**Online Supplementary Material**

**Substitutions between dairy products and risk of stroke: Results from the EPIC-NL cohort**

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**Supplementary table 1. Participant Characteristics Across Quintiles of Whole-Fat Milk Intake in the EPIC-NL Cohort.**

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|  | **Quintiles of whole-fat milk** |
|  | **Q1** | **Q2** | **Q3** | **Q4** | **Q5** |
| Total stroke (n) | 173 | 166 | 184 | 197 | 164 |
| Sex, men (%) | 20.0 | 24.9 | 22.4 | 24.8 | 34.8 |
| Age (years) | 52.3(35.1 ; 63.5) | 51.2(31.4 ; 63.0) | 51.6(31.6 ; 64.1) | 51.6(31.1 ; 63.8) | 50.1(27.6 ; 63.0) |
| Body mass index (kg/m2) | 25.3(21.2 ; 31.3) | 25.1(21.2 ; 30.7) | 25.3(21.3 ; 30.7) | 25.2(21.3 ; 30.7) | 24.9(20.8 ; 30.6) |
| Waist circumference (cm) |  |  |  |  |  |
| Men  | 93.2(80.0 ; 107.4) | 92.0(79.5 ; 106.0) | 92.0(79.0 ; 105.0) | 92.0(79.8 ; 106.5) | 90.9(78.3 ; 106.3) |
| Women | 81.9(70.0 ; 98.0) | 81.0(70.0 ; 96.0) | 82.0(70.4 ; 97.0) | 82.0(71.0 ; 96.5) | 81.3(70.5 ; 97.0) |
| Low educational attainment (%) | 58.8 | 57.0 | 58.8 | 58.4 | 56.4 |
| Current smoker (%) | 28.3 | 30.2 | 28.9 | 28.8 | 35.4 |
| Physically inactive | 8.3 | 7.2 | 7.1 | 6.8 | 7.6 |
| Alcohol consumption (g/day) | 6.1(0.01 ; 32.7) | 5.3(0.02 ; 30.3) | 5.1(0.02 ; 29.4) | 4.5(0.02 ; 28.7) | 4.3(0.01 ; 30.3) |
| Hypertension (%) | 40.7 | 37.0 | 37.6 | 37.2 | 33.7 |
| Hypercholesterolemia (%) | 8.7 | 9.3 | 8.2 | 8.9 | 7.2 |
| Diabetes (%) | 1.5 | 1.2 | 1.3 | 1.8 | 1.5 |
| Prevalent myocardial infarction (%) | 1.3 | 1.1 | 1.2 | 1.4 | 1.4 |
| **Habitual food consumption (servings/day)** |  |  |  |  |  |
| Total dairy | 3.22(1.19 ; 6.25) | 3.39(1.52 ; 6.25) | 3.75(2.00 ; 6.45) | 4.35(2.59 ; 7.13) | 5.41(3.12 ; 8.95) |
| Low-fat milk | 0.05(0.00 ; 0.18) | 0.24(0.07 ; 0.50) | 0.77(0.19 ; 0.95) | 1.19(0.31 ; 1.70) | 1.36(0.24 ; 3.02) |
| Whole-fat milk | 0.01(0.00 ; 0.03) | 0.07(0.04 ; 0.10) | 0.15(0.12 ; 0.19) | 0.28(0.21 ; 0.34) | 0.59(0.39 ; 1.54) |
| Buttermilk | 0.00(0.00 ; 2.00) | 0.00(0.00 ; 2.00) | 0.00(0.00 ; 1.00) | 0.00(0.00 ; 1.00) | 0.00(0.00 ; 1.00) |
| Low-fat yoghurt | 0.11(0.00 ; 0.64) | 0.15(0.01 ; 0.68) | 0.16(0.01 ; 0.67) | 0.17(0.02 ; 0.71) | 0.15(0.01 ; 0.67) |
| Whole-fat yoghurt | 0.03(0.00 ; 0.24) | 0.05(0.00 ; 0.27) | 0.05(0.01 ; 0.27) | 0.07(0.01 ; 0.29) | 0.07(0.01 ; 0.31) |
| Cheese | 1.54(0.32 ; 3.51) | 1.5(0.33 ; 3.38) | 1.46(0.42 ; 3.30) | 1.50(0.43 ; 3.29) | 1.50(0.33 ; 3.50) |
| Butter | 0.40(0.08 ; 1.91) | 0.44(0.12 ; 1.89) | 0.44(0.12 ; 1.79) | 0.46(0.13 ; 1.86) | 0.56(0.15 ; 2.75) |
| Fruit | 2.43(0.72 ; 4.94) | 2.37(0.71 ; 4.67) | 2.43(0.83 ; 4.69) | 2.49(0.89 ; 4.78) | 2.30(0.72 ; 4.76) |
| Vegetables | 1.10(0.62 ; 1.80) | 1.08(0.63 ; 1.73) | 1.08(0.65 ; 1.73) | 1.08(0.66 ; 1.71) | 1.08(0.62 ; 1.73) |
| Fresh red meat | 0.40(0.10 ; 0.70) | 0.40(0.11 ; 0.70) | 0.41(0.12 ; 0.69) | 0.40(0.12 ; 0.67) | 0.42(0.11 ; 0.72) |
| Processed red meat | 1.29(0.13 ; 4.07) | 1.31(0.19 ; 4.01) | 1.37(0.23 ; 3.97) | 1.37(0.24 ; 3.94) | 1.57(0.20 ; 4.40) |
| Fish | 0.05(0.00 ; 0.13) | 0.05(0.00 ; 0.13) | 0.06(0.01 ; 0.13) | 0.06(0.00 ; 0.13) | 0.06(0.00 ; 0.13) |

Q: quintile. Median (80 % central range) unless otherwise indicated.

