**Supplementary Table 1.** Characteristics of participants at-risk of cataract in the Blue Mountains Eye Study, according to quintiles of energy-adjusted wholegrain and legume consumption.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Wholegrain consumption (range g/day)** |  | **Legume consumption (range g/day)** |  |
| **Characteristics** | Quintile 1(<15.7) | Quintile 2(15.7-33.8) | Quintile 3(33.9-50.2) | Quintile 4(50.3-69.9) | Quintile 5(≥70.0) | P† | Quintile 1(<3.6) | Quintile 2(3.6-8.6) | Quintile 3(8.6-13.7) | Quintile 4(13.7-24.6) | Quintile 5(>24.6) | P† |
|  | **At risk of at least one cataract type (N=1076)** |
| N | 208 | 205 | 227 | 225 | 211 |  | 213 | 215 | 226 | 213 | 209 |  |
| Age, mean (SD) | 66.3 (7.2) | 66.1 (6.8) | 66.5 (7.0) | 67.2 (6.8) | 66.7 (7.9) | 0.56 | **67.4 (7.4)** | **67.3 (7.2)** | **66.2 (7.7)** | **65.8 (6.8)** | **66.1 (6.5)** | **0.04** |
| Female (%) | 46.2 | 62.0 | 58.6 | 60.0 | 55.5 | 0.12 | 48.4 | 59.1 | 58.0 | 60.6 | 56.5 | 0.10 |
| Non-smoker (%) | **44.7** | **48.5** | **52.9** | **53.6** | **60.2** | **<.001** | 54.0 | 54.0 | 50.4 | 54.3 | 47.6 | 0.27 |
| Past-smoker (%) | **40.4** | **41.7** | **40.1** | **40.2** | **37.4** | 39.9 | 38.1 | 38.9 | 38.2 | 44.7 |
| Current smoker (%) | **14.9** | **9.8** | **7.1** | **6.3** | **2.4** | 6.1 | 7.9 | 10.6 | 7.6 | 7.7 |
| Pack/years of smoking, mean (SD) | **18.3 (24.6)** | **14.2 (22.5)** | **11.3 (18.6)** | **10.4 (18.9)** | **8.7 (17.6)** | **<.001** | 11.7 (21.4) | 12.1 (18.9) | 12.1 (19.5) | 12.7 (21.1) | 14.2 (22.9) | 0.76 |
| Hypertension (%) | **52.4** | **52.9** | **48.2** | **47.3** | **43.5** | **0.03** | 45.1 | 48.8 | 51.8 | 45.8 | 52.7 | 0.27 |
| Diabetes (%) | 13.9 | 9.3 | 6.6 | 11.1 | 9.5 | 0.29 | 8.9 | 10.2 | 12.0 | 7.5 | 11.5 | 0.72 |
| Education (%)‡ | **56.4** | **58.4** | **68.4** | **66.0** | **72.0** | **<.001** | 67.6 | 62.0 | 65.7 | 59.9 | 66.5 | 0.67 |
| Myopia (%) | 9.1 | 8.3 | 11.0 | 12.1 | 13.3 | 0.08 | 8.5 | 9.3 | 13.7 | 9.9 | 12.5 | 0.20 |
| Inhaled steroids (%) | 12.6 | 15.8 | 14.6 | 18.7 | 12.8 | 0.67 | 13.7 | 14.7 | 12.8 | 17.7 | 16.0 | 0.32 |
| BMI, mean (SD) | **27.8 (4.8)** | **27.8 (4.5)** | **28.3 (4.8)** | **27.5 (4.5)** | **26.9 (4.1)** | **0.02** | 27.3 (3.8) | 27.4 (4.7) | 28.0 (4.5) | 27.8 (5.0) | 27.8 (4.7) | 0.50 |
| Daily energy intake (kJ), mean (SD) | **9185.1 (2802.8)** | **8054.1 (2544.1)** | **8079.2 (2150.0)** | **8444.0 (1974.7)** | **9055.1 (2200.1)** | **<.001** | **10237.5 (1934.1)** | **8067.8 (2034.4)** | **8046.6 (2215.7)** | **7817.7 (1853.7)** | **8647.0 (2925.7)** | **<.001** |
