## title

Comparison of cardiovascular disease risk factors, assessment and management in men and women, including consideration of absolute risk: a nationally representative cross-sectional study

## Supplementary material

Table S1. Crude numbers of participants in the Australian Health Survey (AHS) and the National Health Measures Survey (NHMS) aged 45-74 years, by sex.

|  | Australian Health Survey |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | $\begin{aligned} & \text { Total } \\ & \text { sample } \\ & (\mathrm{n}=11,518) \end{aligned}$ |  | National Health Measures Survey sample ( $n=5,353$ ) |  |
|  | Male <br> \% (n) | Female \% (n) | Male <br> \% (n) | Female $\%(n)$ |
| Number of participants, n (\%) | 5396 (46.8) | 6122 (53.2) | 2429 (45.4) | 2924 (54.6) |
| Median age in years (IQR) | 57 (50-65) | 58 (51-65) | 59 (52-65) | 59 (52-65) |
| Age group, years |  |  |  |  |
| 45-54 | 39.6 (2134) | 39.0 (2386) | 34.1 (829) | 35.4 (1034) |
| 55-64 | 35.3 (1906) | 34.0 (2083) | 37.0 (898) | 35.7 (1044) |
| 65-74 | 25.1 (1356) | 27.0 (1653) | 28.9 (702) | 28.9 (846) |
| Country of birth |  |  |  |  |
| Australia/ NZ | 72.4 (3909) | 71.3 (4363) | 72.8 (1768) | 74.2 (2168) |
| Other | 27.6 (1487) | 28.7 (1756) | 27.2 (661) | 25.8 (755) |
| Region of Residence |  |  |  |  |
| Major cities | 60.9 (3287) | 61.2 (3746) | 59.3 (1440) | 59.4 (1737) |
| Inner regional | 20.6 (1113) | 20.7 (1270) | 23.4 (568) | 23.5 (688) |
| Outer regional and remote | 18.5 (996) | 18.1 (1106) | 17.3 (421) | 17.1 (499) |
| Educational qualifications |  |  |  |  |
| Tertiary | 20.8 (1121) | 23.3 (1425) | 21.9 (531) | 25.2 (736) |
| Diploma/ certificate/ trade | 39.6 (2136) | 29.8 (1825) | 43.0 (1044) | 31.1 (910) |
| High school or below | 20.8 (1121) | 23.3 (1425) | 33.0 (802) | 42.3 (1238) |

Notes: \% of missing cases (AHS, NHMS): country of birth (<1, <1); highest educational qualifications $(1.7,1.7)$. There were no missing data on age, sex or region of residence.

Table S2. Crude numbers of participants in the Australian Health Survey (AHS) and the National Health Measures Survey (NHMS) aged 18 years and over, by sex.

|  | Australian Health Survey |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Total sample(n=24,910) |  | National Health Measure Survey sample ( $n=9564$ ) |  |
|  | Male n (\%) | Female n (\%) | Male n (\%) | Female n (\%) |
| Number of participants \%(n) | 46.5 (11,576) | $53.5(13,334)$ | 44.5 (4252) | 55.5 (5312) |
| Median age in years (IQR) | 47 (34-61) | 48 (34-63) | 53 (40-65) | 51 (38-64) |
| Age group |  |  |  |  |
| 18-44 | 45.4 (5250) | 44.3 (5905) | 33.2 (1410) | 36.8 (1952) |
| 45-54 | 18.4 (2134) | 17.9 (2386) | 19.5 (829) | 19.5 (1034) |
| 55-64 | 16.5 (1906) | 15.6 (2083) | 21.1 (898) | 19.7 (1044) |
| 65-74 | 11.7 (1356) | 12.4 (1653) | 16.5 (702) | 15.9 (846) |
| 75+ | 8.0 (930) | 9.8 (1307) | 9.7 (413) | 8.2 (436) |
| Country of birth |  |  |  |  |
| Australia/ NZ | 73.8 (8539) | 74.1 (9885) | 72.2 (3068) | 74.8 (3975) |
| Other | 26.2 (3036) | 25.8 (3446) | 27.9 (1184) | 25.2 (1336) |
| Region of Resident |  |  |  |  |
| Major cities | 64.5 (7463) | 63.5 (8468) | 62.9 (2675) | 62.8 (3335) |
| Inner regional | 18.7 (2165) | 19.5 (2597) | 21.5 (913) | 21.6 (1149) |
| Outer regional and remote | 16.8 (1948) | 17 (2269) | 15.6 (664) | 15.6 (828) |
| Educational qualifications |  |  |  |  |
| Tertiary | 23 (2658) | 26.3 (3508) | 25.1 (1065) | 29 (1542) |
| Diploma/ certificate/ trade | 38.7 (4482) | 30.5 (4070) | 40.4 (1716) | 31.2 (1659) |
| High school or below | 36.5 (4222) | 41.8 (5569) | 32.5 (1381) | 38.4 (2041) |