**Supplementary table 2. Participant Characteristics Across Quintiles of Buttermilk Intake in the EPIC-NL Cohort.**

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|  | **Quintilesa of buttermilk** |
|  | **Q1** | **Q3** | **Q4** | **Q5** |
| Total stroke (n) | 453 | 58 | 173 | 200 |
| Sex, men (%) | 31.7 | 25.6 | 22.1 | 11.8 |
| Age (years) | 50.1 (28.2 ; 62.7) | 50.3(29 ; 61.5) | 51.8(32.5 ; 63.2) | 55.0(40.2 ; 65.4) |
| Body mass index (kg/m2) | 25.1(21.1 ; 30.7) | 24.6(21.0 ; 29.8) | 25.3(21.3 ; 31.0) | 25.4(21.5 ; 31.2) |
| Waist circumference (cm) |  |  |  |  |
| Men  | 91.5(78.5 ; 106.0) | 90.5(78.6 ; 106.8) | 93.0(80.0 ; 107.0) | 94.0(81.5 ; 107.0) |
| Women | 81.0(69.8 ; 96.0) | 80.0(70.0 ; 95.0) | 82.0(71.0 ; 97.5) | 83.0(72.0 ; 98) |
| Low educational attainment (%) | 57.8 | 51.6 | 56.6 | 61.7 |
| Current smoker (%) | 33.7 | 32.6 | 29.2 | 21.6 |
| Physically inactive | 8.8 | 6.2 | 5.9 | 5.8 |
| Alcohol consumption (g/day) | 4.6(0.01 ; 30.8) | 5.8(0.07 ; 32.5) | 5.8(0.04 ; 30.6) | 4.9(0.02 ; 27.1) |
| Hypertension (%) | 35.8 | 32.5 | 37.6 | 42.5 |
| Hypercholesterolemia (%) | 9.1 | 7.9 | 8.0 | 7.5 |
| Diabetes (%) | 1.3 | 0.9 | 1.6 | 2.1 |
| Prevalent myocardial infarction (%) | 1.4 | 1.2 | 1.3 | 1.1 |
| **Habitual food consumption (servings/day)** |  |  |  |  |
| Total dairy | 3.55(1.52 ; 6.68) | 3.77(1.82 ; 7.06) | 4.24(2.27 ; 7.24) | 5.00(3.04 ; 8.10) |
| Low-fat milk | 0.48(0.04 ; 1.73) | 0.61(0.07 ; 1.74) | 0.65(0.079 ; 1.86) | 0.25(0.03 ; 1.42) |
| Whole-fat milk | 0.16(0.01 ; 0.62) | 0.18(0.02 ; 0.65) | 0.19(0.02 ; 0.65) | 0.09(0.00 ; 0.38) |
| Buttermilk |  0.00(0.00 ; 0.00) | 0.03(0.01 ; 0.03) | 0.17(0.05 ; 0.57) | 1.00(1.00 ; 2.00) |
| Low-fat yoghurt | 0.11(0.01 ; 0.62) | 0.13(0.01 ; 0.57) | 0.19(0.02 ; 0.70) | 0.23(0.02 ; 0.83) |
| Whole-fat yoghurt | 0.04(0.00 ; 0.25) | 0.06(0.01 ; 0.28) | 0.07(0.01 ; 0.28) | 0.08(0.01 ; 0.33) |
| Cheese | 1.37(0.28 ; 3.32) | 1.44(0.42 ; 3.50) | 1.57(0.50 ; 3.48) | 1.69(0.57 ; 3.40) |
| Butter | 0.46(0.12 ; 2.05) | 0.50(0.12 ; 2.35) | 0.49(0.12 ; 2.16) | 0.40(0.10 ; 1.83) |
| Fruit | 2.13(0.60 ; 4.57) | 2.14(0.73 ; 4.55) | 2.48(0.94 ; 4.82) | 2.83(1.24 ; 5.09) |
| Vegetables | 1.04(0.59 ; 1.69) | 1.07(0.63 ; 1.72) | 1.12(0.68 ; 1.77) | 1.17(0.74 ; 1.84) |
| Fresh red meat | 0.43(0.12 ; 0.73) | 0.40(0.10 ; 0.69) | 0.39(0.11 ; 0.67) | 0.35(0.10 ; 0.63) |
| Processed red meat | 1.57(0.20 ; 4.33) | 1.25(0.16 ; 3.9) | 1.33(0.25 ; 3.97) | 1.18(0.16 ; 3.29) |
| Fish | 0.05(0.00 ; 0.13) | 0.05(0.01 ; 0.13) | 0.06(0.01 ; 0.13) | 0.06(0.01 ; 0.14) |

Q: quintile. Median (80 % central range) unless otherwise indicated. aA large proportion of the participants do not consume buttermilk, thus the first quintile includes more than 1/5 of the participants, yielding only four groups.

**Supplementary table 3. Participant Characteristics Across Quintiles of Low-Fat Yoghurt Intake in the EPIC-NL Cohort.**

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|  | **Quintiles of low-fat yoghurt** |
|  | **Q1** | **Q2** | **Q3** | **Q4** | **Q5** |
| Total stroke (n) | 199 | 180 | 168 | 156 | 181 |
| Sex, men (%) | 31.3 | 30.5 | 26.1 | 21.9 | 17.0 |
| Age (years) | 51.1(32.5 ; 62.8) | 50.8(31.3 ; 63.0) | 50.8(29.2 ; 63.2) | 51.7(29.5 ; 63.6) | 52.6(30.6 ; 64.7) |
| Body mass index (kg/m2) | 25.3(21.2 ; 31.3) | 25.2(21.1 ; 30.8) | 25.0(21.1 ; 30.6) | 25.0(21.2 ; 30.4) | 25.2(21.3 ; 30.9) |
| Waist circumference (cm) |  |  |  |  |  |
| Men  | 93.0(79.8 ; 108.0) | 92.3(79.5 ; 105.5) | 91.5(78.5 ; 106.0) | 91.0(78.8 ; 105.5) | 91.0(78.5 ; 106.3) |
| Women | 81.5(70.0 ; 98.0) | 81.5(70.0 ; 97.0) | 81.0(70.0 ; 96.5) | 81.0(70.4 ; 96.0) | 82.0(70.8 ; 97.0) |
| Low educational attainment (%) | 61.5 | 58.0 | 55.2 | 56.0 | 58.6 |
| Current smoker (%) | 43.2 | 33.1 | 28.2 | 23.6 | 23.3 |
| Physically inactive | 11.4 | 7.9 | 6.5 | 5.2 | 6.2 |
| Alcohol consumption (g/day) | 8.1(0.01 ; 41.3) | 5.5(0.02 ; 31.3) | 4.9(0.03 ; 28.7) | 4.4(0.03 ; 24.2) | 3.8(0.01 ; 23.5) |
| Hypertension (%) | 39.2 | 35.8 | 36.5 | 36.1 | 38.6 |
| Hypercholesterolemia (%) | 10.1 | 8.7 | 7.3 | 7.6 | 8.6 |
| Diabetes (%) | 1.7 | 1.3 | 1.2 | 1.3 | 1.9 |
| Prevalent myocardial infarction (%) | 1.8 | 1.2 | 0.9 | 1.2 | 1.4 |
| **Habitual food consumption (servings/day)** |  |  |  |  |  |
| Total dairy | 3.29(1.20 ; 6.62) | 3.81(1.71 ; 7.01) | 4.06(2.03 ; 7.17) | 4.17(2.23 ; 7.06) | 4.65(2.57 ; 7.86) |
| Low-fat milk | 0.26(0.01 ; 1.55) | 0.46(0.05 ; 1.68) | 0.56(0.08 ; 1.77) | 0.60(0.07 ; 1.79 | 0.48(0.06 ; 1.74) |
| Whole-fat milk | 0.11(0.00 ; 0.58) | 0.16(0.01 ; 0.65) | 0.17(0.02 ; 0.65) | 0.16(0.01 ; 0.55) | 0.16(0.01 ; 0.52) |
| Buttermilk | 0.00(0.00 ; 1.00) | 0.00(0.00 ; 1.00) | 0.01(0.00 ; 1.00) | 0.03(0.00 ; 1.29) | 0.03(0.00 ; 2.00) |
| Low-fat yoghurt | 0.01(0.00 ; 0.03) | 0.06(0.04 ; 0.09) | 0.15(0.11 ; 0.20) | 0.30(0.23 ; 0.40) | 0.68(0.46 ; 1.49) |
| Whole-fat yoghurt | 0.01(0.00 ; 0.04) | 0.05(0.01 ; 0.29) | 0.10(0.02 ; 0.38) | 0.09(0.03 ; 0.28) | 0.08(0.03 0.31) |
| Cheese | 1.30(0.21 ; 3.50) | 1.46(0.35 ; 3.35) | 1.51(0.41 ; 3.36) | 1.55(0.48 ; 3.30) | 1.57(0.45 ; 3.45) |
| Butter | 0.48(0.11 ; 2.40) | 0.53(0.14 ; 2.40) | 0.49(0.13 ; 2.17) | 0.43(0.12 ; 1.68) | 0.37(0.09 ; 1.55) |
| Fruit | 1.80(0.39 ; 4.50) | 2.11(0.67 ; 4.45) | 2.40(0.84 ; 4.64) | 2.57(1.08 ; 4.84) | 2.80(1.22 ; 5.13) |
| Vegetables | 1.03(0.56 ; 1.72) | 1.06(0.61 ; 1.68) | 1.08(0.66 ; 1.69) | 1.11(0.67 ; 1.74) | 1.16(0.70 ; 1.85) |
| Fresh red meat | 0.44(0.11 ; 0.74) | 0.43(0.13 ; 0.72) | 0.40(0.11 ; 0.68) | 0.39(0.11 ; 0.68) | 0.37(0.10 ; 0.65) |
| Processed red meat | 1.77(0.20 ; 4.74) | 1.57(0.27 ; 4.40) | 1.36(0.20 ; 3.97) | 1.28(0.19 ; 3.84) | 1.17(0.13 ; 3.58) |
| Fish | 0.05(0.00 ; 0.13) | 0.05(0.00 ; 0.13) | 0.05(0.01 ; 0.13) | 0.06(0.01; 0.13) | 0.06(0.00 ; 0.14) |

Q: quintile. Median (80 % central range) unless otherwise indicated.

