Australian adults' behaviours, knowledge and perceptions of risk factors for heart disease: A cross-sectional study

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ABSTRACT

This research aimed to determine Australian adults' perceptions of risk factors for heart disease, self-reported behaviours relating to modifiable risk factors, and knowledge of leading causes of death. This study reports on HeartWatch survey data collected between January 2015 and December 2015 in a sample of Australian adults. The setting of the research was Australian communities, with all states and territories represented in the final sample. Participants were Australian adults aged 30–59 years (n = 8425), and were representative of the wider Australian population based on key demographic and health characteristics. Half of the sample overall correctly identified heart disease as the biggest underlying cause of death of males, and 26% for women. For risk factors for heart disease, respondents most frequently reported; poor diet (58.2%, 95%CI 57.9–59.1), physical inactivity (49.0%, 95%CI 47.9–50.2), smoking (38.7%, 95%CI 37.7–39.8). A low proportion (< 10%) recognised underlying clinical risk factors for heart disease including high blood pressure (6.3%, 95% CI 5.8–6.8) and dyslipidaemia (9.8%, 95% CI 9.2–10.5). This study revealed broad misconceptions with regard to the leading cause of death and risk factors for heart disease among Australian men and women. Overall the lack of understanding in all groups suggests the need for a comprehensive national campaign reaching schools and the broad adult population. The health system alone cannot achieve national and international targets for disease prevention without understanding and engagement in the general community.

1. Introduction

In 2015, ischaemic heart disease (IHD) was the leading cause of death for both Australian men and women (Australian Bureau of Statistics, 2016). IHD includes angina, heart attack and other forms of coronary artery disease. The collective term heart disease is used to refer to IHD and all other diseases that affect the heart including valve disease, cardiomyopathy, arrhythmia and heart failure. In 2015, there were a total of 29,576 deaths attributed to heart disease in Australia, including 15,427 deaths among men, and 14,149 among women (Australian Bureau of Statistics, 2016). Cardiovascular diseases (CVD) broadly, including all heart, stroke and blood vessel diseases, were the cause of 45,392 deaths of Australians in 2015 (Australian Bureau of Statistics, 2016). The need for awareness of heart and cardiovascular disease and its causes in the Australian community is of critical importance as much is preventable.

Modifiable lifestyle behaviours that contribute to the development of heart disease include tobacco use, poor diet, overweight/obesity and physical inactivity (World Health Organization, 2013). High levels of alcohol consumption, or single heavy drinking sessions (binge drinking) can cause stress to the heart, arrhythmia and raise blood pressure (World Health Organization, 2012). The clinical risk factors for heart disease include dyslipidaemia (including high cholesterol), high blood pressure, and diabetes. Stress and psychological health are also associated with heart disease, partly through interactions with other risk behaviours, and comorbidity with mental disorders (Stansfeld & Marmot, 2002). There are also genetic risk factors for heart disease. A recent cross-sectional study of over 130,000 Australian General Practitioner records demonstrated that specific sub-groups are more (e.g., diabetics) or less (e.g., women) likely to be screened for CVD risk factors, and < 2% had all clinical, lifestyle, and other major risk factors recorded. Identifying high risk individuals through clinical practice and enhancing risk factor knowledge are critical factors in the prevention and management of heart disease.
Current Australian and global public health policy aims to tackle the significant burden of these risk factors and prevent disease. With such population-wide efforts, it is imperative to understand the level of population awareness of heart disease risk factors and to engage the public. Given known inequalities in the burden and prevalence of heart disease (Nichols et al., 2014), it is also of interest whether demographic characteristics such as gender, age and area of residence, in addition to health characteristics, are associated with risk factor awareness.

The present study addressed the following research questions:

1. What do Australian adults report as the leading cause of death for men and women?
2. What clinical, lifestyle, genetic, and psychological factors do Australian adults recognise as increasing their risk of heart disease, and what demographic associations exist?
3. What health characteristics are associated with risk factor awareness of heart disease?

2. Methods

The HeartWatch survey was developed by the National Heart Foundation of Australia and this study examines data collected during January 2015 to December 2015. HeartWatch is an online survey (except the Northern Territory which was a Computer Assisted Telephone Interview) that has been reported bi-annually since July 2009 among cross-sectional samples of Australian adults aged between 30 and 65 years. The study sample was recruited from an online panel. A purposive non-probability sampling method was used with all panel members qualifying for survey completion, up to quotas for age, gender and area of residence to reflect the wider Australian population based on Australian Demographic Census (Australian Bureau of Statistics, 2017). The survey captures Australian adults’ understanding of heart disease and associated risk factors, in addition to health behaviours and existing health conditions. This study received an ethics waiver from the Alfred Health Human Ethics Committee.