Table S3. Means, medians and interquartile range for continuous CVD risk factors in Australian population aged 18 years and over, by sex.

|  | Men <br> Mean | Median | Interquartile <br> range | Women <br> Mean | Median | Interquartile <br> range |
| :--- | ---: | ---: | :---: | :---: | :---: | :---: |
| BMI | 27.7 | 27.2 | $24.4-30.4$ | $27.1^{* * *}$ | 25.8 | $22.6-30.6$ |
| Waist circumference | 97.7 | 97.0 | $88.0-106.0$ | $87.6^{* * *}$ | 85.5 | $76.1-97.0$ |
| Systolic blood pressure | 125.9 | 122.0 | $114-134$ | $119.9^{* * *}$ | 116.0 | $106-130$ |
| Diastolic blood pressure | 77.4 | 78.0 | $70.0-84.0$ | $76.2^{* * *}$ | 76.0 | $68.0-82.0$ |
| LDL cholesterol | 3.2 | 3.1 | $2.6-3.7$ | $3.1^{* *}$ | 3.0 | $2.5-3.6$ |
| HDL cholesterol | 1.2 | 1.2 | $1.0-1.4$ | $1.5^{* * *}$ | 1.4 | $1.2-1.7$ |
| Total cholesterol | 5.0 | 5.0 | $4.3-5.7$ | 5.1 | 5.0 | $4.4-5.7$ |
| Total: HDL cholesterol | 4.4 | 4.2 | $3.5-5.1$ | $3.6^{* * *}$ | 3.4 | $2.9-4.1$ |
| Triglycerides | 1.5 | 1.2 | $0.9-1.7$ | $1.1^{* * *}$ | 1.0 | $0.7-1.4$ |
| Fasting plasma glucose | 5.2 | 5.0 | $4.7-5.4$ | $5.0^{* * *}$ | 4.8 | $4.5-5.2$ |
| HbA1c | 36.6 | 35.0 | $33-39$ | $35.8^{* * *}$ | 35.0 | $32.0-38.0$ |

Notes: ${ }^{* * *}$ indicates that means are significantly different $\mathrm{p}<0.001$, ${ }^{* *} \mathrm{p}<0.01$.

Table S4. Means, medians and interquartile range for continuous CVD risk factors in Australian population aged 45-74 years without prior CVD, by sex.