**Supplementary table 4. Participant Characteristics Across Quintiles of Whole-Fat Yoghurt Intake in the EPIC-NL Cohort.**

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|  | **Quintiles of whole-fat yoghurt** |
|  | **Q1** | **Q2** | **Q3** | **Q4** | **Q5** |
| Total stroke (n) | 197 | 188 | 194 | 137 | 168 |
| Sex, men (%) | 30.3 | 28.0 | 23.2 | 25.6 | 19.8 |
| Age (years) | 51.0(31.8 ; 62.8) | 50.9(29.2 ; 62.8) | 51.9(30.9 ; 64.3) | 50.5(28.6 ; 62.5) | 52.7(33.1 ; 64.8) |
| Body mass index (kg/m2) | 25.5(21.3 ; 31.4) | 25.5(21.4 ; 31.2) | 25.3(21.3 ; 30.9) | 24.8(21.0 ; 30.3) | 24.7(20.9 ; 29.9) |
| Waist circumference (cm) |  |  |  |  |  |
| Men  | 93.5(79.8 ; 108.0) | 92.5(79.7 ; 107.3) | 92.0(79.0 ; 106.0) | 90.5(78.3 ; 105.0) | 90.1(78.5 ; 104.0) |
| Women | 82.0(70.0 ; 98.0) | 82.0(70.3 ; 98.0) | 82.0(70.3 ; 97.0) | 80.8(70.0 ; 95.5) | 81.0(71.0 ; 96.0) |
| Low educational attainment (%) | 62.8 | 60.4 | 58.9 | 52.0 | 55.3 |
| Current smoker (%) | 42.9 | 32.9 | 26.9 | 27.4 | 21.5 |
| Physically inactive | 11.6 | 8.0 | 6.8 | 5.4 | 5.2 |
| Alcohol consumption (g/day) | 7.5(0.01 ; 40.9) | 4.8(0.02 ; 31.0) | 4.5(0.02 ; 27.9) | 5.2(0.04 ; 26.0) | 4.1(0.02 ; 23.5) |
| Hypertension (%) | 39.5 | 37.8 | 36.9 | 34.8 | 37.2 |
| Hypercholesterolemia (%) | 10.4 | 9.0 | 8.2 | 7.9 | 6.7 |
| Diabetes (%) | 2.0 | 1.1 | 1.6 | 1.0 | 1.6 |
| Prevalent myocardial infarction (%) | 2.0 | 1.3 | 1.2 | 1.0 | 1.0 |
| **Habitual food consumption (servings/day)** |  |  |  |  |  |
| Total dairy | 3.25(1.20 ; 6.53) | 3.70(1.70 ; 6.79) | 4.04(2.03 ; 7.02) | 4.27(2.26 ; 7.33) | 4.72(2.66 ; 7.87) |
| Low-fat milk | 0.24(0.00 ; 1.55) | 0.42(0.04 ; 1.67) | 0.52(0.06 ; 1.73) | 0.60(0.10 ; 1.80) | 0.57(0.08 ; 1.81) |
| Whole-fat milk | 0.10(0.00 ; 0.52) | 0.15(0.01 ; 0.55) | 0.16(0.01 ; 0.54) | 0.18(0.02 ; 0.62) | 0.18(0.02 ; 0.68) |
| Buttermilk | 0.00(0.00 ; 1.00) | 0.00(0.00 ; 1.00) | 0.00(0.00 ; 1.00) | 0.03(0.00 ; 1.00) | 0.03(0.00 ; 2.00) |
| Low-fat yoghurt | 0.01(0.00 ; 0.15) | 0.13(0.03 ; 0.49) | 0.26(0.04 ; 0.72) | 0.22(0.06 ; 0.82) | 0.21(0.07 ; 1.03) |
| Whole-fat yoghurt | 0.00(0.00 ; 0.01) | 0.02(0.02 ; 0.03) | 0.05(0.04 ; 0.07) | 0.12(0.09 ; 0.17) | 0.28(0.20 ; 0.48) |
| Cheese | 1.29(0.21 ; 3.45) | 1.43(0.36 ; 3.29) | 1.50(0.41 ; 3.33) | 1.52(0.43 ; 3.38) | 1.71(0.51 ; 3.49) |
| Butter | 0.44(0.10 ; 2.15) | 0.46(0.12 ; 2.13) | 0.44(0.11 ; 1.83) | 0.48(0.13 ; 2.03) | 0.47(0.14 ; 2.13) |
| Fruit | 1.85(0.39 ; 4.54) | 2.20(0.68 ; 4.60) | 2.47(0.90 ; 4.77) | 2.51(0.95 ; 4.80) | 2.67(1.18 ; 5.01) |
| Vegetables | 1.04(0.56 ; 1.77) | 1.05(0.61 ; 1.70) | 1.10(0.65 ; 1.73) | 1.10(0.67 ; 1.72) | 1.14(0.71 ; 1.77) |
| Fresh red meat | 0.44(0.10 ; 0.75) | 0.42(0.13 ; 0.71) | 0.40(0.11 ; 0.68) | 0.40(0.11 ; 0.68) | 0.37(0.10 ; 0.65) |
| Processed red meat | 1.65(0.18 ; 4.67) | 1.51(0.27 ; 4.31) | 1.32(0.19 ; 3.96) | 1.37(0.21 ; 3.99) | 1.18(0.15 ; 3.58) |
| Fish | 0.05(0.00 ; 0.13) | 0.05(0.00 ; 0.13) | 0.06(0.00 ; 0.13) | 0.06(0.01 ; 0.13) | 0.06(0.01 ; 0.13) |

Q: quintile. Median (80 % central range) unless otherwise indicated.

