Supplementary Table 1. Magnesium and calcium intake from foods and risk of reflux oesophagitis, Barrett’s oesophagus and oesophageal adenocarcinoma stratified by vitamin D intake.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Vitamin D intake <median a | | Vitamin D ≥median a | |  |
|  | Controls/Cases | Adjusted b  OR (95%CI) | Controls/ Cases | Adjusted b  OR (95%CI) | *P* for interaction |
| REFLUX OESOPHAGITIS c |  |  |  |  |  |
| Calcium (mg/1000kcal/d)  <399.7  399.7- <482.9  ≥482.9 | 19/47  16/38  23/29 | 1.00  1.90 (0.48-7.48)  0.74 (0.20-2.77) | 19/46  23/30  15/18 | 1.00  0.46 (0.12-1.73)  1.78 (0.28-11.08) |  |
| *P* for trend |  | p=0.68 |  | p=0.69 | 0.15 |
| Magnesium (mg/1000kcal/d)  <130.6  130.6- <155.6  ≥155.6 | 19/54  21/35  18/25 | 1.00  0.51 (0.13-2.06)  0.33 (0.07-1.49) | 19/55  18/24  20/15 | 1.00  0.64 (0.15-2.87)  0.84 (0.12-6.01) |  |
| *P* for trend |  | p=0.16 |  | p=0.90 | 0.92 |
| Ca:mg ratio  <3.15  ≥3.15 | 27/52  31/62 | 1.00  1.33 (0.46-3.86) | 30/45  27/49 | 1.00  1.05 (0.30-3.72) |  |
| *P* for trend |  | p=0.61 |  | p=0.94 | 0.62 |
| BARRETT’S OESOPHAGUS |  |  |  |  |  |
| Calcium (mg/1000kcal/d)  <395.5  395.5 - <474.0  ≥474.0 | 33/40  45/30  48/28 | 1.00  0.63 (0.24-1.67)  0.70 (0.25-2.00) | 51/40  39/33  36/41 | 1.00  1.34 (0.53-3.35)  2.09 (0.70-6.19) |  |
| *P* for trend |  | p=0.51 |  | p=0.18 | 0.21 |
| Magnesium (mg/1000kcal/d)  <134.0  134.0 <157.7  ≥157.7 | 39/56  50/31  37/11 | 1.00  0.42 (0.15-1.17)  0.18 (0.04-0.80) | 45/53  34/39  47/22 | 1.00  0.96 (0.34-2.17)  0.36 (0.09-1.45) |  |
| *P* for trend |  | p=0.02 |  | p=0.17 | 0.44 |
| Ca:mg ratio  <3.05  ≥3.05 | 56/39  70/59 | 1.00  1.13 (0.51-2.51) | 70/43  56/71 | 1.00  1.45 (0.62-3.37) |  |
| *P* for trend |  | p=0.76 |  | p=0.39 | 0.23 |
| OESOPHAGEAL ADENOCARCINOMA | |  |  |  |  |
| Calcium (mg/1000kcal/d)  <395.5  395.5 - <474.0  ≥474.0 | 33/29  45/25  48/29 | 1.00  0.30 (0.09-1.05)  0.68 (0.20-2.34) | 51/57  39/31  36/47 | 1.00  0.67 (0.27-1.65)  1.73 (0.60-4.98) |  |
| *P* for trend |  | p=0.53 |  | p=0.43 | 0.13 |
| Magnesium (mg/1000kcal/d)  <134.0  134.0 <157.7  ≥157.7 | 39/50  50/24  37/9 | 1.00  0.72 (0.22-2.36)  0.68 (0.11-4.27) | 45/71  34/32  47/32 | 1.00  0.87 (0.29-2.60)  0.86 (0.24-3.11) |  |
| *P* for trend |  | p=0.61 |  | p=0.82 | 0.51 |
| Ca:mg ratio  <3.05  ≥3.05 | 56/32  70/51 | 1.00  0.44 (0.16-1.20) | 70/56  56/79 | 1.00  1.18 (0.49-2.80) |  |
| *P* for trend |  | p=0.11 |  | p=0.71 | 0.30 |

a Vitamin D intake per 1000kcal categories defined by the median value in Northern Ireland controls (0.97) for reflux oesophagitis analysis and all controls (0.94) for Barrett’s oesophagus and oesophageal adenocarcinoma analysis.

b Adjusted for age (years), sex, energy intake (by nutrient density method + log kcal/d), smoking status (current/previous/never), BMI 5 years prior, education (years), occupation (manual/non-manual), alcohol (g/d), regular NSAID use (ever/never), *Helicobacter pylori* infection (seropositive/seronegative), location (Northern Ireland/Republic of Ireland), antioxidant index score, energy-adjusted daily intakes of fat (g) and carbohydrate (g). Energy adjusted daily intakes of calcium (mg) and magnesium (mg) were mutually adjusted for each other.

c Analysis limited to Northern Ireland controls only.

Supplementary Table 2. Vitamin D intake from foods and risk of reflux oesophagitis, Barrett’s oesophagus and oesophageal adenocarcinoma stratified by Ca:mg intake ratios.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Ca:mg ratio <median a | | Ca:mg ratio ≥median a | |  |
|  | Controls/Cases | Adjusted b  OR (95%CI) | Controls/ Cases | Adjusted b  OR (95%CI) | *P* for interaction |
| REFLUX OESOPHAGITIS c |  |  |  |  |  |
| Vitamin D (μg/1000kcal/d)  <0.85  0.85 - <1.18  ≥1.18 | 19/41  16/34  22/22 | 1.00  1.96 (0.52-7.45)  0.40 (0.11-1.41) | 19/46  23/31  16/34 | 1.00  0.45 (0.13-1.59)  0.64 (0.17-2.34) |  |
| *P* for trend |  | p=0.09 |  | p=0.56 | 0.31 |
| BARRETT’S OESOPHAGUS |  |  |  |  |  |
| Vitamin D (μg/1000kcal/d)  <0.79  0.79 - <1.12  ≥1.12 | 39/31  39/19  48/32 | 1.00  0.41 (0.14-1.22)  0.82 (0.29-2.32) | 45/37  46/48  35/45 | 1.00  0.84 (0.37-1.90)  1.11 (0.48-2.56) |  |
| *P* for trend |  | p=0.95 |  | p=0.73 | 0.13 |
| OESOPHAGEAL ADENOCARCINOMA | |  |  |  |  |
| Vitamin D (μg/1000kcal/d)  <0.79  0.79 - <1.12  ≥1.12 | 39/21  39/26  48/41 | 1.00  2.05 (0.69-6.11)  2.07 (0.69-6.25) | 45/30  46/46  35/54 | 1.00  1.00 (0.35-2.83)  2.39 (0.80-7.13) |  |
| *P* for trend |  | p=0.30 |  | p=0.08 | 0.87 |

Ca:mg: Calcium:magnesium intake

a Calcium:magnesium intake ratio categories defined by the median value in Northern Ireland controls (3.15) for reflux oesophagitis analysis and all controls (3.05) for Barrett’s oesophagus and oesophageal adenocarcinoma analysis.

b Adjusted for age (years), sex, energy intake (by nutrient density method + log kcal/d), smoking status (current/previous/never), BMI 5 years prior, education (years), occupation (manual/non-manual), alcohol (g/d), regular NSAID use (ever/never), *Helicobacter pylori* infection (seropositive/seronegative), location (Northern Ireland/Republic of Ireland), antioxidant index score, energy-adjusted daily intakes of fat (g) and carbohydrate (g).

c Analysis limited to Northern Ireland controls only.