|  | Men <br> Mean | Median | Interquartile <br> range | Women <br> Mean | Median | Interquartile <br> range |
| :--- | ---: | :---: | :---: | :---: | :---: | :---: |
| BMI | 28.8 | 28.3 | $25.4-31.4$ | $28.1^{* * *}$ | 27.0 | $23.8-31.3$ |
| Waist circumference | 101.6 | 100.5 | $93.0-109.0$ | $90.6^{* * *}$ | 89.1 | $80.3-100.0$ |
| Systolic blood pressure | 130.6 | 128 | $118-142$ | $126.9^{* * *}$ | 124 | $114-138$ |
| Diastolic blood pressure | 80.8 | 80.0 | $74-88$ | $79.0^{* * *}$ | 78.0 | $72-86$ |
| LDL cholesterol | 3.4 | 3.3 | $2.8-3.9$ | 3.4 | 3.4 | $2.8-3.9$ |
| HDL cholesterol | 1.2 | 1.2 | $1.0-1.4$ | $1.5^{* * *}$ | 1.5 | $1.3-1.7$ |
| Total cholesterol | 5.3 | 5.3 | $4.7-5.9$ | $5.5^{* * *}$ | 5.5 | $4.8-6.1$ |
| Total: HDL cholesterol | 4.5 | 4.4 | $3.6-5.3$ | $3.8^{* * *}$ | 3.6 | $3.1-4.3$ |
| Triglycerides | 1.6 | 1.3 | $1.0-1.9$ | $1.2^{* * *}$ | 1.1 | $0.8-1.5$ |
| Fasting plasma glucose | 5.5 | 5.2 | $4.9-5.7$ | $5.1^{* * *}$ | 5.0 | $4.7-5.4$ |
| HbA1c | 38.2 | 37.0 | $34-40$ | $37.4^{* *}$ | 37.0 | $34-39$ |

Notes: ${ }^{* * *}$ indicates that means are significantly different $\mathrm{p}<0.001,{ }^{* *} \mathrm{p}<0.01$.

Table S5. Population prevalence of 5-year absolute risk of CVD among Australians aged 18 years and over, by sex.

|  | Low primary risk <br> $\%(95 \% \mathrm{CI})$ | Moderate primary risk <br> $\%(95 \% \mathrm{CI})$ | High primary risk <br> $\%(95 \% \mathrm{Cl})$ | Prior CVD <br> $\%(95 \% \mathrm{Cl})$ |
| :--- | :--- | :--- | :--- | :--- |
| Men | $74.8(73.5,76.0)$ | $6.9(5.9,7.9)$ | $10.8(9.9,11.7)$ | $7.6(6.7,8.5)$ |
| Women | $86.3(85.4,87.3)$ | $2.4(1.9,2.8)$ | $5.3(4.4,6.1)$ | $6.0(5.2,6.9)$ |
| Total | $80.6(79.8,81.3)$ | $4.6(4.0,5.2)$ | $8.0(7.3,8.7)$ | $6.8(6.2,7.4)$ |

Notes: FRE Framingham risk equation.

Table S6. Estimated proportions (with 95\% confidence intervals) and numbers of people in the Australian population aged 45-74 years receiving cardiovascular disease medications for those at low, moderate and high primary CVD risk, and those with prior atherosclerotic/ thromboembolic CVD, by sex.