2.1. Design

The survey took an average 20–25 min to complete. Participation was voluntary and participants were informed that privacy laws protected the information they provided and responses would be de-identified and treated as strictly confidential. The survey consisted of eight modules, as well as demographic characteristics.

2.2. Participants

This study examined a subset of the total survey sample who participated during 2015 (n = 12,077). A total number of 8425 participants aged 30–59 years had complete data available and were included in subsequent analyses. The subset was also representative of the sample as a whole and of the Australian population in age, sex, and area of residence (Australian Bureau of Statistics, 2017).

2.3. Measures

2.3.1. Health status

Participants reported their height (in metres, centimetres, or feet and inches) and weight (in kilograms, pounds, or stones and pounds), allowing calculation of body mass index (BMI) (kg/m²). Weight status was derived based on World Health Organization criteria whereby a BMI > 25 kg/m² is overweight, and equal to or > 30 kg/m² is obese (World Health Organization, 2015). Participants reported whether they currently smoke, and to report their fruit and vegetable consumption patterns. Fruit and vegetable consumption responses were combined to form an overall variable which indicated whether participants met or did not meet Australian dietary guidelines of two serves or more of fruit per day, and five serves or more of vegetables per day (National Health and Medical Research Council, 2013).

Participants were asked; ‘Have you ever been told by a doctor that you (have)…? ’ with a range of health outcomes listed including heart disease and diabetes. Medication status was derived from the item ‘Are you currently taking medications for…?’ with responses; ‘High blood pressure’, ‘High cholesterol’, ‘Heart disease’, and ‘Diabetes’. Previous heart-related events were assessed by the item ‘In the last five years have you had…?’ ‘A heart attack’, and ‘Angina’.

2.3.2. Knowledge and perceptions of heart disease and risk factors

Participants were asked ‘What do you believe are the top three causes of death for women/men in Australia, ranking them from one to three, where one is the highest cause of death?’, with this item being asked of all participants, for cause of death in women and men separately. Responses were open verbatim. The order of first, second and third listed was captured by the survey software. Participants were also asked ‘Based on what you know, what things do you think increase your risk of heart disease?’ with responses being open verbatim and multiple responses allowed. Items were aligned with those used in previous population health surveys (e.g., ‘What is the leading cause of death of all women?’, perceptions of risk factors for, and strategies to mitigate, heart disease (Mosca et al., 2004)). The items reported here were deemed acceptable surrogates in the absence of accessible, valid and reliable measures of risk factors for heart disease (Gholizadeh et al., 2009).

2.3.3. Demographics

As part of the initial screening module on the survey, participants reported their age, gender, their state and postcode of residence. Participants also reported educational attainment, language spoken at home, and other demographic profile items relating to household and family structure.

2.4. Statistical analysis

All data were analysed using Stata release V.14.1 (Stata Corp., College Station, Texas, USA, 2013). All variables were checked for missing data. Besides weight status (where approximately 10% were missing), there were < 5% missing values for all other variables and case-wise deletion was used accordingly. Little's Missing Completely At Random test was significant for weight status (Little, 1988). When missing and non-missing weight status data were further analysed with chi-square tests and logistic regression models, a subset of predictor variables (e.g., gender, age, and educational attainment) were found to be significantly associated with missing data for weight status. Case-wise deletion was deemed appropriate as unbiased estimates were expected given the inclusion of predictor variables in final regression models (Allison, 2002), and based on previous recommendations that missing data < 10% should not be expected to introduce biases (Bennett, 2001).