| Dietary fibre (g), mean (SD)§ | **21.8 (7.4)** | **24.9 (6.7)** | **27.9 (7.2)** | **30.1 (7.7)** | **33.7 (8.3)** | **<.001** | **25.8 (9.4)** | **26.2 (6.7)** | **26.5 (7.3)** | **27.8 (7.5)** | **32.5 (9.5)** | **<.001** |
| Vitamin E (mg), mean (SD)§ | **6.5 (2.7)** | **7.9 (2.8)** | **8.1 (3.9)** | **9.1 (5.9)** | **16.0 (13.7)** | **<.001** | 9.9 (9.6) | 9.4 (7.2) | 9.1 (6.4) | 9.7 (7.7) | 9.5 (7.9) | 0.83 |
|  | **At risk of cortical cataract (N=852)** |
| N | 167 | 152 | 177 | 184 | 172 |  | 166 | 175 | 178 | 176 | 157 |  |
| Age, mean (SD) | 65.6 (7.0) | 65.0 (6.7) | 65.9 (7.1) | 66.3 (6.6) | 65.7 (7.8) | 0.52 | **66.6 (7.3)** | **66.6 (7.4)** | **65.5 (7.5)** | **65.1 (6.6)** | **64.7 (6.1)** | **0.04** |
| Female (%) | 43.7 | 59.2 | 59.9 | 56.5 | 54.7 | 0.11 | 45.8 | 59.4 | 56.2 | 57.4 | 54.8 | 0.19 |
| Non-smoker (%) | **45.5** | **49.0** | **53.1** | **54.1** | **62.8** | **<.001** | 56.0 | 54.9 | 52.3 | 54.9 | 46.8 | 0.22 |
| Past-smoker (%) | **39.5** | **39.1** | **40.1** | **39.9** | **35.5** | 39.2 | 35.4 | 36.5 | 37.1 | 46.8 |
| Current smoker (%) | **15.0** | **11.9** | **6.8** | **6.0** | **1.7** | 4.8 | 9.7 | 11.2 | 8.0 | 6.4 |
| Pack/years of smoking, mean (SD) | **17.8 (23.9)** | **14.0 (22.4)** | **11.9 (19.4)** | **10.6 (19.6)** | **7.9 (16.2)** | **<.001** | 10.1 (19.1) | 12.4 (19.1) | 11.6 (19.1) | 12.8 (21.4) | 15.1 (24.2) | 0.28 |
| Hypertension (%) | 50.3 | 50.3 | 46.0 | 46.5 | 44.1 | 0.19 | 45.2 | 47.4 | 48.3 | 44.6 | 51.6 | 0.45 |
| Diabetes (%) | 13.8 | 7.9 | 6.8 | 10.3 | 9.9 | 0.46 | 7.8 | 8.6 | 14.0 | 8.0 | 10.2 | 0.58 |
| Education (%)‡ | **57.1** | **59.9** | **67.3** | **66.7** | **71.0** | **0.003** | 67.3 | 64.3 | 65.9 | 59.6 | 65.8 | 0.50 |
| Myopia (%) | **7.8** | **7.9** | **10.2** | **12.6** | **14.0** | **0.02** | 7.8 | 8.6 | 13.5 | 10.2 | 12.8 | 0.13 |
| Inhaled steroids (%) | 12.1 | 15.3 | 13.6 | 17.2 | 13.4 | 0.59 | 15.2 | 14.6 | 12.4 | 15.0 | 14.7 | 0.96 |
| BMI, mean (SD) | 28.0 (4.7) | 27.6 (4.2) | 28.3 (4.4) | 27.8 (4.5) | 26.9 (4.2) | 0.06 | 27.5 (3.6) | 27.3 (4.3) | 28.0 (4.3) | 27.9 (4.9) | 28.0 (4.8) | 0.49 |
| Daily energy intake (kJ), mean (SD) | **9093.1 (2704.4)** | **8048.9 (2619.5)** | **8093.4 (2121.0)** | **8494.2 (1945.0)** | **9019.6 (2214.8)** | **<.001** | **10193.8 (1867.1)** | **8126.4 (2104.1)** | **8132.8 (2160.0)** | **7836.2 (1824.6)** | **8564.2 (2975.6)** | **<.001** |
| Dietary fibre (g), mean (SD)§ | **22.1 (7.6)** | **24.8 (6.9)** | **27.4 (7.1)** | **30.2 (7.5)** | **33.9 (8.4)** | **<.001** | **26.4 (9.5)** | **26.2 (6.9)** | **26.5 (7.7)** | **27.8 (7.4)** | **32.5 (9.6)** | **<.001** |
| Vitamin E (mg), mean (SD)§ | **6.6 (2.7)** | **8.0 (2.9)** | **8.1 (4.0)** | **9.3 (6.2)** | **16.0 (14.1)** | **<.001** | 10.4 (10.3) | 8.9 (6.7) | 9.1 (6.7) | 9.8 (7.7) | 10.0 (8.7) | 0.40 |
