

Matters of the heart are important to women



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It may come as a surprise to many women in Australia to learn that they are considerably more likely to die from a heart attack or stroke than from breast cancer or any other major form of illness.

Each year, within Australia alone, heart disease claims the lives of more than 12,000 women – five times more lives than are killed by breast cancer and more lives than are killed from all cancers and infectious diseases.¹ However, even this staggering figure is dwarfed by the more than 360,000 women who are currently living with some form of cardiovascular-related disability.² Recently, the Heart Foundation launched its 'Go Red for Women' campaign to help raise the level of awareness among the general Australian community, especially women, that heart disease is the nation's biggest killer and a major cause of physical, emotional and financial hardship in women.

delay in treatment.⁸ Whatever the underlying mechanisms that are responsible for the sex differences in coronary risk, clearly, much more work needs to be done to try to bridge the gap.

Diabetes and heart disease: Are the risks the same in men and women?

Together with elevated blood pressure, raised cholesterol levels and cigarette smoking, type-2 diabetes is a major risk factor for coronary heart disease. Individuals with diabetes are more than twice as likely to die from heart disease compared to those without the condition. In a recent review of the literature it was shown that the cardiovascular hazards associated with diabetes were far greater in women than in men. In individuals with diabetes, the risk of dying from a heart attack was 50 per cent higher for women than for men. There are several possible mechanisms for why diabetes may have a greater adverse affect in women than in men. First, diabetes may induce a more unfavourable cardiovascular risk profile among women, as supported by data showing that not only did women with diabetes have significantly higher levels of blood pressure and lipids compared with men with diabetes, but that the difference in the level of these risk factors among individuals with and without diabetes was significantly greater in women than in men. This suggests that the sex difference in coronary heart disease (CHD) risk is mediated in large part by differences in the levels of cardiovascular risk factors.

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Alternatively, the greater coronary hazard associated with diabetes seen in women may reflect a treatment bias that favours men. Recent large surveillance studies from Europe and the United States have suggested that men with diabetes, or established cardiovascular disease (CVD), are more likely to receive aspirin, statins or antihypertensive medication. Similar findings were reported from the *United Kingdom Prospective Diabetes Study*, where women with diabetes were significantly less likely to use aspirin compared with men.

In Australia, an estimated six per cent of women are known to have diabetes. However, this is likely to be a gross underestimate of the true number affected, as it is estimated that between 30 and 50 per cent of adults with diabetes remain unaware of their condition.

Battle of the sexes

Statistics tell us that at 40 years of age, the risk of having a heart attack at some point in the future is one in two for men and one in three for women.³ However, in people with evidence of established cardiovascular disease (55 per cent of whom are women⁴), the risks are reversed such that women are over 50 per cent more likely to be killed by heart disease compared with men. This is despite the fact that women tend to smoke less, have lower blood pressure and usually have healthier eating patterns compared with men. The reasons for this role reversal remain elusive and many theories have been propounded over the years to try and explain the observed sex differences. A particularly popular theory is the idea that after menopause the 'cardioprotection' that premenopausal women are thought to enjoy is lost. However, this idea has come under threat, most recently by the United States' *Nurses' Health Study* – a large cohort study that has been followed up for several decades – which showed that postmenopausal women are at no higher risk than premenopausal women for cardiovascular diseases when smoking status and age were controlled.⁵ A more pragmatic explanation suggests that there are significant treatment disparities between the sexes, which make it much less likely for women to receive conventional blood pressure and lipid-lowering therapies compared with men.^{6,7}

There is also some evidence to indicate that women are less likely to receive early treatment because they may present differently to their doctors as compared to men. For example, women are more likely to have 'prodromal' symptoms of fatigue, changes or difficulty in breathing, neck and jaw pain, sleep problems, cough, nausea and vomiting than are men^{8,9}, but they can also present with 'typical' angina signs, such as chest, shoulder and arm pain.¹⁰ Furthermore, women having a heart attack may be less likely to be recognised as having one compared with men and as a consequence incur a

Many women live with diabetes for many years before it is detected and consequently, a significant proportion of them already have some form of micro- or macrovascular disease by the time they visit their general practitioner. Improving the ability to identify women at high risk of developing diabetes earlier on during routine clinical practice, should therefore be a main priority.

Overweight, obesity and diabetes

Australia, having overtaken the United States, has recently become the world leader in the overweight (body mass index between 25 and 30 kg/m²) and obesity (more than 30 kg/m²) stakes, with 60 per cent of the population over 25 years of age (approximately 65 per cent of middle-aged women) affected.¹² Excess weight, particularly central obesity, is recognised to be a major determinant of diabetes risk in all populations. Consequently, indicators of overweight have been incorporated into several guidelines for the early identification of individuals with type-2 diabetes. The *Cambridge Risk Score*, which was developed in a predominantly Caucasian population in the UK, includes body mass index (BMI). Other guidelines include a measure of central obesity, such as waist circumference (WC) in addition to that of BMI. In 2006, Diabetes UK released a position statement outlining the criteria for screening diabetes within targeted populations (www.diabetes.org.uk). One criterion is that individuals with a BMI greater than 25 kg/m² and/or a WC in excess of 80 cm in Caucasian and Asian women, 85 cm in Asian men and 94 cm in Caucasian men should be offered screening for diabetes. Other studies have posited that measuring the waist to hip ratio (WHR) is a more accurate predictor of diabetes risk.

Recent work led by researchers at The George Institute, that has been supported by a grant from the Heart Foundation, has attempted to determine whether there is a single measure of overweight that can be routinely measured in clinical practice and universally applied, that may facilitate earlier detection of diabetes in the general population. Using data from the *Obesity in Asia Collaboration*, with information on more than 200,000 men and women from Australia and the wider region, the researchers determined which measure of overweight and obesity (therefore, BMI, WC or WHR) is the better discriminator of diabetes risk and the optimal 'cut-points' for each of these measures.

How do we identify those women most at risk of diabetes?

Although the relationship between excess weight and major cardiovascular risk factors, including diabetes, is continuous, measures such as BMI and WC are frequently categorised into 'normal' and 'overweight'. Specifying a single value of 'overweight' along the continuum of risk provides clinicians and public health specialists with an opportunity to identify those individuals most at risk of developing diabetes and who, consequently, would be expected to derive the greatest health benefits from interventions aimed at preventing further weight gain. Despite years of work, there is still much uncertainty regarding what values these cut-points should take and which measure, or combination of measures, of excess weight has the greatest discriminatory capability for diabetes, as reflected by the different cut-points used in various guidelines for the detection of diabetes.

In a series of recent publications from the *Obesity in Asia Collaboration*, it was shown that although each of the three measures (BMI, WC and WHR) performed equally as well at discriminating those individuals at greatest risk of diabetes, waist circumference tended to perform slightly better compared with

BMI. The study findings suggest that current recommended WC cut-points for diabetes should be modified to 80 cm in Asian women and slightly higher at 85 cm in Caucasian women. For men, the values are higher at 85 cm and 99 cm in Asian and Caucasian populations. WC also has the added advantage over body mass index (or WHR) in that it is a more readily understood measure and is easily determined with the aid of a tape measure. Furthermore, by marking on the tape where sex and ethnic cut-points are, the necessity of having to remember these values (which are likely to change over time as the prevalence of obesity continues to grow) is removed.

Measuring WC is a quick and simple tool which can be done both at home and in the clinic, which may well help to identify those women most at risk of developing diabetes and heart disease at some point in the future. Earlier detection means earlier intervention, which in the long-term should significantly reduce the number of lives lost each year to one of the most preventable forms of premature death in women in Australia and worldwide.

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