 | 0.012 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.005.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S3.5. Association between the adapted KIDMED for adolescents: 14 components (without hamburger and not including pulses) and nutritional biomarkers**  |
|  | KIDMED\_A\_NPH (N=552) |
|  | Β | 95% CI | *p*-value |
|  |  |  |  |  |
| Vitamin D (nmol/L) | 0.0133 | 0.0042, | 0.0224 | 0.004 |
| Vitamin C (mg/dL) | 0.0970 | 0.0292, | 0.1647 | 0.005 |
| Plasma folate (nmol/L) | 0.0303 | 0.0072, | 0.0534 | 0.010 |
| Holo-Transcobalamin (TC-II/B12) (pmol/L)† | 1.7438 | 0.5522, | 2.9354 | 0.004 |
| Total homocysteine (µmol/L) | -0.1016 | -0.1692 | -0.0340 | 0.003 |
| Beta carotene (ng/ml) | 0.0022 | 0.0008, | 0.0035 | 0.001 |
| Retinol (ng/ml) | 0.0002 | -0.0021, | 0.0025 | 0.847 |
| Triglycerides (mg/dL) | 0.0004 | -0.0052, | 0.0061 | 0.881 |
| ω-3 fatty acids (µmol/L) | 0.0059 | 0.0011, | 0.0108 | 0.016 |
| Trans-Fatty acids (µmol/L) | -0.4085 | -0.7155, | -0.1014 | 0.009 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.005.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S3.6. Association between the adapted Mediterranean diet score for adolescents (MDS\_A) and nutritional biomarkers** |
|  | MDS\_A (N=697) |
|  | Β | 95% CI | *p*-value |
|  |  |  |  |  |
| Vitamin D (nmol/L) | 0.0068 | 0.0017, | 0.0120 | 0.009 |
| Vitamin C (mg/dL) | 0.0312 | -0.0062, | 0.0687 | 0.102 |
| Plasma folate (nmol/L) | 0.0164 | 0.0044, | 0.0284 | 0.007 |
| Holo-Transcobalamin (TC-II/B12) (pmol/L)† | 1. 045 | 0.4062, | 1.685 | 0.001 |
| Total homocysteine (µmol/L) | -0.0315 | -0.0619, | -0.0010 | 0.042 |
| Beta carotene (ng/ml) | 0.0006 | -0.0000, | 0.0013 | 0.080 |
| Retinol (ng/ml) | 0.0001 | -0.0011, | 0.0013 | 0.867 |
| Triglycerides (mg/dL) | 0.0011 | -0.0022, | 0.0045 | 0.501 |
| ω-3 fatty acids (µmol/L) | 0.0032 | 0.0007, | 0.0057 | 0.011 |
| Trans- fatty acids (µmol/L) | -0.1228 | -0.2729, | 0.0273 | 0.109 |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.005.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S3.7. Association between the adapted Mediterranean diet score for adolescents (MDS\_A) and nutritional biomarkers (underreporters excluded)** |
|  | MDS\_A (underreporters excluded) (N=552) |
|  | Β | 95% CI | *p*-value |
|  |  |  |  |  |
| Vitamin D (nmol/L) | 0.0075 | 0.0018, | 0.0131 | 0.009 |
| Vitamin C (mg/dL) | 0.0300 | -0.0106, | 0.0708 | 0.147 |
| Plasma folate (nmol/L) | 0.0222 | 0.0097, | 0.0346 | <0.0001 |
| Holo-Transcobalamin (TC-II/B12) (pmol/L)† | 0.9647 | 0.2759, | 1.6336 | 0.006 |
| Total homocysteine (µmol/L) | -0.0175 | -0.0517, | 0.0106 | 0.314 |
| Beta carotene (ng/ml) | 0.0005 | -0.0001, | 0.0013 | 0.142 |
| Retinol (ng/ml) | 0.0003 | -0.0010, | 0.0017 | 0.610 |
| Triglycerides (mg/dL) | 0.0010 | -0.0030, | 0.0050 | 0.624 |
| ω-3 fatty acids (µmol/L) | 0.0022 | 0.0005, | 0.0050 | 0.115 |
| Trans-Fatty acids (µmol/L) | -0.1422 | -0.3051, | 0.0206 | 0.087 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.005.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S3.8. Association between the adapted Mediterranean diet score for adolescents excluding alcohol (MDS\_A\_NA) and nutritional biomarkers**  |
|  | MDS\_A\_NA (N=697) |
|  | Β | 95% CI | *p*-value |
|  |  |  |  |  |
| Vitamin D (nmol/L) | 0.0067 | 0.0018, | 0.0117 | 0.008 |
| Vitamin C (mg/dL) | 0.0352 | -0.0007, | 0.0711 | 0.055 |
| Plasma folate (nmol/L) | 0.0157 | 0.0042, | 0.0273 | 0.007 |