Descriptive data and participant characteristics were calculated as proportions with 95% confidence intervals. Associations between a range of demographic and health characteristics and each of the respective clinical, lifestyle, genetic and psychological risk factors were estimated using logistic regression models and expressed as odds ratios with 95% confidence intervals. Each risk factor (dependent variable) was examined in separate models with all of the identified predictor variables; gender, age, level of education, area of residence, weight status (overweight/obese compared to normal weight), medication and diagnostic status, and whether the individual had reported experiencing a heart attack or angina in the previous five years. The purpose of these analyses was to determine any differences in level of knowledge pertaining to risk factors for heart disease, based on demographic and health characteristics. In addition, month of survey was included (not reported). Statistical significance was assumed when p < 0.05.
3. Results

Participant characteristics are reported in Table 1 and broadly reflected the wider Australian population based on; age distribution, level of education, language spoken at home, and the proportion residing in metropolitan and regional areas (Australian Bureau of Statistics, 2017). Of the 8425 participants, a quarter of males were on medication for high blood pressure/dyslipidaemia, heart disease or diabetes, compared to 18% of females. Approximately one tenth had been diagnosed with heart disease or diabetes, with proportions similar for males and females, and 4% of males and 2% of females reported having a heart attack or angina in the previous five years. The health characteristics of this sample resembled those of the wider Australian population based on: age distribution, level of education, language spoken at home, and the proportion residing in metropolitan and regional areas based on: age distribution, level of education, language spoken at home, and the proportion residing in metropolitan and regional areas (Australian Bureau of Statistics, 2017).

Of the known risk factors for heart disease, females were more likely than males to recognise risk factors, except for poor diet, which appeared to be universally recognised (Table 5). The oldest age group more frequently individual risk factors, except for poor diet (OR = 0.78, 95%CI = 0.70–0.89, p < 0.05). Greater recognition of risk factors was observed in those with the highest-level educational attainment. Participants living in regional areas more frequently recognised overweight/obesity as a risk factor (OR = 1.14, 95%CI = 1.02–1.27, p < 0.05) than those in metropolitan areas, but no other differences were observed for area of residence. Participants who were overweight or obese more frequently reported weight status as a risk factor (OR = 1.69, 95%CI = 1.52–1.87, p < 0.05), and less frequently reported poor diet (OR = 0.90, 95%CI = 0.82–0.99, p < 0.05), smoking (OR = 0.84, 95%CI = 0.74–0.96, p < 0.05), and stress (OR = 0.81, 95%CI = 0.70–0.95, p < 0.05) compared to normal weight participants.

Table 1
Demographics and health characteristics of Australian adults participating in HeartWatch 2015.

|                         | Males      | Females    | Total      |
|-------------------------|------------|------------|------------|
| N (%)                   | 4095 (48.6)| 4330 (51.4)| 8425 (100.0)|
| Age group (years) n (%) |            |            |            |
| 30–39                   | 1112 (27.2)| 1372 (31.7)| 2484 (29.5)|
| 40–49                   | 1331 (32.5)| 1407 (32.5)| 2738 (32.5)|
| 50–59                   | 1652 (40.3)| 1551 (35.8)| 3203 (38.0)|
| Highest education level n (%) |      |            |            |
| Less than year 12       | 479 (11.7) | 591 (13.7) | 1070 (12.7)|
| Completed year 12       | 1856 (45.3)| 1948 (45.0)| 3804 (45.2)|
| Completed tertiary      | 1760 (43.0)| 1791 (41.3)| 3551 (42.2)|
| Language spoken at home n (%) |      |            |            |
| English                 | 3305 (80.7)| 3622 (83.7)| 6927 (82.2)|
| Other                   | 790 (19.3) | 708 (16.3) | 1498 (17.8)|
| Location                |            |            |            |
| Metro                   | 3131 (76.5)| 3153 (72.8)| 6284 (74.6)|
| Regional                | 964 (23.5) | 1177 (27.2)| 2141 (25.4)|
| Health characteristics n (%) |      |            |            |
| Overweight/obese        | 2832 (69.2)| 2341 (54.1)| 5173 (61.4)|
| Smokers (yes)           | 676 (16.5) | 601 (13.9) | 1277 (15.2)|
| Meeting fruit and vegetable consumption | 236 (5.8) | 413 (9.5) | 649 (7.7)|
| Medication for high blood pressure/dyslipidaemia | 1035 (25.3)| 781 (18.0)| 1816 (21.6)|
| Diagnosed heart disease/diabetes | 459 (11.2)| 343 (7.9) | 802 (9.5)|
| Heart attack or Angina in last 5 years | 170 (4.2) | 86 (2.0) | 256 (3.0)|
| Perceived leading causes of death in Australian women (% selected as leading cause) |      |            |            |
| Cancer – breast cancer  | 1559 (38.1)| 1376 (31.8)| 2935 (34.8)|
| Cancer (other)          | 1196 (29.2)| 1145 (26.4)| 2341 (27.8)|
| Heart disease/heart attack | 789 (19.3)| 1424 (32.9)| 2213 (26.3)|
| Other                   | 551 (13.4) | 385 (8.9) | 936 (11.1)|
| Perceived leading cause of death in Australian men (% selected as leading cause) |      |            |            |
| Heart disease/heart attack | 1644 (40.1)| 2318 (53.5)| 3962 (47.0)|
| Cancer (other)          | 1043 (25.5)| 924 (21.3)| 1967 (23.3)|
| Cancer – prostate       | 496 (12.1) | 582 (13.4) | 1078 (12.8)|
| Other                   | 912 (22.3) | 506 (11.7) | 1418 (16.8)|