**Supplementary table 5. Participant Characteristics Across Quintiles of Cheese Intake in the EPIC-NL Cohort.**

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|  | **Quintiles of cheese** |
|  | **Q1** | **Q2** | **Q3** | **Q4** | **Q5** |
| Total stroke (n) | 187 | 188 | 170 | 160 | 179 |
| Sex, men (%) | 29.8 | 22.4 | 22.9 | 21.5 | 30.3 |
| Age (years) | 49.8(26.6 ; 62.7) | 52.1(31.7 ; 64.7) | 51.7(32.3 ; 63.1) | 52.6(33.8 ; 64.6) | 50.8(32.0 ; 61.9) |
| Body mass index (kg/m2) | 25.1(21.0 ; 30.7) | 25.3(21.3 ; 30.9) | 25.2(21.3 ; 30.7) | 25.2(21.2 ; 30.7) | 25.0(21.1 ; 30.8) |
| Waist circumference (cm) |  |  |  |  |  |
| Men  | 91.3(78.0 ; 106.0) | 92.0(79.5 ; 105.5) | 92.8(80.0 ; 106.0) | 92.0(79.3 ; 106.8) | 92.0(79.0 ; 106.7) |
| Women | 80.8(70.0 ; 96.5) | 82.0(70.8 ; 97.0) | 81.5(70.5 ; 97.0) | 82.0(71.0 ; 97.0) | 80.9(70.0 ; 97.0) |
| Low educational attainment (%) | 60.8 | 62.9 | 56.9 | 57.8 | 51.1 |
| Current smoker (%) | 34.4 | 29.3 | 29.9 | 26.8 | 31.2 |
| Physically inactive | 9.7 | 8.4 | 6.7 | 6.4 | 5.8 |
| Alcohol consumption (g/day) | 3.0(0.01 ; 29.8) | 3.6(0.01 ; 28.0) | 6.2(0.04 ; 30.9) | 5.0(0.02 ; 28.7) | 7.5(0.03 ; 33.2) |
| Hypertension (%) | 35.4 | 39.4 | 36.9 | 39.8 | 34.8 |
| Hypercholesterolemia (%) | 9.5 | 9.2 | 8.3 | 7.8 | 7.4 |
| Diabetes (%) | 1.3 | 1.5 | 1.6 | 1.7 | 1.3 |
| Prevalent myocardial infarction (%) | 1.6 | 1.5 | 1.0 | 1.3 | 1.0 |
| **Habitual food consumption (servings/day)** |  |  |  |  |  |
| Total dairy | 2.33(0.91 ; 4.76) | 3.19(1.83 ; 5.46) | 3.78(2.38 ; 6.12) | 4.63(3.14 ; 6.99) | 6.17(4.20 ; 9.66) |
| Low-fat milk | 0.41(0.04 ; 1.70) | 0.50(0.05 ; 1.71) | 0.47(0.05 ; 1.69) | 0.51(0.05 ; 1.71) | 0.42(0.04 ; 1.74) |
| Whole-fat milk | 0.15(0.01 ; 0.63) | 0.16(0.01 ; 0.57) | 0.15(0.01 ; 0.58) | 0.16(0.01 ; 0.55) | 0.15(0.00 ; 0.63) |
| Buttermilk | 0.00(0.00 ; 1.00) | 0.00(0.00 ; 1.00) | 0.01(0.00 ; 1.00) | 0.03(0.00 ; 1.50) | 0.00(0.00 ; 1.00) |
| Low-fat yoghurt | 0.11(0.01 ; 1.60) | 0.15(0.01 ; 0.63) | 0.16(0.01 ; 0.68) | 0.18(0.02 ; 0.76) | 0.14(0.01 ; 0.73) |
| Whole-fat yoghurt | 0.04(0.00 ; 0.24) | 0.05(0.00 ; 0.27) | 0.06(0.01 ; 0.28) | 0.06(0.01 ; 0.31) | 0.05(0.00 ; 0.29) |
| Cheese | 0.36(0.00 ; 0.64) | 1.02(0.79 ; 1.14) | 1.5(1.21 ; 1.93) | 2.16(2.01 ; 2.5) | 3.38(2.90 ; 5.49) |
| Butter | 0.41(0.10 ; 1.81) | 0.43(0.12 ; 1.85) | 0.46(0.12 ; 2.06) | 0.46(0.13 ; 2.02) | 0.53(0.11 ; 2.48) |
| Fruit | 1.98(0.54 ; 4.55) | 2.35(0.79 ; 4.56) | 2.47(0.85 ; 4.76) | 2.54(0.96 ; 4.87) | 2.49(0.82 ; 4.97) |
| Vegetables | 1.03(0.57 ; 1.71) | 1.07(0.63 ; 1.70) | 1.09(0.66 ; 1.73) | 1.11(0.68 ; 1.77) | 1.12(0.66 ; 1.78) |
| Fresh red meat | 0.43(0.11 ; 0.74) | 0.41(0.14 ; 0.68) | 0.41(0.11 ; 0.69) | 0.39(0.11 ; 0.66) | 0.39(0.08 ; 0.71) |
| Processed red meat | 1.41(0.20 ; 4.42) | 1.30(0.28 ; 3.83) | 1.54(0.27 ; 4.00) | 1.29(0.17 ; 3.74) | 1.33(0.11 ; 4.49) |
| Fish | 0.05(0.00 ; 0.13) | 0.05(0.00 ; 0.13) | 0.06(0.01 ; 0.13) | 0.06(0.00 ; 0.13) | 0.06(0.00 ; 0.13) |

Q: quintile. Median (80 % central range) unless otherwise indicated.

**Supplementary table 6. Participant Characteristics Across Quintiles of Butter Intake in the EPIC-NL Cohort.**

|  |  |
| --- | --- |
|  | **Quintiles of butter** |
|  | **Q1** | **Q2** | **Q3** | **Q4** | **Q5** |
| Total stroke (n) | 156 | 181 | 201 | 171 | 175 |
| Sex, men (%) | 14.8 | 17.7 | 27.3 | 35.7 | 31.4 |
| Age (years) | 51.2(27.7 ; 63.1) | 51.7(29.8 ; 64.2) | 51.6(31.9 ; 64.1) | 50.7(31.4 ; 62.8) | 52.0(33.1 ; 63.3) |
| Body mass index (kg/m2) | 25.2(21.3 ; 31.1) | 25.3(21.3 ; 31.0) | 25.2(21.3 ; 30.8) | 25.1(21.2 ; 30.7) | 24.7(20.9 ; 30.3) |
| Waist circumference (cm) |  |  |  |  |  |
| Men  | 91.8(78.3 ; 106.0) | 92.3(80.0 ; 106.0) | 92.3(79.0 ; 106.8) | 92.0(79.5 ; 106.0) | 91.3(79.0 ; 106.3) |
| Women | 81.0(70.0 ; 96.5) | 82.0(71.0 ; 97.0) | 82.0(71.0 ; 98.0) | 81.0(70.3 ; 96.5) | 80.0(70.0 ; 96.0) |
| Low educational attainment (%) | 56.1 | 61.3 | 63.6 | 57.1 | 51.3 |
| Current smoker (%) | 25.1 | 25.9 | 29.8 | 33.7 | 37.1 |
| Physically inactive | 6.9 | 6.9 | 7.5 | 7.6 | 8.1 |
| Alcohol consumption (g/day) | 4.1(0.01 ; 26.3) | 3.5(0.01 ; 26.2) | 4.1(0.01 ; 28.7) | 5.9(0.03 ; 32.2) | 8.5(0.1 ; 35.8) |
| Hypertension (%) | 37.6 | 39.8 | 39.2 | 35.4 | 34.1 |
| Hypercholesterolemia (%) | 9.0 | 9.2 | 9.4 | 8.8 | 5.9 |
| Diabetes (%) | 1.4 | 1.9 | 1.7 | 1.4 | 1.0 |
| Prevalent myocardial infarction (%) | 1.5 | 1.3 | 1.5 | 1.3 | 0.8 |
| **Habitual food consumption (servings/day)** |  |  |  |  |  |
| Total dairy | 3.31(1.34 ; 5.97) | 3.49(1.60 ; 5.93) | 3.73(1.79 ; 6.32) | 4.13(2.14 ; 6.85) | 5.78(3.36 ; 9.37) |
| Low-fat milk | 0.39(0.03 ; 1.71) | 0.50(0.05 ; 1.71) | 0.54(0.06 ; 1.74) | 0.48(0.06 ; 1.73) | 0.40(0.05 ; 1.64) |
| Whole-fat milk | 0.13(0.00 ; 0.46) | 0.15(0.01 ; 0.49) | 0.16(0.01 ; 0.56) | 0.16(0.01 ; 0.65) | 0.17(0.01 ; 0.81) |
| Buttermilk | 0.00(0.00 ; 1.00) | 0.00(0.00 ; 1.00) | 0.00(0.00 ; 1.00) | 0.00(0.00 ; 1.00) | 0.00(0.00 ; 1.00) |
| Low-fat yoghurt | 0.19(0.01 ; 0.85) | 0.17(0.01 ; 0.74) | 0.14(0.01 ; 0.65) | 0.13(0.01 ; 0.59) | 0.11(0.01 ; 0.55) |
| Whole-fat yoghurt | 0.05(0.00 ; 0.26) | 0.05(0.00 ; 0.29) | 0.05(0.00 ; 0.29) | 0.05(0.00 ; 0.27) | 0.06(0.00 ; 0.28) |
| Cheese | 1.37(0.30 ; 3.29) | 1.34(0.35 ; 3.15) | 1.50(0.35 ; 3.29) | 1.58(0.41 ; 3.50) | 1.66(0.44 ; 3.78) |
| Butter | 0.12(0.03 ; 0.19) | 0.28(0.22 ; 0.35) | 0.46(0.38 ; 0.55) | 0.77(0.61 ; 1.04) | 2.06(1.26 ; 4.39) |
| Fruit | 2.59(0.96 ; 5.02) | 2.48(0.86 ; 4.83) | 2.34(0.71 ; 4.58) | 2.23(0.65 ; 4.59) | 2.22(0.74 ; 4.66) |
| Vegetables | 1.09(0.61 ; 1.83) | 1.07(0.61 ; 1.72) | 1.08(0.64 ; 1.69) | 1.08(0.65 ; 1.72) | 1.12(0.66 ; 1.75) |
| Fresh red meat | 0.32(0.07 ; 0.63) | 0.38(0.12 ; 0.65) | 0.43(0.13 ; 0.70) | 0.46(0.14 ; 0.74) | 0.43(0.12 ; 0.73) |
| Processed red meat | 1.02(0.07 ; 3.23) | 1.18(0.18 ; 3.37) | 1.51(0.27 ; 4.00) | 1.88(0.31 ; 4.67) | 1.77(0.25 ; 4.73) |
| Fish | 0.06(0.00 ; 0.14) | 0.05(0.00 ; 0.13) | 0.05(0.00 ; 0.13) | 0.05(0.00 ; 0.13) | 0.06(0.01 ; 0.13) |