|  | Blood pressurelowering medication | Lipid-Lowering medication | Antithrombotic medication | Blood pressure- and lipid-lowering medication | Blood pressure- and lipid-lowering and antithrombotic medication | No medication |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Low risk |  |  |  |  |  |  |
| Men \% | 15.2 (11.1, 19.2) | 13.9 (10.0, 17.8) | 5.0 (3.3, 6.7) | $6.1(3.6,8.5)$ | $\mathrm{n} / \mathrm{a}$ | 76.1 (71.6, 80.6) |
| N ('000) | 326 | 298 | 107 | 131 |  | 1,631 |
| Women \% | 20.2 (17.4, 22.9) | 13.0 (10.5, 15.5) | 5.8 (4.1, 7.5) | 6.7 (4.8, 8.7) | $\mathrm{n} / \mathrm{a}$ | 71.9 (68.7, 75.1) |
| N ('000) | 613 | 394 | 176 | 203 |  | 2,180 |
| Moderate risk |  |  |  |  |  |  |
| Men \% | 33.3 (22.9, 43.6) | 18.2 (10.3, 26.0) | 17.3 (10.0, 24.6) | 10.9 (5.1, 16.7) | $\mathrm{n} / \mathrm{a}$ | 56.5 (45.8, 67.1) |
| N ('000) | 166 | 91 | 86 | 54 |  | 281 |
| Women \% | 35.1 (17.9, 53.1) | 21.9 (6.7, 37.2) | 20.6 (3.9, 37.2) | 15.8 (2.6, 28.9) | $\mathrm{n} / \mathrm{a}$ | 49.3 (30.0, 68.6) |
| N ('000) | 37 | 23 | 22 | 17 |  | 52 |
| High risk |  |  |  |  |  |  |
| Men \% | 43.7 (34.7, 52.7) | 33.3 (24.2, 42.3) | 18.8 (11.9, 25.7) | 24.0 (16.3, 31.7) | 11.1 (5.6, 16.6) | 45.0 (35.3, 54.7) |
| N ('000) | 243 | 185 | 104 | 133 | 62 | 250 |
| Women \% | 44.4 (32.1, 56.6) | 28.2 (16.2, 40.2) | 18.6 (9.6, 27.6) | 21.0 (9.4, 32.6) | 9.3 (1.3, 17.3) | 47.4 (34.6, 60.3) |
| N ('000) | 108 | 68 | 45 | 51 | 23 | 115 |
| Prior atherosclerotic/ thromboembolic CVD |  |  |  |  |  |  |
| Men \% | 73.6 (67.8, 79.3) | 65.2 (57.6, 72.8) | 66.1 (59.7, 72.5) | 56.7 (49.6, 63.8) | 41.6 (34.7, 48.5) | 11.0 (7.0, 15.1) |
| N ('000) | 230 | 204 | 207 | 178 | 130 | 34 |
| Women \% | 62.0 (53.4, 70.6) | 58.9 (51.1, 66.7) | 48.6 (40.2, 57.0) | 44.2 (34.9, 53.6) | 28.1 (20.9, 35.4) | 16.8 (10.5, 23.2) |
| N ('000) | 114 | 109 | 90 | 82 | 52 | 31 |

Notes: n /a: cell sizes have been suppressed due to small sample size. No medication refers to no blood pressure- lowering, lipid-lowering or antithrombotic medications.


Figure S1. Distribution of CVD risk factors in population aged 18 years and over, by sex. Notes: The $x$ axis for waist circumference is estimated with the difference between waist circumference and the sex-specific cut points for an "at risk" waist circumference ( 80 cms for women, 94 cms for men). Body mass index and waist circumference were rounded to the nearest whole number. Systolic and diastolic blood pressure were rounded to the nearest second number. Risk factor values with less than 10 respondents have been supressed.


Figure S2. Age-adjusted prevalence, prevalence difference and prevalence ratios (and 95\% CI) for CVD risk factors for the population aged 18 years and over for women versus men. Notes: Weighted percent are age-adjusted. The prevalence ratio is plotted.


Figure S3. Distribution of CVD risk factors in the Australian population aged $45-74$ years without prior CVD, by sex. Notes: The x-axis for waist circumference is estimated with the difference between waist circumference and the sex-specific cut points for an "at risk" waist circumference ( 80 cms for women, 94 cms for men). Body mass index and waist circumference are rounded to the nearest whole number. Systolic and diastolic blood pressure are rounded to the nearest second number. Risk factor values with less than 10 respondents have been supressed.