The most frequently listed cause of death for Australian men was heart disease, cancer (general) and prostate cancer. For women, the most frequently listed cause of death was breast cancer, cancer (general) and heart disease. While 47% of the sample overall correctly identified heart disease as the leading cause of death, there were just 26% who correctly identified heart disease as the biggest underlying cause of death for women. Table 2 demonstrates the actual and perceived causes of death among the Australian adult population.

As reported in Table 3, respondents most frequently reported lifestyle risk factors including poor diet (58%), physical inactivity (49%), smoking (39%), and overweight/obesity (31%). Clinical risk factors were least frequently reported risk factors for heart disease overall, with 6% nominating high blood pressure and 10% nominating high cholesterol. Table 4 demonstrates the actual contribution of each risk factor to cardiovascular disease burden in Australia, and the proportion of Australian adults who recognised these risk factors in this study.

Of the known risk factors for heart disease, females were more likely than males to recognise risk factors, except for poor diet, which
Preventive Medicine Reports 8 (2017) 204–209

Table 2
Actual (according to Australian Bureau of Statistics Australia’s Leading Causes of Death, 2015 (Australian Bureau of Statistics, 2016), including International Classification of Diseases and Related Health Problems coding (World Health Organization, 2004)) and perceived leading causes of death among Australian adults in HeartWatch 2015.

| What is the leading cause of death among Australian women? | Actual | Male respondents | Female respondents | What is the leading cause of death among Australian men? | Actual | Male respondents | Female respondents |
|-----------------------------------------------------------|--------|----------------|-------------------|---------------------------------------------------------|--------|----------------|-------------------|
|                                                          |        | Perceived      | Perceived         |                                                          |        | Perceived      | Perceived         |
| 1. Ischaemic heart disease (120–125)                       |        | Cancer – breast cancer (38.1%) | Heart disease/heart attack (32.9%) | 1. Ischaemic heart disease (120–125)                       |        | Heart disease/heart attack (40.1%) | Heart disease/heart attack (53.5%) |
| 2. Dementia and Alzheimer disease (F01, F03, G30)          |        | Cancer (other) (29.2%) | Cancer – breast cancer (31.8%) | 2. Cancer of trachea, bronchus, lung (C33-C34)            |        | Cancer (other) (25.5%) | Cancer (other) (21.3%) |
| 3. Cerebrovascular diseases (160, 169)                      |        | Heart disease/heart attack (19.3%) | Cancer (other) (26.4%) | 3. Dementia and Alzheimer disease (F01, F03, G30)        |        | Cancer – prostate (12.1%) | Cancer – prostate (13.4%) |
| 4. Chronic lower respiratory diseases (J40–J47)             |        | Other (13.4%) | Other (8.9%)       | 4. Cerebrovascular diseases (160, 169)                     |        | Other (22.3%) | Other (11.7%) |

4. Discussion

4.1. Key findings

Just half of the sample correctly identified heart disease or heart attack as the leading cause of death among men, and the greatest proportion believed that breast cancer is the leading cause of death among women. A quarter correctly identified heart disease as the leading cause of death among women. It appears there are misconceptions of the proportion of deaths attributed specifically to heart disease among Australian adults. This may be due, in part, to the fact that cause of death varies with age. High awareness of breast cancer as a leading cause of death for Australian women reflects effective cancer awareness campaigns and should be commended. While gender differences in health literacy has been previously reported (Stroebele et al., 2011; Berkman et al., 2011; Maniere, 2015), the findings warrant further investigation into misconceptions of health and potential behavioural and subsequent health outcomes among Australian adult men and women. For example, do beliefs surrounding leading causes of death among women lead to greater engagement in protective factors relating to such beliefs?