Q: quintile. Median (80 % central range) unless otherwise indicated.

**Supplementary table 7. Associations for 1 Serving/Day Substitutions Between Dairy Products and Risk of Total Stroke in the EPIC-NL Cohort.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Substitution** | **Model 1** | **Model 2** | **Model 3** | **Model 4** |
|  | **HR** | **95 % CI** | **HR** | **95 % CI** | **HR** | **95 % CI** | **HR** | **95 % CI** |
| **Low-fat yoghurt for** |  |  |  |  |  |  |  |  |
| Whole-fat yoghurt | 1.97 | 1.08,3.59 | 1.53 | 0.85,2.76 | 1.43 | 0.80,2.58 | 1.32 | 0.73,2.36 |
| Low-fat milk | 0.86 | 0.70,1.06 | 0.90 | 0.74,1.10 | 0.91 | 0.75,1.11 | 0.91 | 0.75,1.11 |
| Whole-fat milk | 0.80 | 0.63,1.03 | 0.93 | 0.72,1.19 | 0.94 | 0.74,1.21 | 0.90 | 0.70,1.16 |
| Buttermilk | 0.90 | 0.73,1.11 | 0.93 | 0.76,1.14 | 0.94 | 0.76,1.15 | 0.93 | 0.76,1.14 |
| Cheese | 0.88 | 0.73,1.06 | 0.92 | 0.76,1.10 | 0.93 | 0.77,1.12 | 0.91 | 0.76,1.10 |
| Butter | 0.86 | 0.71,1.04 | 0.93 | 0.77,1.11 | 0.95 | 0.79,1.13 | 0.91 | 0.76,1.10 |
| **Whole-fat yoghurt for** |  |  |  |  |  |  |  |  |
| Low-fat milk | 0.44 | 0.25,0.77 | 0.59 | 0.34,1.02 | 0.64 | 0.37,1.11 | 0.69 | 0.40,1.20 |
| Whole-fat milk | 0.41 | 0.23,0.73 | 0.60 | 0.34,1.08 | 0.66 | 0.37,1.18 | 0.68 | 0.39,1.22 |
| Buttermilk | 0.45 | 0.26,0.80 | 0.61 | 0.35,1.06 | 0.65 | 0.37,1.14 | 0.70 | 0.41,1.22 |
| Cheese | 0.45 | 0.26,0.78 | 0.60 | 0.35,1.03 | 0.65 | 0.38,1.12 | 0.69 | 0.40,1.19 |
| Butter | 0.44 | 0.25,0.76 | 0.60 | 0.35,1.04 | 0.66 | 0.38,1.14 | 0.69 | 0.40,1.19 |
| **Low-fat milk for**  |  |  |  |  |  |  |  |  |
| Whole-fat milk | 0.94 | 0.74,1.18 | 1.03 | 0.81,1.30 | 1.04 | 0.82,1.31 | 0.99 | 0.78,1.25 |
| Buttermilk | 1.04 | 0.92,1.18 | 1.03 | 0.91,1.17 | 1.03 | 0.90,1.17 | 1.02 | 0.90,1.16 |
| Cheese | 1.02 | 0.92,1.14 | 1.02 | 0.92,1.13 | 1.02 | 0.92,1.14 | 1.00 | 0.90,1.12 |
| Butter | 1.00 | 0.90,1.11 | 1.03 | 0.93,1.14 | 1.04 | 0.93,1.15 | 1.00 | 0.90,1.11 |
| **Whole-fat milk for** |  |  |  |  |  |  |  |  |
| Buttermilk | 1.11 | 0.91,1.36 | 1.00 | 0.82,1.23 | 0.99 | 0.81,1.21 | 1.03 | 0.84,1.26 |
| Cheese | 1.09 | 0.91,1.32 | 0.99 | 0.82,1.20 | 0.99 | 0.81,1.19 | 1.01 | 0.84,1.23 |
| Butter | 1.07 | 0.88,1.30 | 1.00 | 0.82,1.23 | 1.00 | 0.82,1.22 | 1.01 | 0.83,1.24 |
| **Buttermilk for** |  |  |  |  |  |  |  |  |
| Cheese | 0.98 | 0.88,1.10 | 0.99 | 0.88,1.10 | 1.00 | 0.89,1.11 | 0.99 | 0.88,1.10 |
| Butter | 0.96 | 0.86,1.08 | 1.00 | 0.89,1.11 | 1.01 | 0.90,1.13 | 0.98 | 0.88,1.10 |
| **Cheese for** |  |  |  |  |  |  |  |  |
| Butter | 0.98 | 0.90,1.06 | 1.01 | 0.93,1.10 | 1.02 | 0.94,1.10 | 1.00 | 0.92,1.08 |

CI: Confidence interval; HR: Hazard ratio. Model 1was adjusted for energy intake and cohort (stratum variable). Model 2 was additionally adjusted for educationa, BMI-adjusted waist circumference, smoking, physical activity and alcohol. Model 3 was additionally adjusted for the Dutch Health Diet index 2015. Model 4 additionally adjusted for baseline hypertension, hypercholesterolemia, diabetes mellitus and myocardial infarction.