| Holo-Transcobalamin (TC-II/B12) (pmol/L)† | 0.9578 | 0.3468 | 1.568 | 0.002 |
| Total homocysteine (µmol/L) | -0.0285 | -0.0577, | 0.0007 | 0.056 |
| Beta carotene (ng/ml) | 0.0006 | 0.0000, | 0.0013 | 0.045 |
| Retinol (ng/ml) | 0.0002 | -0.0009, | 0.0013 | 0.743 |
| Triglycerides (mg/dL) | 0.0006 | -0.0025, | 0.0038 | 0.686 |
| ω-3 fatty acids (µmol/L) | 0.0036 | 0.0012, | 0.0060 | 0.003 |
| Trans- fatty acids (µmol/L) | -0.0904 | -0.2341, | 0.0532 | 0.217 |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.005.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S3.9. Association the adapted Mediterranean diet score for adolescents excluding alcohol (MDS\_A\_NA) and nutritional biomarkers (underreporters excluded)**  |
|  | MDS\_A\_NA (underreporters excluded) (N=552) |
|  | Β | 95% CI | *p*-value |
|  |  |  |  |  |
| Vitamin D (nmol/L) | 0.0078 | 0.0023, | 0.0133 | 0.005 |
| Vitamin C (mg/dL) | 0.0367 | -0.0027, | 0.0762 | 0.068 |
| Plasma folate (nmol/L) | 0.0216 | 0.0095, | 0.0337 | <0.0001 |
| Holo-Transcobalamin (TC-II/B12) (pmol/L)† | 0.9816 | 0.3142, | 1.6490 | 0.004 |
| Total homocysteine (µmol/L) | -0.0136 | -0.0469, | 0.0195 | 0.418 |
| Beta carotene (ng/ml) | 0.0005 | -0.0001, | 0.0012 | 0.140 |
| Retinol (ng/ml) | 0.0004 | -0.0008, | 0.0017 | 0.517 |
| Triglycerides (mg/dL) | 0.0012 | -0.0026, | 0.0050 | 0.542 |
| ω-3 fatty acids (µmol/L) | 0.0021 | -0.0005, | 0.0048 | 0.121 |
| Trans- fatty acids (µmol/L) | -0.1129 | -0.2706, | 0.0446 | 0.160 |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.005.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S3.10. Association between the adapted Mediterranean Diet Score Z-score method energy adjusted for adolescents (zEnMDS\_A) and nutritional biomarkers**  |
|  | zEnMDS\_A (N=697) |
|  | Β | 95% CI | *p*-value |
|  |  |  |  |  |
| Vitamin D (nmol/L) | 0.0102 | -0.0011, | 0.0217 | 0.077 |
| Vitamin C (mg/dL) | 0.1174 | 0.0361, | 0.1987 | 0.005 |
| Plasma folate (nmol/L) | 0.0446 | 0.0186, | 0.0707 | 0.001 |
| Holo-Transcobalamin (TC-II/B12) (pmol/L)† | 0.6504 | -0.7294, | 2.030 | 0.355 |
| Total homocysteine (µmol/L) | -0.0055 | -0.0720, | 0.0609 | 0.870 |
| Beta carotene (ng/ml) | 0.0019 | 0.0005, | 0.0034 | 0.008 |
| Retinol (ng/ml) | 0.00272 | -0.00007, | 0.00536 | 0.044 |
| Triglycerides (mg/dL) | 0.0087 | 0.0014, | 0.0160 | 0.019 |
| ω-3 fatty acids (µmol/L) | 0.0095 | 0.0041, | 0.0150 | 0.001 |
| Trans-Fatty acids (µmol/L) | -0.5204 | -0.8480, | -0.1927 | 0.002 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.005.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S3.11. Association between the adapted Mediterranean Diet Score Z-score method energy adjusted for adolescents (zEnMDS\_A) and nutritional biomarkers (underreporters excluded)** |
|  | zEnMDS\_A (underreporters excluded) (N=552) |
|  | Β | 95% CI | *p*-value |
|  |  |  |  |  |
| Vitamin D (nmol/L) | 0.0183 | 0.0063, | 0.0302 | 0.003 |
| Vitamin C (mg/dL) | 0.1371 | 0.0515, | 0.2227 | 0.002 |
| Plasma folate (nmol/L) | 0.0459 | 0.0193, | 0.0726 | 0.001 |
| Holo-Transcobalamin (TC-II/B12) (pmol/L)† | 0.6207 | -0.8304, | 2.071 | 0.401 |
| Total homocysteine (µmol/L) | -0.0254 | -0.0984, | 0.0476 | 0.494 |
| Beta carotene (ng/ml) | 0.0020 | 0.0005, | 0.0036 | 0.008 |
| Retinol (ng/ml) | 0.0013 | -0.0014, | 0.0042 | 0.346 |
| Triglycerides (mg/dL) | 0.0034 | -0.0051, | 0.0119 | 0.430 |