|  | **At risk of nuclear cataract (N=552)** |
| N | 96 | 96 | 113 | 118 | 99 |  | 88 | 82 | 128 | 111 | 113 |  |
| Age, mean (SD) | **64.4 (6.1)** | **64.9 (6.5)** | **65.2 (6.6)** | **67.1 (7.0)** | **65.0 (6.6)** | **0.02** | 66.1 (6.5) | 66.9 (7.3) | 64.8 (6.7) | 65.0 (6.7) | 64.9 (6.0) | 0.14 |
| Female (%) | 39.6 | 61.5 | 62.8 | 61.9 | 51.5 | 0.12 | 51.1 | 54.9 | 58.6 | 55.9 | 57.5 | 0.41 |
| Non-smoker (%) | **49.0** | **47.4** | **57.5** | **47.9** | **59.6** | **0.01** | 59.1 | 56.1 | 50.0 | 52.7 | 46.4 | 0.07 |
| Past-smoker (%) | **32.3** | **42.1** | **36.3** | **43.6** | **37.4** | 35.2 | 35.4 | 38.3 | 40.0 | 42.0 |
| Current smoker (%) | **18.8** | **10.6** | **6.2** | **8.6** | **3.0** | 5.7 | 8.5 | 11.7 | 7.3 | 11.6 |
| Pack/years of smoking, mean (SD) | **18.6 (26.0)** | **12.6 (20.0)** | **9.2 (16.0)** | **10.1 (18.0)** | **9.1 (16.8)** | **0.003** | 6.9 (14.3) | 12.9 (20.3) | 12.6 (19.4) | 11.7 (19.6) | 13.7 (23.0) | 0.14 |
| Hypertension (%) | 52.1 | 51.0 | 40.2 | 47.0 | 48.0 | 0.45 | 42.1 | 51.2 | 54.7 | 46.4 | 51.8 | 0.34 |
| Diabetes (%) | 12.5 | 5.2 | 6.2 | 9.3 | 13.1 | 0.55 | 9.1 | 9.8 | 11.7 | 7.2 | 8.0 | 0.56 |
| Education (%)‡ | **54.8** | **60.4** | **72.0** | **71.2** | **74.0** | **0.001** | 67.4 | 64.1 | 69.7 | 62.5 | 69.4 | 0.88 |
| Myopia (%) | 8.3 | 8.3 | 9.7 | 15.4 | 14.4 | 0.06 | 10.2 | 9.8 | 13.3 | 9.0 | 13.4 | 0.60 |
| Inhaled steroids (%) | 9.4 | 16.0 | 16.1 | 24.4 | 12.1 | 0.20 | 13.6 | 18.8 | 14.1 | 18.4 | 15.3 | 0.79 |
| BMI, mean (SD) | 28.2 (4.3) | 27.5 (4.3) | 28.5 (4.5) | 27.7 (4.8) | 26.9 (4.2) | 0.12 | 27.2 (4.2) | 27.3 (4.2) | 28.3 (4.8) | 28.1 (4.9) | 27.7 (4.0) | 0.38 |
| Daily energy intake (kJ), mean (SD) | **9556.6 (2831.7)** | **8008.7 (2460.7)** | **7940.2 (2127.1)** | **8573.7 (1996.3)** | **9014.4 (2282.0)** | **<.001** | **10200.6 (1876.2)** | **8079.1 (1816.7)** | **8008.8 (2201.2)** | **7952.8 (1834.9)** | **9023.2 (3119.0)** | **<.001** |
| Dietary fibre (g), mean (SD)§ | **22.0 (7.5)** | **25.0 (7.2)** | **28.2 (7.0)** | **30.1 (7.8)** | **34.1 (9.0)** | **<.001** | **26.0 (8.4)** | **25.8 (7.0)** | **26.3 (7.2)** | **28.4 (8.2)** | **32.8 (10.2)** | **<.001** |
| Vitamin E (mg), mean (SD)§ | **6.3 (2.7)** | **7.9 (2.8)** | **8.2 (3.7)** | **9.4 (6.1)** | **16.0 (14.1)** | **<.001** | 9.3 (8.7) | 8.8 (6.0) | 9.1 (6.1) | 10.3 (8.4) | 10.1 (9.6) | 0.60 |
|  | **At risk of PSC cataract (N=1011)** |
| N | 197 | 191 | 210 | 213 | 200 |  | 196 | 202 | 211 | 204 | 198 |  |
| Age, mean (SD) | 66.3 (7.3) | 65.8 (6.7) | 66.2 (7.1) | 67.2 (6.9) | 66.4 (7.7) | 0.43 | 67.0 (7.2) | 67.2 (7.4) | 66.1 (7.7) | 65.7 (6.8) | 66.1 (6.6) | 0.17 |