**Supplementary table 8. Associations for 1 Serving/Day Substitutions Between Dairy Products and Risk of Total Stroke in the EPIC-NL Cohort Excluding Participant With Hypertension, Hypercholesterolemia, Diabetes Mellitus or Myocardial Infarction at Baseline.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Substitution** | **Model 1** | **Model 2** | **Model 3** |
|  | **HR** | **95 % CI** | **HR** | **95 % CI** | **HR** | **95 % CI** |
| **Low-fat yoghurt for** |  |  |  |  |  |  |
| Whole-fat yoghurt | 2.08 | 0.74,5.86 | 1.70 | 0.61,4.73 | 1.66 | 0.59,4.61 |
| Low-fat milk | 1.01 | 0.71,1.45 | 1.05 | 0.74,1.50 | 1.06 | 0.74,1.50 |
| Whole-fat milk | 0.93 | 0.60,1.43 | 1.07 | 0.69,1.65 | 1.08 | 0.70,1.66 |
| Buttermilk | 0.92 | 0.64,1.32 | 0.95 | 0.67,1.35 | 0.95 | 0.67,1.35 |
| Cheese | 0.91 | 0.66,1.26 | 0.95 | 0.70,1.30 | 0.96 | 0.70,1.31 |
| Butter | 0.90 | 0.66,1.24 | 0.98 | 0.72,1.33 | 0.98 | 0.72,1.34 |
| **Whole-fat yoghurt for** |  |  |  |  |  |  |
| Low-fat milk | 0.49 | 0.18,1.30 | 0.62 | 0.23,1.63 | 0.64 | 0.24,1.69 |
| Whole-fat milk | 0.45 | 0.16,1.23 | 0.63 | 0.23,1.72 | 0.65 | 0.24,1.79 |
| Buttermilk | 0.44 | 0.17,1.18 | 0.56 | 0.21,1.48 | 0.58 | 0.22,1.53 |
| Cheese | 0.44 | 0.17,1.15 | 0.56 | 0.22,1.45 | 0.58 | 0.22,1.50 |
| Butter | 0.43 | 0.17,1.13 | 0.58 | 0.22,1.49 | 0.59 | 0.23,1.55 |
| **Low-fat milk for**  |  |  |  |  |  |  |
| Whole-fat milk | 0.92 | 0.61,1.38 | 1.02 | 0.67,1.54 | 1.02 | 0.67,1.54 |
| Buttermilk | 0.91 | 0.72,1.15 | 0.90 | 0.72,1.14 | 0.90 | 0.72,1.13 |
| Cheese | 0.90 | 0.74,1.10 | 0.91 | 0.74,1.10 | 0.91 | 0.75,1.10 |
| Butter | 0.89 | 0.74,1.08 | 0.93 | 0.77,1.13 | 0.93 | 0.77,1.13 |
| **Whole-fat milk for** |  |  |  |  |  |  |
| Buttermilk | 0.99 | 0.70,1.40 | 0.89 | 0.62,1.27 | 0.88 | 0.62,1.26 |
| Cheese | 0.98 | 0.71,1.36 | 0.89 | 0.64,1.25 | 0.89 | 0.64,1.24 |
| Butter | 0.97 | 0.69,1.37 | 0.92 | 0.64,1.30 | 0.91 | 0.64,1.30 |
| **Buttermilk for** |  |  |  |  |  |  |
| Cheese | 0.99 | 0.82,1.20 | 1.00 | 0.83,1.21 | 1.00 | 0.83,1.21 |
| Butter | 0.98 | 0.81,1.19 | 1.03 | 0.85,1.24 | 1.03 | 0.85,1.25 |
| **Cheese for** |  |  |  |  |  |  |
| Butter | 0.99 | 0.86,1.13 | 1.03 | 0.90,1.18 | 1.03 | 0.90,1.18 |

CI: Confidence interval; HR: Hazard ratio. Model 1was adjusted for energy intake and cohort (stratum variable). Model 2 was additionally adjusted for education, BMI-adjusted waist circumference, smoking, physical activity and alcohol. Model 3 was additionally adjusted for the Dutch Health Diet index 2015.

**Supplementary table 9. Associations for 1 Serving/Day Substitutions Between Dairy Products and Risk of Ischemic Stroke in the EPIC-NL Cohort Excluding Participant With Hypertension, Hypercholesterolemia, Diabetes Mellitus or Myocardial Infarction at Baseline.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Substitution** | **Model 1** | **Model 2** | **Model 3** |
|  | **HR** | **95 % CI** | **HR** | **95 % CI** | **HR** | **95 % CI** |
| **Low-fat yoghurt for** |  |  |  |  |  |  |
| Whole-fat yoghurt | 2.75 | 0.58,12.98 | 2.03 | 0.44,9.32 | 2.05 | 0.44,9.49 |
| Low-fat milk | 0.83 | 0.48,1.44 | 0.89 | 0.52,1.51 | 0.89 | 0.52,1.51 |
| Whole-fat milk | 0.88 | 0.45,1.73 | 1.05 | 0.53,2.05 | 1.04 | 0.53,2.04 |
| Buttermilk | 0.82 | 0.47,1.42 | 0.88 | 0.52,1.50 | 0.88 | 0.51,1.50 |
| Cheese | 0.73 | 0.44,1.19 | 0.79 | 0.49,1.27 | 0.79 | 0.49,1.27 |
| Butter | 0.74 | 0.45,1.20 | 0.83 | 0.52,1.34 | 0.83 | 0.52,1.34 |
| **Whole-fat yoghurt for** |  |  |  |  |  |  |
| Low-fat milk | 0.30 | 0.07,1.29 | 0.44 | 0.10,1.83 | 0.43 | 0.10,1.82 |
| Whole-fat milk | 0.32 | 0.07,1.46 | 0.51 | 0.12,2.30 | 0.51 | 0.11,2.29 |
| Buttermilk | 0.30 | 0.07,1.27 | 0.43 | 0.10,1.82 | 0.43 | 0.10,1.81 |
| Cheese | 0.26 | 0.06,1.09 | 0.39 | 0.10,1.57 | 0.38 | 0.09,1.57 |
| Butter | 0.27 | 0.06,1.11 | 0.41 | 0.10,1.67 | 0.40 | 0.10,1.67 |
| **Low-fat milk for**  |  |  |  |  |  |  |
| Whole-fat milk | 1.07 | 0.57,1.98 | 1.18 | 0.63,2.21 | 1.17 | 0.63,2.21 |
| Buttermilk | 0.98 | 0.71,1.37 | 0.99 | 0.71,1.38 | 0.99 | 0.71,1.38 |
| Cheese | 0.87 | 0.67,1.15 | 0.89 | 0.68,1.16 | 0.89 | 0.68,1.16 |
| Butter | 0.89 | 0.68,1.16 | 0.94 | 0.72,1.23 | 0.94 | 0.72,1.23 |
| **Whole-fat milk for** |  |  |  |  |  |  |
| Buttermilk | 0.30 | 0.07,1.27 | 0.43 | 0.10,1.82 | 0.43 | 0.10,1.81 |
| Cheese | 0.82 | 0.50,1.35 | 0.75 | 0.45,1.26 | 0.75 | 0.45,1.26 |
| Butter | 0.83 | 0.50,1.41 | 0.80 | 0.47,1.36 | 0.80 | 0.47,1.37 |
| **Buttermilk for** |  |  |  |  |  |  |
| Cheese | 0.89 | 0.68,1.16 | 0.89 | 0.69,1.17 | 0.89 | 0.68,1.17 |
| Butter | 0.90 | 0.69,1.19 | 0.95 | 0.72,1.25 | 0.95 | 0.72,1.24 |
| **Cheese for** |  |  |  |  |  |  |
| Butter | 1.02 | 0.85,1.21 | 1.06 | 0.89,1.27 | 1.06 | 0.88,1.27 |

CI: Confidence interval; HR: Hazard ratio. Model 1was adjusted for energy intake and cohort (stratum variable). Model 2 was additionally adjusted for education, BMI-adjusted waist circumference, smoking, physical activity and alcohol. Model 3 was additionally adjusted for the Dutch Health Diet index 2015.