| ω-3 fatty acids (µmol/L) | 0.0094 | 0.0036, | 0.0153 | 0.002 |
| Trans-Fatty acids (µmol/L) | -0.5144 | -0.8592, | -0.1695 | 0.004 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.005.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S3.12. Association between the adapted Mediterranean Diet Score Z-score method energy adjusted for adolescents excluding alcohol (zEnMDS\_A\_NA) and nutritional biomarkers**  |
|  | zEnMDS\_A\_NA (N=697) |
|  | Β | 95% CI | *p*-value |
|  |  |  |  |  |
| Vitamin D (nmol/L) | 0.0105 | 0.0003, | 0.0207 | 0.042 |
| Vitamin C (mg/dL) | 0.1209 | 0.0471, | 0.1947 | 0.001 |
| Plasma folate (nmol/L) | 0.0433 | 0.0197, | 0.0670 | <0.0001 |
| Holo-Transcobalamin (TC-II/B12) (pmol/L)† | 0.8043 | -0.4485, | 2.057 | 0.208 |
| Total homocysteine (µmol/L) | -0.0135 | -0.0739, | 0.0469 | 0.661 |
| Beta carotene (ng/ml) | 0.0019 | 0.0005, | 0.0032 | 0.005 |
| Retinol (ng/ml) | 0.0022 | 0.0002, | 0.0050 | 0.028 |
| Triglycerides (mg/dL) | 0.0070 | 0.0004, | 0.0137 | 0.037 |
| ω-3 fatty acids (µmol/L) | 0.0099 | 0.0050, | 0.0148 | <0.0001 |
| Trans-Fatty acids (µmol/L) | -0.3907 | -0.6876, | -0.0937 | 0.010 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.005.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S3.13. Association between the adapted Mediterranean Diet Score Z-score method energy adjusted for adolescents excluding alcohol (zEnMDS\_A\_NA) and nutritional biomarkers (underreporters excluded)** |
|  | zEnMDS\_A\_NA (underreporters excluded) (N=552) |
|  | Β | 95% CI | *p*-value |
|  |  |  |  |  |
| Vitamin D (nmol/L) | 0.0197 | 0.0091, | 0.0303 | 0.042 |
| Vitamin C (mg/dL) | 0.1354 | 0.0577, | 0.2130 | 0.001 |
| Plasma folate (nmol/L) | 0.0459 | 0.0218, | 0.0700 | <0.0001 |
| Holo-Transcobalamin (TC-II/B12) (pmol/L)† | 0.7814 | -0.5317, | 2.0946 | 0.243 |
| Total homocysteine (µmol/L) | -0.0314 | -0.0977, | 0.0347 | 0.351 |
| Beta carotene (ng/ml) | 0.0020 | 0.0006, | 0.0034 | 0.004 |
| Retinol (ng/ml) | 0.0014 | -0.0011, | 0.0039 | 0.278 |
| Triglycerides (mg/dL) | 0.0025 | -0.0052, | 0.0103 | 0.520 |
| ω-3 fatty acids (µmol/L) | 0.0094 | 0.0041, | 0.0146 | 0.001 |
| Trans-Fatty acids (µmol/L) | -0.3639 | -0.6761, | -0.0517 | 0.022 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.005.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S3.14. Association between the adapted Mediterranean Diet Score for adolescents: 8 components, including 6 positive components and 2 negative (dairy & meat) and nutritional biomarkers**  |
|  | MDS\_A\_NA\_6P\_2N (N=697) |
|  | Β | 95% CI | *p*-value |
|  |  |  |  |  |
| Vitamin D (nmol/L) | -0.0001 | -0.0048, | 0.0044 | 0.945 |
| Vitamin C (mg/dL) | 0.0446 | 0.0113, | 0.0779 | 0.009 |
| Plasma folate (nmol/L) | 0.0050 | -0.0057, | 0.0158 | 0.259 |
| Holo-Transcobalamin (TC-II/B12) (pmol/L)† | -0.1315 | -0.7003, | 0.4371 | 0.650 |
| Total homocysteine (µmol/L) | 0.0071 | -0.0202 | 0.0345 | 0.609 |
| Beta carotene (ng/ml) | 0.0007 | 0.0001, | 0.0014 | 0.014 |
| Retinol (ng/ml) | 0.0003 | -0.0008, | 0.0014 | 0.588 |
| Triglycerides (mg/dL) | 0.0008 | -0.0021, | 0.0038 | 0.576 |
| ω-3 fatty acids (µmol/L) | 0.0041 | 0.0019, | 0.0063 | <0.0001 |
| Trans-Fatty acids (µmol/L) | 0.0229 | -0.1118, | -0.1577 | 0.738 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.005.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S3.15. Association between the adapted Mediterranean Diet Score for adolescents: 9 components, including 6 positive components and 3 negative (dairy, meat & alcohol) and nutritional biomarkers**  |