| Female (%) | 45.7 | 60.7 | 58.1 | 59.6 | 54.5 | 0.13 | 47.5 | 57.9 | 56.4 | 60.3 | 56.6 | 0.07 |
| Non-smoker (%) | **43.7** | **47.4** | **52.9** | **54.7** | **61.5** | **<.001** | 53.1 | 54.0 | 51.2 | 54.7 | 47.7 | 0.35 |
| Past-smoker (%) | **41.6** | **42.6** | **40.0** | **39.2** | **36.0** | 40.8 | 38.6 | 37.9 | 37.4 | 44.7 |
| Current smoker (%) | **14.7** | **10.0** | **7.1** | **6.1** | **2.5** | 6.1 | 7.4 | 10.9 | 7.9 | 7.6 |
| Pack/years of smoking, mean (SD) | **18.7 (24.9)** | **14.7 (23.0)** | **10.8 (18.1)** | **10.4 (19.1)** | **8.5 (17.1)** | **<.001** | 11.6 (21.2) | 12.1 (19.0) | 11.9 (19.4) | 12.6 (21.1) | 14.6 (23.3) | 0.62 |
| Hypertension (%) | 51.8 | 52.6 | 47.4 | 46.7 | 43.9 | 0.06 | 44.4 | 47.5 | 51.7 | 45.3 | 53.1 | 0.18 |
| Diabetes (%) | 14.2 | 8.9 | 5.7 | 11.3 | 8.5 | 0.18 | 8.2 | 9.4 | 12.3 | 7.4 | 11.1 | 0.57 |
| Education (%)‡ | **54.7** | **59.2** | **67.3** | **66.7** | **73.0** | **<.001** | 68.0 | 61.5 | 67.0 | 60.1 | 64.8 | 0.46 |
| Myopia (%) | **8.1** | **7.3** | **10.0** | **11.8** | **13.5** | **0.03** | 8.2 | 8.4 | 12.8 | 9.8 | 11.7 | 0.22 |
| Inhaled steroids (%) | 11.8 | 15.9 | 14.4 | 17.9 | 12.0 | 0.75 | 13.9 | 13.6 | 11.9 | 16.5 | 16.3 | 0.32 |
| BMI, mean (SD) | **27.9 (4.9)** | **27.9 (4.5)** | **28.4 (4.9)** | **27.5 (4.5)** | **26.9 (4.2)** | **0.03** | 27.4 (3.9) | 27.4 (4.8) | 28.1 (4.4) | 28.0 (5.1) | 27.8 (4.8) | 0.41 |
| Daily energy intake (kJ), mean (SD) | **9163.1 (2767.2)** | **8056.9 (2576.0)** | **8067.9 (2163.5)** | **8446.1 (1959.1)** | **9063.9 (2223.8)** | **<.001** | **10219.3 (1936.8)** | **8078.3 (2052.0)** | **8118.1 (2251.2)** | **7830.2 (1867.7)** | **8611.2 (2915.9)** | **<.001** |
| Dietary fibre (g), mean (SD)§ | **21.8 (7.4)** | **24.7 (6.1)** | **27.9 (7.1)** | **30.0 (7.7)** | **33.9 (8.2)** | **<.001** | **25.9 (9.3)** | **26.3 (6.7)** | **26.5 (7.4)** | **27.8 (7.5)** | **32.3 (9.3)** | **<.001** |
| Vitamin E (mg), mean (SD)§ | **6.5 (2.7)** | **7.8 (2.8)** | **8.1 (4.0)** | **9.1 (6.0)** | **15.9 (13.6)** | **<.001** | 10.0 (9.7) | 9.4 (7.3) | 9.1 (6.5) | 9.6 (7.5) | 9.3 (7.9) | 0.77 |

N, total number in each quintile, SD, standard deviation; BMI, body mass index; PSC, posterior subcapsular.
\*For participants who attended the BMES 2 and BMES 3 examinations, who had completed the food frequency questionnaires at BMES 2 and were at risk of developing cataract.
†P for trend calculated using Mantel-Haenszel Chi-Square test or F test accordingly.

‡Education defined as trade certificate or higher qualification

§Energy adjusted dietary intake.

Bolded font indicates significant trend of association (P for trend <0.05)