The finding that only a small proportion of the Australian public recognise clinical risk factors for heart disease is an important public health finding. The Australian Burden of Disease study (2011) found that while physical inactivity and poor diet were important attributable risk factors for the burden of cardiovascular diseases, one third (32%) was attributable to high blood pressure, and 16% to high cholesterol (Australian Institute of Health and Welfare, 2016). While limitations exist in interpreting independent contributions given risk factors are not mutually exclusive, the low awareness of clinical risk factors found in this study is nonetheless concerning. While onset of heart disease may occur at an older age, risk factors that predispose to the condition may be present decades prior and public health and prevention measures will not be successful without awareness from an early age.

Exacerbating this was the finding that there were little differences in awareness of clinical risk factors in those who had and had not been diagnosed with heart disease or diabetes, and those who had a heart attack or angina the last 5 years. Those reporting these health conditions might be expected to have greater knowledge given their health status, however this assumption was not supported by the findings of this study. At face value those at high risk who needed an understanding of their risk were equally or less knowledgeable than the general population.

To the authors’ knowledge this is the first comprehensive evaluation of population-level representations of health beliefs surrounding cause of death among Australians, and awareness of specific risk factors for heart disease. Previous studies have demonstrated low levels of

Table 3
Proportions of selected risk factors for heart disease among Australian adults in HeartWatch 2015.

| Clinical % selected (95%CI) | Males | Females | Total | p |
|----------------------------|-------|---------|-------|---|
| High cholesterol           | 7.7 (6.9–8.5) | 11.8 (10.9–12.8) | 9.8 (9.2–10.5) | < 0.000 |
| High blood pressure        | 4.3 (3.8–5.0) | 8.2 (7.4–9.0) | 6.3 (5.8–6.8) | < 0.000 |
| Genetic % selected (95%CI) |       |         |       |   |
| Hereditary heart problems  | 13.7 (12.6–14.7) | 22.7 (21.5–24.0) | 18.3 (17.5–19.1) | < 0.000 |
| Lifestyle % selected (95%CI) |     |       |       |   |
| Poor diet                  | 57.0 (55.5–58.5) | 59.0 (57.6–60.5) | 58.1 (57.0–59.1) | NS |
| Physical inactivity        | 45.6 (44.1–47.1) | 52.2 (50.7–53.7) | 49.0 (47.9–50.1) | < 0.000 |
| Smoking                    | 36.8 (35.4–38.3) | 40.6 (39.1–42.0) | 38.7 (37.7–39.8) | < 0.05 |
| Overweight/obesity         | 25.3 (23.9–26.6) | 35.7 (34.3–37.1) | 30.6 (29.6–31.6) | < 0.05 |
| Alcohol consumption        | 11.7 (10.7–12.7) | 10.3 (9.4–11.1) | 10.9 (10.3–11.6) | < 0.05 |
| Psychological % selected (95%CI) |    |       |       |   |
| Stress                     | 8.9 (8.1–9.9) | 10.6 (9.8–11.6) | 9.8 (9.2–10.5) | < 0.01 |
Table 5
Logistic regression (odds ratio) for awareness of risk factors in HeartWatch 2015 for heart disease demographic and health predictor variables, adjusted for month of survey (not reported).