|  | MDS\_A\_6P\_3N (N=697) |
|  | Β | 95% CI | *p*-value |
|  |  |  |  |  |
| Vitamin D (nmol/L) | -0.0000 | -0.0048, | 0.0047 | 0.984 |
| Vitamin C (mg/dL) | 0.0402 | 0.0056, | 0.0749 | 0.023 |
| Plasma folate (nmol/L) | 0.0056 | -0.0055, | 0.0168 | 0.321 |
| Holo-Transcobalamin (TC-II/B12) (pmol/L)† | -0.0438 | -0.6393, | 0.5517 | 0.885 |
| Total homocysteine (µmol/L) | 0.0039 | -0.0245 | 0.0323 | 0.786 |
| Beta carotene (ng/ml) | 0.0007 | 0.0000, | 0.0013 | 0.033 |
| Retinol (ng/ml) | 0.0002 | -0.0009, | 0.0013 | 0.722 |
| Triglycerides (mg/dL) | 0.0014 | -0.0017, | 0.0045 | 0.377 |
| ω-3 fatty acids (µmol/L) | 0.0037 | 0.0014, | 0.0060 | 0.002 |
| Trans-Fatty acids (µmol/L) | -0.0083 | -0.1487, | 0.1320 | 0.907 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.005.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S3.16. Association between the adapted Mediterranean Diet Score for adolescents: 8 components, including 6 positive components and 2 negative (dairy & meat) and nutritional biomarkers (underreporters excluded)** |
|  | MDS\_A\_NA\_6P\_2N (underreporters excluded) (N=552) |
|  | Β | 95% CI | *p*-value |
|  |  |  |  |  |
| Vitamin D (nmol/L) | 0.0005 | -0.0046, | 0.0057 | 0.832 |
| Vitamin C (mg/dL) | 0.0396 | 0.0024, | 0.0767 | 0.037 |
| Plasma folate (nmol/L) | 0.0134 | 0.0018, | 0.0249 | 0.023 |
| Holo-Transcobalamin (TC-II/B12) (pmol/L)† | 0.1267 | -0.5044, | 0.7580 | 0.693 |
| Total homocysteine (µmol/L) | 0.0075 | -0.0239 | 0.0391 | 0.637 |
| Beta carotene (ng/ml) | 0.0008 | 0.0001, | 0.0015 | 0.016 |
| Retinol (ng/ml) | 0.0003 | -0.0008, | 0.0016 | 0.557 |
| Triglycerides (mg/dL) | 0.0031 | -0.0005, | 0.0067 | 0.097 |
| ω-3 fatty acids (µmol/L) | 0.0023 | -0.0001, | 0.0049 | 0.067 |
| Trans-Fatty acids (µmol/L) | -0.0052 | -0.1552, | 0.1446 | 0.945 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.005.† Variable was log-transformed to obtain a normal distribution. |
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| **Supplemental Table S3.17. Association between the adapted Mediterranean Diet Score for adolescents: 9 components, including 6 positive components and 3 negative (dairy, meat & alcohol) and nutritional biomarkers (underreporters excluded)** |
|  | MDS\_A\_6P\_3N (underreportersexcluded) (N=552) |
|  | Β | 95% CI | *p*-value |
|  |  |  |  |  |
| Vitamin D (nmol/L) | 0.0003 | -0.0050, | 0.0057 | 0.909 |
| Vitamin C (mg/dL) | 0.0329 | -0.0057, | 0.0715 | 0.095 |
| Plasma folate (nmol/L) | 0.0139 | 0.0019, | 0.0258 | 0.023 |
| Holo-Transcobalamin (TC-II/B12) (pmol/L)† | 0.1031 | -0.5523, | 0.7583 | 0.757 |
| Total homocysteine (µmol/L) | 0.0035 | -0.0291 | 0.0362 | 0.830 |
| Beta carotene (ng/ml) | 0.0008 | 0.0001, | 0.0015 | 0.019 |
| Retinol (ng/ml) | 0.0002 | -0.0010, | 0.0015 | 0.666 |
| Triglycerides (mg/dL) | 0.0029 | -0.0008 | 0.0067 | 0.131 |
| ω-3 fatty acids (µmol/L) | 0.0024 | -0.0001, | 0.0050 | 0.069 |
| Trans-Fatty acids (µmol/L) | -0.0336 | -0.1894, | 0.1221 | 0.672 |
|  |  |  |  |  |
| Multilevel regression analyses with inclusion of a random intercept for centre and corrected for age and sex as independent variables. Bonferroni correction resulted in level of significance <0.005. † Variable was log-transformed to obtain a normal distribution. |
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