|  | Men \% | Women \% | Prevalence difference | Prevalence Ratio |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| BMI |  |  |  |  |  |  |  |
| Underweight/normal | 21.6 | 34.2 | 12.6 (10.3, 15.0) | 1.58 (1.45, 1.73) |  | - |  |
| Overweight | 44.0 | 34.0 | -10.0 (-12.5, -7.5) | 0.77 (0.72, 0.82) | $\square$ |  |  |
| Obese | 34.5 | 31.9 | -2.6 (-5.1, -0.2) | 0.92 (0.86, 1.00) | - |  |  |
| Waist circumference |  |  |  |  |  |  |  |
| Not at risk | 26.7 | 23.1 | -3.6 (-5.9, -1.4) | 0.86 (0.79, 0.95) | $\square$ |  |  |
| At risk | 73.3 | 76.9 | 3.6 (1.4, 5.9) | 1.05 (1.02, 1.08) |  |  |  |
| Physical activity |  |  |  |  |  |  |  |
| High | 11.8 | 8.7 | -3.1 (-4.8, -1.5) | 0.73 (0.63, 0.86) | - |  |  |
| Moderate | 31.5 | 29.9 | -1.7 (-4.2, 0.9) | 0.95 (0.87, 1.03) | - |  |  |
| Low | 34.8 | 40.5 | $5.7(3.3,8.1)$ | 1.16 (1.09, 1.24) |  |  |  |
| Sedentary | 21.8 | 20.9 | -0.9 (-3.4, 1.6) | 0.96 (0.85, 1.08) |  |  |  |
| Smoking Status |  |  |  |  |  |  |  |
| Current | 18.4 | 14.3 | -4.1 (-6.1, -2.1) | 0.78 (0.69, 0.88) | - |  |  |
| Former | 42.6 | 32.3 | -10.3 (-12.7, -7.9) | 0.76 (0.71, 0.81) | - |  |  |
| Never | 39.0 | 53.4 | 14.4 (11.9, 16.8) | 1.37 (1.29, 1.45) |  | $\square$ |  |
| Alcohol intake/wk |  |  |  |  |  |  |  |
| 0 drinks | 27.8 | 46.4 | 18.6 (15.1, 22.0) | 1.67 (1.51, 1.84) |  | - |  |
| 1-14 drinks | 42.2 | 42.1 | -0.1 (-3.2, 3.0) | 1.00 (0.93, 1.07) |  |  |  |
| >14 drinks | 30.0 | 11.5 | -18.5 (-21.4, -15.5) | 0.38 (0.32, 0.46) | $\ldots$ |  |  |
| Systolic BP |  |  |  |  |  |  |  |
| $<120 \mathrm{mmHg}$ | 29.6 | 40.4 | 10.8 (8.1, 13.4) | 1.36 (1.27, 1.47) |  | $\square$ |  |
| $120-139 \mathrm{mmHg}$ | 42.0 | 36.6 | -5.4 (-7.8, -3.0) | 0.87 (0.82, 0.93) | - |  |  |
| $140-179 \mathrm{mmHg}$ | 27.3 | 21.9 | -5.4 (-7.6, -3.2) | 0.80 (0.73, 0.88) | $\cdots$ |  |  |
| $\geq 180 \mathrm{mmHg}$ | 1.2 | 1.2 | $0.0(-0.6,0.6)$ | 1.02 (0.61, 1.72) |  |  |  |
| Diastolic BP |  |  |  |  |  |  |  |
| $<90 \mathrm{mmHg}$ | 80.8 | 85.2 | $4.4(1.9,6.8)$ | 1.05 (1.02, 1.09) |  |  |  |
| $90-<110 \mathrm{mmHg}$ | 18.4 | 14.4 | -3.9 (-6.4, -1.5) | 0.79 (0.67, 0.91) | $\cdots$ |  |  |
| $\geq 110 \mathrm{mmHg}$ | 0.8 | 0.3 | -0.4 (-0.8, -0.1) | 0.42 (0.21, 0.84) | $\square$ |  |  |
| LDL Cholestersol |  |  |  |  |  |  |  |
| $<2.0 \mathrm{mmol} / \mathrm{L}$ | 5.0 | 3.0 | -2.0 (-3.6, -0.4) | 0.60 (0.41, 0.89) | -- |  |  |
| $2.0-3.5 \mathrm{mmol} / \mathrm{L}$ | 55.6 | 55.0 | -0.6 (-5.0, 3.8) | 0.99 (0.91, 1.07) |  |  |  |