| Model # | DV | Gender¹ | Age (years) | Level of education | Area of residence² | Weight status³ | Med⁴ | Diag⁵ | Heart attack⁶ |
|---------|----|---------|------------|-------------------|-------------------|----------------|------|-------|-------------|
|         |     | (95% CI) | (95% CI)   | (95% CI)          | (95% CI)          | (95% CI)       | (95% CI) | (95% CI) | (95% CI) |
|         |     |          |            |                   |                   |                |       |       |             |
| 40-49²  |     |          |            |                   |                   |                |       |       |             |
| > Year 12 |     |          |            |                   |                   |                |       |       |             |
| Tertiary³ |     |          |            |                   |                   |                |       |       |             |
| Clinical |     |          |            |                   |                   |                |       |       |             |
| 1       | Choles 1.66 | 1.36 | 1.79 | 1.19 | 1.79 | 0.91 | 0.89 | 1.10 | 0.93 | 0.92 |
|         | (1.43–1.93) | (1.12–1.66) | (1.48–2.18) | (0.92–1.53) | (1.39–2.30) | (0.77–1.09) | (0.77–1.04) | (0.90–1.35) | (0.70–1.24) | (0.58–1.47) |
| 2       | BP 2.20 | 1.25 | 1.81 | 1.32 | 1.94 | 0.93 | 1.20 | 1.97 | 0.73 | 0.81 |
|         | (1.82–2.66) | (0.97–1.62) | (1.42–2.30) | (0.97–1.79) | (1.42–2.64) | (0.75–1.15) | (0.99–1.46) | (1.58–2.46) | (0.52–1.01) | (0.46–1.44) |
| Genetic |     |          |            |                   |                   |                |       |       |             |
| 3       | Heced 1.92 | 1.24 | 1.40 | 1.72 | 2.68 | 1.04 | 0.99 | 1.04 | 0.89 | 0.85 |
|         | (1.71–2.16) | (1.07–1.43) | (1.20–1.62) | (1.59–2.13) | (2.16–3.22) | (0.92–1.19) | (0.88–1.12) | (0.89–1.23) | (0.70–1.11) | (0.59–1.24) |
| Lifestyle |     |          |            |                   |                   |                |       |       |             |
| 4       | Diet 1.02 | 0.94 | 0.78 | 1.27 | 1.10 | 1.00 | 0.90 | 0.70 | 0.82 | 0.82 |
|         | (0.89–1.11) | (0.84–1.06) | (0.70–0.89) | (1.10–1.46) | (0.95–1.27) | (0.91–1.11) | (0.82–0.99) | (0.70–0.98) | (0.63–1.07) |
| 5       | PA 1.31 | 1.07 | 1.13 | 1.50 | 1.62 | 1.00 | 1.05 | 0.95 | 0.88 | 0.60 |
|         | (1.20–1.43) | (0.96–1.19) | (1.01–1.26) | (1.30–1.73) | (1.40–1.87) | (0.91–1.11) | (0.96–1.15) | (0.84–1.08) | (0.74–1.04) | (0.45–0.79) |
| 6       | Smoke 1.12 | 1.34 | 1.36 | 1.11 | 0.99 | 1.04 | 0.81 | 0.84 | 0.76 | 1.04 |
|         | (1.03–1.23) | (1.19–1.50) | (1.21–1.52) | (0.97–1.28) | (0.86–1.15) | (0.94–1.15) | (0.73–0.88) | (0.74–0.96) | (0.63–0.91) | (0.78–1.37) |
| 7       | Ob/Ob 1.85 | 1.15 | 1.57 | 1.24 | 1.43 | 1.14 | 1.69 | 1.33 | 0.73 | 0.69 |
|         | (1.67–2.03) | (1.01–1.30) | (1.38–1.78) | (1.06–1.45) | (1.22–1.67) | (1.02–1.27) | (1.52–1.87) | (1.17–1.52) | (0.60–0.88) | (0.50–0.94) |
| 8       | Alcoh 0.84 | 1.03 | 1.06 | 1.22 | 1.04 | 0.91 | 0.87 | 0.98 | 0.89 | 0.93 |
|         | (0.73–0.97) | (0.86–1.23) | (0.89–1.27) | (0.97–1.53) | (0.82–1.32) | (0.78–1.08) | (0.75–1.01) | (0.80–1.19) | (0.68–1.18) | (0.60–1.44) |
| Psychological |     |          |            |                   |                   |                |       |       |             |
| 9       | Stress 1.21 | 1.43 | 1.41 | 1.42 | 1.65 | 0.85 | 0.62 | 0.92 | 0.91 | 1.31 |
|         | (1.04–1.40) | (1.19–1.73) | (1.16–1.71) | (1.10–1.84) | (1.27–2.15) | (0.71–1.01) | (0.70–0.95) | (0.75–1.14) | (0.68–1.23) | (0.85–1.99) |

DV, dependent variable (risk factor identified compared to not identified); Choles, cholesterol; BP, blood pressure; Heced, hereditary; Diet, poor diet; PA, physical inactivity; Smoke, smoking; Ob/Ob, overweight/obesity; Alcoh, alcohol.

¹ p < 0.05.
² Females compared to males.
³ Compared to 30–39 year age group.
⁴ Compared to those who did not complete Year 12 (secondary education).
⁵ Regional compared to Metropolitan.
⁶ Overweight/obese compared to normal weight.
⁷ Reported taking medication for high blood pressure or high cholesterol compared to not taking medication.
⁸ Reported being diagnosed with heart disease or diabetes compared to not having a diagnosis.
⁹ Experienced a previous heart attack or angina compared to not experiencing, in the previous 5 years.