**Supplementary table 10. Associations for 100 kcal Substitutions Between Dairy Products and Risk of Total Stroke in the EPIC-NL Cohort.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Substitution** | **Model 1** | **Model 2** | **Model 3** | **Model 4** |
|  | **HR** | **95 % CI** | **HR** | **95 % CI** | **HR** | **95 % CI** | **HR** | **95 % CI** |
| **Low-fat yoghurt for** |  |  |  |  |  |  |  |  |
| Whole-fat yoghurt | 1.81 | 1.08,3.03 | 1.45 | 0.88,2.40 | 1.37 | 0.83,2.26 | 1.27 | 0.77,2.09 |
| Low-fat milk | 0.87 | 0.72,1.05 | 0.90 | 0.75,1.08 | 0.90 | 0.75,1.08 | 0.90 | 0.75,1.08 |
| Whole-fat milk | 0.83 | 0.68,1.01 | 0.93 | 0.76,1.13 | 0.94 | 0.77,1.14 | 0.91 | 0.75,1.11 |
| Buttermilk | 0.93 | 0.75,1.17 | 0.94 | 0.76,1.17 | 0.93 | 0.75,1.15 | 0.93 | 0.75,1.16 |
| Cheese | 0.92 | 0.77,1.09 | 0.93 | 0.79,1.10 | 0.94 | 0.79,1.11 | 0.92 | 0.78,1.09 |
| Butter | 0.87 | 0.71,1.06 | 0.93 | 0.76,1.14 | 0.95 | 0.78,1.16 | 0.90 | 0.74,1.09 |
| **Whole-fat yoghurt for** |  |  |  |  |  |  |  |  |
| Low-fat milk | 0.48 | 0.29,0.78 | 0.62 | 0.38,1.00 | 0.66 | 0.41,1.07 | 0.71 | 0.44,1.14 |
| Whole-fat milk | 0.46 | 0.28,0.75 | 0.64 | 0.39,1.03 | 0.69 | 0.42,1.12 | 0.72 | 0.44,1.16 |
| Buttermilk | 0.52 | 0.31,0.85 | 0.65 | 0.39,1.06 | 0.68 | 0.41,1.12 | 0.73 | 0.45,1.20 |
| Cheese | 0.51 | 0.31,0.82 | 0.64 | 0.40,1.03 | 0.69 | 0.43,1.10 | 0.72 | 0.45,1.16 |
| Butter | 0.48 | 0.29,0.78 | 0.64 | 0.40,1.04 | 0.69 | 0.43,1.12 | 0.71 | 0.44,1.14 |
| **Low-fat milk for**  |  |  |  |  |  |  |  |  |
| Whole-fat milk | 0.95 | 0.79,1.15 | 1.03 | 0.85,1.25 | 1.04 | 0.86,1.26 | 1.01 | 0.83,1.22 |
| Buttermilk | 1.07 | 0.90,1.28 | 1.05 | 0.88,1.24 | 1.03 | 0.87,1.23 | 1.03 | 0.87,1.22 |
| Cheese | 1.05 | 0.93,1.20 | 1.04 | 0.92,1.18 | 1.04 | 0.92,1.18 | 1.02 | 0.90,1.16 |
| Butter | 1.00 | 0.85,1.17 | 1.04 | 0.89,1.22 | 1.05 | 0.90,1.23 | 0.99 | 0.85,1.17 |
| **Whole-fat milk for** |  |  |  |  |  |  |  |  |
| Buttermilk | 1.13 | 0.93,1.37 | 1.01 | 0.83,1.23 | 0.99 | 0.81,1.20 | 1.02 | 0.84,1.24 |
| Cheese | 1.11 | 0.95,1.28 | 1.01 | 0.86,1.17 | 1.00 | 0.86,1.16 | 1.01 | 0.87,1.18 |
| Butter | 1.05 | 0.86,1.28 | 1.01 | 0.82,1.24 | 1.01 | 0.82,1.23 | 0.99 | 0.81,1.21 |
| **Buttermilk for** |  |  |  |  |  |  |  |  |
| Cheese | 0.98 | 0.83,1.17 | 0.99 | 0.84,1.18 | 1.01 | 0.85,1.20 | 0.99 | 0.83,1.17 |
| Butter | 0.93 | 0.76,1.14 | 0.99 | 0.81,1.22 | 1.02 | 0.83,1.25 | 0.96 | 0.79,1.18 |
| **Cheese for** |  |  |  |  |  |  |  |  |
| Butter | 0.95 | 0.81,1.11 | 1.00 | 0.85,1.18 | 1.01 | 0.86,1.18 | 0.97 | 0.83,1.14 |

CI: Confidence interval; HR: Hazard ratio. Model 1 was adjusted for energy intake and cohort (stratum variable). Model 2 was additionally adjusted for education, BMI-adjusted waist circumference, smoking, physical activity and alcohol. Model 3 was additionally adjusted for the Dutch Health Diet index 2015. Model 4 was additionally adjusted for baseline hypertension, Hypercholesterolemia, diabetes mellitus and myocardial infarction.

**Supplementary table 11. Associations for 100 kcal Substitutions Between Dairy Products and Risk of Ischemic Stroke in the EPIC-NL Cohort.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Substitution** | **Model 1** | **Model 2** | **Model 3** | **Model 4** |
|  | **HR** | **95 % CI** | **HR** | **95 % CI** | **HR** | **95 % CI** | **HR** | **95 % CI** |
| **Low-fat yoghurt for** |  |  |  |  |  |  |  |  |
| Whole-fat yoghurt | 3.13 | 1.50,6.52 | 2.39 | 1.17,4.89 | 2.26 | 1.11,4.64 | 2.03 | 0.99,4.13 |
| Low-fat milk | 0.85 | 0.66,1.10 | 0.88 | 0.69,1.12 | 0.88 | 0.69,1.13 | 0.89 | 0.69,1.13 |
| Whole-fat milk | 0.76 | 0.59,0.99 | 0.85 | 0.66,1.10 | 0.86 | 0.67,1.11 | 0.83 | 0.64,1.07 |
| Buttermilk | 0.90 | 0.67,1.22 | 0.91 | 0.68,1.22 | 0.91 | 0.68,1.21 | 0.91 | 0.68,1.21 |
| Cheese | 0.91 | 0.72,1.16 | 0.93 | 0.74,1.17 | 0.94 | 0.74,1.18 | 0.91 | 0.72,1.15 |
| Butter | 0.87 | 0.66,1.15 | 0.94 | 0.72,1.24 | 0.96 | 0.73,1.25 | 0.89 | 0.68,1.16 |
| **Whole-fat yoghurt for** |  |  |  |  |  |  |  |  |
| Low-fat milk | 0.27 | 0.14,0.55 | 0.37 | 0.19,0.73 | 0.39 | 0.20,0.78 | 0.44 | 0.22,0.86 |
| Whole-fat milk | 0.24 | 0.12,0.49 | 0.36 | 0.18,0.71 | 0.38 | 0.19,0.76 | 0.41 | 0.21,0.81 |
| Buttermilk | 0.29 | 0.14,0.59 | 0.38 | 0.19,0.77 | 0.40 | 0.20,0.81 | 0.45 | 0.22,0.90 |
| Cheese | 0.29 | 0.15,0.58 | 0.39 | 0.20,0.76 | 0.41 | 0.21,0.81 | 0.45 | 0.23,0.88 |
| Butter | 0.28 | 0.14,0.56 | 0.39 | 0.20,0.79 | 0.42 | 0.21,0.84 | 0.44 | 0.22,0.87 |
| **Low-fat milk for**  |  |  |  |  |  |  |  |  |
| Whole-fat milk | 0.89 | 0.70,1.13 | 0.97 | 0.76,1.23 | 0.97 | 0.77,1.24 | 0.93 | 0.73,1.19 |
| Buttermilk | 1.06 | 0.84,1.33 | 1.04 | 0.83,1.30 | 1.02 | 0.82,1.28 | 1.02 | 0.81,1.28 |
| Cheese | 1.07 | 0.90,1.27 | 1.06 | 0.89,1.25 | 1.06 | 0.90,1.25 | 1.03 | 0.87,1.21 |
| Butter | 1.02 | 0.83,1.27 | 1.07 | 0.86,1.33 | 1.08 | 0.87,1.34 | 1.00 | 0.81,1.24 |
| **Whole-fat milk for** |  |  |  |  |  |  |  |  |
| Buttermilk | 1.19 | 0.93,1.53 | 1.07 | 0.84,1.38 | 1.05 | 0.82,1.35 | 1.10 | 0.85,1.41 |
| Cheese | 1.20 | 0.99,1.45 | 1.09 | 0.90,1.33 | 1.09 | 0.90,1.32 | 1.10 | 0.91,1.34 |
| Butter | 1.15 | 0.88,1.49 | 1.11 | 0.85,1.45 | 1.11 | 0.85,1.45 | 1.07 | 0.82,1.39 |
| **Buttermilk for** |  |  |  |  |  |  |  |  |
| Cheese | 1.01 | 0.80,1.27 | 1.02 | 0.81,1.28 | 1.03 | 0.82,1.30 | 1.01 | 0.80,1.26 |
| Butter | 0.97 | 0.74,1.27 | 1.03 | 0.79,1.35 | 1.06 | 0.81,1.38 | 0.98 | 0.75,1.28 |
| **Cheese for** |  |  |  |  |  |  |  |  |
| Butter | 0.96 | 0.77,1.19 | 1.01 | 0.82,1.26 | 1.02 | 0.82,1.27 | 0.97 | 0.78,1.21 |