| $>3.5 \mathrm{mmol} / \mathrm{L}$ | 39.4 | 42.0 | 2.6 (-2.1, 7.3) | 1.07 (0.95, 1.20) |  |  |  |
| HDL Cholesterol |  |  |  |  |  |  |  |
| $\geq 1.0 \mathrm{mmol} / \mathrm{L}$ | 81.2 | 97.1 | 15.9 (13.3, 18.5) | 1.20 (1.16, 1.23) |  | $\square$ |  |
| <1.0mmol/L | 18.8 | 2.9 | -15.9 (-18.5, -13.3) | 0.16 (0.11, 0.21) | $\square$ |  |  |
| Total Cholesterol |  |  |  |  |  |  |  |
| < $4.0 \mathrm{mmol} / \mathrm{L}$ | 7.9 | 4.5 | -3.4 (-5.0, -1.7) | 0.57 (0.44, 0.75) | - |  |  |
| $4.0-5.5 \mathrm{mmol} / \mathrm{L}$ | 58.3 | 53.1 | -5.2 (-9.1, -1.3) | 0.91 (0.85, 0.98) | $\cdots$ |  |  |
| $5.6-7.5 \mathrm{mmol} / \mathrm{L}$ | 32.5 | 40.0 | 7.5 (3.2, 11.8) | 1.23 (1.09, 1.39) |  | - |  |
| >7.5mmol/L | 1.3 | 2.4 | 1.1 (0.2, 1.9) | 1.80 (1.07, 3.04) |  | $\square$ |  |
| Total:HDL Cholesterol |  |  |  |  |  |  |  |
| <4.5 | 53.1 | 79.1 | 26.0 (21.6, 30.3) | 1.49 (1.38, 1.60) |  | $\square$ |  |
| 4.5-<6.0 | 33.4 | 17.3 | -16.1 (-20.2, -12.0) | 0.52 (0.44, 0.61) | $\square$ |  |  |
| $\geq 6.0$ | 13.4 | 3.6 | -9.8(-12.6, -7.1) | 0.27 (0.18, 0.40) | $\square$ |  |  |
| Triglycerides |  |  |  |  |  |  |  |
| <1.7mmol/L | 64.4 | 81.2 | 16.7 (12.6, 20.9) | 1.26 (1.18, 1.34) |  | \# |  |
| $1.7-2.0 \mathrm{mmol} / \mathrm{L}$ | 15.2 | 10.0 | -5.2 (-8.7, -1.8) | 0.66 (0.50, 0.86) | - |  |  |
| >2.0mmol/L | 20.3 | 8.8 | -11.5 (-14.6, -8.3) | 0.43 (0.35, 0.54) | - |  |  |
| Diabetes | 11.5 | 5.9 | -5.6 (-7.7, -3.5) | 0.52 (0.41, 0.65) | - |  |  |
| Diabetes microalbuminuria | 3.0 | 0.7 | -2.3 (-3.4, -1.2) | 0.25 (0.13, 0.46) | - |  |  |
| Chronic kidney disease | 0.6 | 0.2 | -0.3 (-0.7, 0.1) | 0.41 (0.13, 1.36) | $\square$ |  |  |
|  |  |  |  | Prevalence Ratio ( $95 \% \mathrm{Cl}$ ) |  |  |  |
|  |  |  |  | Prevalence lo women com to men |  | Prevalen women c to men | her in ared |

Figure S4. Age-adjusted prevalence, prevalence difference and prevalence ratios (and 95\% CI) for CVD risk factors for the population aged 45-74 years without prior CVD for women versus men. Notes: Prevalence differences and prevalence ratios compares women to men. The prevalence ratio is plotted. An at risk waist circumference is defined as $\geq 80 \mathrm{~cm}$ for women and $\geq 94 \mathrm{~cm}$ for men.


5-Year Absolute CVD Risk

Figure S5. Estimated distribution of 5 -year absolute CVD risk, including clinically high risk and prior CVD, among the Australian population aged 18 years and over, by sex.