10 The recruitment method in this study was likely to have led to respondent bias in that participants were individuals who were interested in participating in surveys in exchange for payment. Furthermore, due to the purposive sampling technique used it is possible that unmeasured factors may have led to selection bias, and the extent to which this sample is truly representative of the wider population is unknown. In addition, this study did not capture information on non-responders, and this may have led to additional bias. Although several key factors were including as covariates, it is possible that residual confounding occurred from omitted factors. This study was also limited by factors typical to cross-sectional self-report survey design. These include; conclusions are not possible based on causality, findings are subject to response and social desirability bias. Furthermore, information bias may have occurred as a result of respondent misunderstanding with respect to heart disease items and this may have influenced response outcomes. Findings are, ultimately, dependent on the subjective perceptions of participants relating to heart disease and leading causes of death and may have been vulnerable to reliability and validity issues. Despite these limitations, the use of online survey data in health research is pragmatic in capitalising on existing data sources and has previously demonstrated good reliability and validity (Pollard, 2002). While the HeartWatch survey was developed for the specific purpose of informing National Heart Foundation of Australia on the level of understanding in the general community, and limited by the non-probabilistic sampling technique, it is expected that findings hold important public health implications.

It has previously been demonstrated that there are biases in self-reported health behaviours. For example, individuals tend to under report weight (Ezzati et al., 2006) and alcohol intake (Stockwell et al., 2004) and over-report physical activity (Adams et al., 2005), and this may have impacted upon findings pertaining to typical health behaviours of the study sample. However if indeed this sample had higher levels of overweight/obesity, did less physical activity, and drank more alcohol than they reported then the disparity between their understanding of their risk and their health status, suggested by previous studies (Ezzati et al., 2006; Stockwell et al., 2004; Adams et al., 2005), may be even greater than we report. An area for future research is whether level of knowledge significantly predicts behavioural action and which aspects of health are indeed motivating for action. Building on the current findings will provide more comprehensive public health messaging to ultimately improve health outcomes.

4.3. Implications for policy and practice

Significant implications for practice emerged from this study. It is clear that while lifestyle factors are most readily recognised, efforts to
improve awareness of clinical risk factors for heart disease are needed. This is critical given the large proportion of burden attributable to high blood pressure, in particular, in the Australian population. The finding of little differences between those who reported receiving medication, who have been diagnosed, or had a heart attack or angina in the preceding 5 years, and those who did not report such characteristics, is concerning. In a previous study we found that the availability of a practice nurse was a significant factor in achieving blood pressure targets in primary practice suggesting that busy general practitioners need additional support in helping their patients understand the need for achieving targets for risk factors (Carrington et al., 2015). Finally, lack of awareness of the role of heart disease in population health have broader political implications through influencing funding decisions that reflect perceptions of importance in the community.

5. Conclusion

Heart disease as the leading cause of death for Australian men and women is largely misunderstood and there exists a need for population-wide campaigns. The link between risk factors as precursors to disease needs to be promoted, as opposed to high blood pressure and cholesterol being an end, treatable, result. Improvements in recognition of heart disease as the leading cause of death is needed. Overall the lack of understanding in all groups suggests the need for a comprehensive national campaign reaching schools and the broad adult population. The health system alone cannot achieve national and international targets for disease prevention without understanding and engagement in the general community.

Transparency document

The Transparency document associated with this article can be found, in online version.