CI: Confidence interval; HR: Hazard ratio. Model 1 was adjusted for energy intake and cohort (stratum variable). Model 2 was additionally adjusted for education, BMI-adjusted waist circumference, smoking, physical activity and alcohol. Model 3 was additionally adjusted for the Dutch Health Diet index 2015. Model 4 was additionally adjusted for baseline hypertension, Hypercholesterolemia, diabetes mellitus and myocardial infarction.

**Supplementary table 12. Associations for 100 kcal Substitutions Between Dairy Products and Risk of Hemorrhagic Stroke in the EPIC-NL Cohort.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Substitution** | **Model 1** | **Model 2** | **Model 3** | **Model 4** |
|  | **HR** | **95 % CI** | **HR** | **95 % CI** | **HR** | **95 % CI** | **HR** | **95 % CI** |
| **Low-fat yoghurt for** |  |  |  |  |  |  |  |  |
| Whole-fat yoghurt | 1.06 | 0.43,2.61 | 0.84 | 0.35,2.03 | 0.78 | 0.32,1.88 | 0.73 | 0.30,1.75 |
| Low-fat milk | 0.84 | 0.59,1.18 | 0.85 | 0.61,1.18 | 0.85 | 0.61,1.19 | 0.85 | 0.61,1.19 |
| Whole-fat milk | 1.03 | 0.69,1.52 | 1.12 | 0.75,1.66 | 1.14 | 0.77,1.69 | 1.10 | 0.74,1.63 |
| Buttermilk | 1.02 | 0.67,1.56 | 1.00 | 0.67,1.52 | 0.99 | 0.66,1.49 | 0.99 | 0.66,1.49 |
| Cheese | 0.89 | 0.65,1.22 | 0.90 | 0.66,1.23 | 0.91 | 0.67,1.23 | 0.89 | 0.66,1.22 |
| Butter | 0.71 | 0.50,1.00 | 0.76 | 0.54,1.08 | 0.77 | 0.55,1.09 | 0.74 | 0.53,1.05 |
| **Whole-fat yoghurt for** |  |  |  |  |  |  |  |  |
| Low-fat milk | 0.79 | 0.34,1.85 | 1.01 | 0.44,2.34 | 1.10 | 0.47,2.53 | 1.16 | 0.51,2.67 |
| Whole-fat milk | 0.97 | 0.40,2.33 | 1.34 | 0.56,3.18 | 1.46 | 0.61,3.48 | 1.51 | 0.64,3.56 |
| Buttermilk | 0.97 | 0.40,2.36 | 1.20 | 0.50,2.89 | 1.28 | 0.53,3.06 | 1.36 | 0.57,3.23 |
| Cheese | 0.84 | 0.36,1.94 | 1.08 | 0.47,2.44 | 1.17 | 0.51,2.65 | 1.22 | 0.54,2.76 |
| Butter | 0.67 | 0.29,1.56 | 0.91 | 0.40,2.10 | 1.00 | 0.43,2.29 | 1.02 | 0.45,2.32 |
| **Low-fat milk for**  |  |  |  |  |  |  |  |  |
| Whole-fat milk | 1.23 | 0.82,1.83 | 1.32 | 0.88,1.98 | 1.33 | 0.89,2.00 | 1.30 | 0.86,1.94 |
| Buttermilk | 1.22 | 0.87,1.72 | 1.19 | 0.85,1.66 | 1.16 | 0.83,1.63 | 1.16 | 0.83,1.63 |
| Cheese | 1.06 | 0.84,1.34 | 1.06 | 0.84,1.34 | 1.07 | 0.85,1.34 | 1.05 | 0.83,1.33 |
| Butter | 0.85 | 0.65,1.11 | 0.90 | 0.69,1.18 | 0.91 | 0.69,1.19 | 0.87 | 0.67,1.14 |
| **Whole-fat milk for** |  |  |  |  |  |  |  |  |
| Buttermilk | 1.00 | 0.67,1.49 | 0.90 | 0.60,1.35 | 0.87 | 0.58,1.31 | 0.90 | 0.60,1.35 |
| Cheese | 0.87 | 0.63,1.19 | 0.81 | 0.58,1.11 | 0.80 | 0.58,1.10 | 0.81 | 0.59,1.12 |
| Butter | 0.69 | 0.47,1.01 | 0.68 | 0.46,1.01 | 0.68 | 0.46,1.01 | 0.67 | 0.46,0.99 |
| **Buttermilk for** |  |  |  |  |  |  |  |  |
| Cheese | 0.87 | 0.62,1.21 | 0.90 | 0.65,1.24 | 0.92 | 0.66,1.27 | 0.90 | 0.65,1.25 |
| Butter | 0.69 | 0.48,1.00 | 0.76 | 0.53,1.09 | 0.78 | 0.54,1.12 | 0.75 | 0.52,1.08 |
| **Cheese for** |  |  |  |  |  |  |  |  |
| Butter | 0.80 | 0.61,1.04 | 0.85 | 0.65,1.11 | 0.85 | 0.65,1.11 | 0.83 | 0.64,1.08 |

CI: Confidence interval; HR: Hazard ratio. Model 1 was adjusted for energy intake and cohort (stratum variable). Model 2 was additionally adjusted for education, BMI-adjusted waist circumference, smoking, physical activity and alcohol. Model 3 was additionally adjusted for the Dutch Health Diet index 2015. Model 4 was additionally adjusted for baseline hypertension, Hypercholesterolemia, diabetes mellitus and myocardial infarction.

**Invited**

Prospect: 50313 MORGEN: 50766

**Accepted invitation**

Prospect: 17357 MORGEN: 22654

**Included in the EPIC-NL cohort**

40,011

**Excluded**

Did not permit register linkage: 1.763

Self-reported previous stroke: 453

Poor diet reporters: 352

Missing exposure or covariate information: 557

**Analysed participants**

36,886

**Supplementary figure 1. Participant flowchart**