References

Adams, S.A., Matthews, C.E., Ebbeling, C.B., et al., 2005 Feb 15. The effect of social desirability and social approval on self-reports of physical activity. Am. J. Epidemiol. 161 (4), 389–398.
Allison, P.D., 2002. Missing data: quantitative applications in the social sciences. Br. J. Math. Stat. Psychol. 55 (1), 193–196.
Australian Bureau of Statistics, 2015. In: Australian Bureau of Statistics (Ed.), National Health Survey: First Results, 2014–15. (Canberra).
Australian Bureau of Statistics, 2016. Causes of Death, Australia, 2015. Canberra.
Australian Bureau of Statistics, 2017. Australian Demographic Statistics, Dec 2016. Canberra.
Australian Institute of Health and Welfare, 2016. In: Australian Institute of Health and Welfare (Ed.), Australian Burden of Disease Study: Impact and Causes of Illness and Deaths in Australia 2011. AIHW, Canberra.
Bennett, D.A., 2001. How can I deal with missing data in my study? Aust. N. Z. J. Public Health 25 (5), 464–469.
Berkman, Nancy D., Sheridan, Stacey L., Donahue, Katrina E., Halpern, David J., Crotty, Karen, 2011. Low health literacy and health outcomes: an updated systematic review. Ann. Intern. Med. 155 (2), 97–107.
Carrington, M.J., Jennings, G.L., Harris, M., et al., 2015 Jun 18. Impact of nurse-mediated management on achieving blood pressure goal levels in primary care: insights from the valsartan intensified primary care reduction of blood pressure study. Eur. J. Cardiovasc. Nurs., 1474515115591901.
Ezzati, M., Martin, H., Skjold, S., Vander Hoorn, S., Murray, C.J.L., 2006 May 1. Trends in national and state-level obesity in the USA after correction for self-report bias: analysis of health surveys. J. R. Soc. Med. 99 (5), 250–257.
Gholizadeh, L., Salamonson, Y., Worrall-Carter, L., DiGiacomo, M., Davidson, P.M., 2009. Awareness and causal attributions of risk factors for heart disease among immigrant women living in Australia. J. Women’s Health 18 (9), 1385–1393.
Little, R.J., 1988 Dec 1. A test of missing completely at random for multivariate data with missing values. J. Am. Stat. Assoc. 83 (404), 1198–1202.
MacTernan, A., Fritschi, L., Slevin, T., Jalleh, G., Donovan, R., Heyworth, J., 2014. Public perceptions of cancer risk factors: a Western Australian study. Health Promot. J. Austr. 25 (2), 90–96.
Manierre, Matthew J., 2015. Gaps in knowledge: tracking and explaining gender differences in health information seeking. Soc. Sci. Med. 128, 151–158.
Mosca, L., Farris, A., Fabunni, R., Robertson, R.M., 2004. Tracking women’s awareness of heart disease an American Heart Association National Study. Circulation 109 (5), 573–579.
National Health and Medical Research Council, 2013. Australian Dietary Guidelines.
National Health and Medical Research Council 2013, Canberra.
Nichols, M., Peterson, K., Alston, L., Allender, S., 2014. Australian Heart Disease Statistics 2014. Melbourne, National Heart Foundation of Australia.
Pollard, W.E., 2002. In: Use of consumer panel survey data for public health communication planning: an evaluation of survey results. Proceedings of the Section on Health Policy Statistics. American Statistical Association.
Redeker, C., Wardle, J., Wilder, D., Hiom, S., Miles, A., 2009. The launch of Cancer Research UK’s ‘Reduce the Risk’ campaign: baseline measurements of public awareness of cancer risk factors in 2004. Eur. J. Cancer 45 (5), 827–836.
Ryan, A.M., Cushen, S., Schellekens, H., et al., 2015. Poor awareness of risk factors for cancer in Irish adults: results of a large survey and review of the literature. Oncologist 20 (4), 372–378.
Sanderson, S.C., Waller, J., Jarvis, M.J., Humphries, S.E., Wardle, J., 2009. Awareness of lifestyle risk factors for cancer and heart disease among adults in the UK. Patient Educ. Couns. 74 (2), 221–227.
Stansfeld, S.A., Marmot, M.G., 2002. Stress and the Heart: Psychosocial Pathways to Coronary Heart Disease: BMJ Books.
Stockwell, T., Donath, S., Cooper-Stanbury, M., Chikritzhs, T., Catalano, P., Mateo, C., 2004 Aug 1. Under-reporting of alcohol consumption in household surveys: a comparison of quantity-frequency, graduated-frequency and recent recall. Addiction 99 (8), 1024–1033.
Stroebele, Nanette, et al., 2011. Knowledge of risk factors, and warning signs of stroke: a systematic review from a gender perspective. Int. J. Stroke 6 (1), 60–66.
World Health Organization, 2004. International Statistical Classification of Diseases and Health Related Problems (The) ICD-10. World Health Organization.
World Health Organization, 2012. Alcohol in the European Union: Consumption, Harm and Policy Approaches: Final Report, Copenhagen 27 March 2012.
World Health Organization, 2013. Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020.
World Health Organization, 2015. Global Database on Body Mass Index: BMI Classification. 2006.
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