

EXERCISE AND DIETARY BEHAVIOUR CHANGE AMONG A SAMPLE OF MIDLIFE AUSTRALIAN WOMEN

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This is a summary of sections of my PhD thesis. It covers the aim of the study and the questions addressed in it, definitions of key terms, an overview of literature on midlife women's health, the methodology and conceptual framework, the main findings, and issues arising from the findings. The statistical information and interview data have been left out, but if you're interested in that information, please contact me.

ABSTRACT

The study investigated exercise and dietary behaviour among middle-aged Queensland women. Postal surveys were sent to 564 women aged 51-66 years from rural and urban locations, and semi-structured interviews were conducted with 29 of those who completed the survey. The results showed that since the age of 40 almost 40% of the women had made a change to their exercise, mainly by walking more, and around 60% had made changes to their diet, mainly eating less fat. Interview data reinforced that the main motivations for making these changes were being overweight or having an injury or illness. The main facilitators of exercise were positive role models, more time due to retirement, and support from significant others. The main obstacles were work, care giving, illness and injury. In summary, women are willing to improve their lifestyles in midlife, but they need education and support to be successful.

AIM OF THE STUDY

The overall aim of the research was to develop a greater understanding of the relationships between midlife women's exercise self-efficacy, dietary self-efficacy, health-related quality of life and health behaviour change.

RESEARCH QUESTIONS

The research aimed to answer the following questions:

1. What factors can influence exercise self-efficacy and dietary self-efficacy among midlife women?
2. How prevalent is positive health behaviour change among midlife women?
3. What are the main health behaviour changes made by midlife women?
4. Do exercise self-efficacy and dietary self-efficacy influence health behaviour change among midlife women?
5. Does making a positive health behaviour change result in higher health-related quality of life?
6. What motivates midlife women to make positive changes to their exercise and dietary behaviour?
7. How do midlife women make positive changes to their exercise and dietary behaviour?
8. What factors facilitate or impede self-efficacy and health behaviour change?

DEFINITION OF TERMS

- **BMI (body mass index)**

This is an index calculated from the participants' height and weight (the weight in kilograms is divided by the square of the height in metres: kg/m²). Using the BMI, a score of 25 or above is considered 'overweight', and 30 and above is classified as 'obese'. These categories are based on WHO classifications (2008).

- **Exercise vs physical activity**

Marcus and Forsyth (2003) defined 'physical activity' as any bodily movement that results in the burning of calories, and 'exercise' as a subcategory of physical activity that is planned, structured and repetitive (p.3). 'Physical activity' has become the more widely adopted term in recent years, largely because it is considered more acceptable to people than the 'no pain, no gain' notion of exercise. However, in this study, 'exercise' refers to any activity undertaken for the purpose of exercising. For example, taking the stairs more often at work, with an intention to be more active, would be considered exercise, whereas doing housework, while it burns calories, would not be considered exercise if it was not undertaken for the purpose of being active. While many studies on physical activity are referred to in the literature review, and the terms 'being active' and 'physical activity' are used in the study, the intention is to investigate activity undertaken for the specific purpose of exercising rather than incidental activity that occurs in the normal course of living.

- **Health behaviour**

In the context of this study, 'health behaviour' refers to exercise participation and dietary intake. 'Health behaviour change' refers to changes made to exercise or diet.

- **Health-related quality of life**

This encompassed both physical and mental health, and within this study referred to measures derived from the SF-36, a multi-purpose, short-form health survey comprising 36 questions.

- **Midlife**

For the purposes of this study, midlife or middle-age was defined as the years from 40-65. The population sample for this study was aged 51-66. The participants aged 66 were included in the study because it was assumed that their data would not alter the statistical results and conclusions.

- **Self-efficacy**

The study used Bandura's (1977) definition of self-efficacy (see page 9) and (1997) exercise and dietary self-efficacy scales to measure this. The scales required participants to indicate, using a scale of 0-100, where 0 represents 'cannot do at all' and 80-100 represents 'highly certain can do', how confident they were that they could stick to an exercise routine or a dietary regime in the face of a range of challenging situations (18 for exercise, 30 for diet), such as 'when I am feeling tired' or 'during a vacation'.

LITERATURE

Ageing, obesity and chronic disease

Australian Bureau of Statistics' (ABS) (2000, 2001) population projections show that the number of Australians aged over 65 will more than double in the next half century. The fastest rate of growth will be in the number of people aged over 85 years, which is expected to double in the next two decades. Since women live, on average, five years longer than men do (ABS, 2006a), women will comprise the bulk of this group of ageing Australians. As populations of midlife and older women continue to grow, maintaining their health and functional capacity is, and will continue to be, a critical issue.

The same challenge confronts America and many other countries. Christian (2006), in an address to a United States symposium on women's healthy ageing, noted that in the past century the number of Americans aged over 65 had increased from 3 million to 36 million.

Thirty years from now, this age group will double to well over 70 million, with women still expected to be the majority. People 85 years old and older are the fastest growing age group in this country... (Christian, 2006).

According to Broome (2007), women in industrialized countries experience more disease than men do, but women outlive men. This implies that many older women live with the consequences of degenerative disease. Foremost among these is coronary heart disease, which accounts for up to one-third of all deaths among women worldwide (Lockyer & Bury, 2002). A global increase in coronary heart disease, along with other chronic conditions such as stroke, type 2 diabetes, hypertension and some cancers have accompanied the 'obesity epidemic'. The World Health Organisation's (WHO) (2008) Global Strategy on Diet, Physical Activity and Health notes that around the world there are now more than 1 billion overweight adults. At least 300 million of these are obese. This has been a consequence of shifts in lifestyle that involve both less physical activity and consumption of more calorie-dense foods.

While the increase in obesity and chronic disease has previously been considered a major public health issue for developed countries, rapid urbanization, falling food prices, the globalization of economies and population ageing have contributed to making this an enormous challenge for developing countries as well (Raymond, Leeder & Greenberg, 2006). By 2020 there will be more people in the developing world over the age of 65 than under the age of 5, and the median age of much of the developing world will approach that of the West (Raymond, 2003). Moreover, developing countries are likely to contribute a greater share to the global burden of diseases such as cardiovascular disease (Gholizadeh & Davidson, 2008), and this will have a huge impact on women, who are

twice as likely to die from a heart attack as men (Davidson, Daly, Hancock, & Jackson, 2004). In the Middle East, Central Europe and Latin American, almost as many women are obese as in the United States, and there appears to be a trend for obesity to grow fastest among women who are poor (Raymond et al., 2006). The combination of fragile economies and health systems that are incapable of providing the disease management and risk prevention strategies needed to stem this new wave of chronic disease will have potentially devastating effects on these countries.

While the likely social and economic costs of chronic disease among older women are massive, the spread of these health concerns to much of the rest of the world underlines the importance and the urgency of developing effective strategies for addressing the escalation of obesity and degenerative disease. Since women who adopt healthier lifestyles are likely to live longer, healthier lives, it is vital that we find ways to support women in doing this. The research aims to understand how midlife women relate to exercise and diet — two areas that must be impacted if we are to relieve the burden of chronic disease that currently confronts ageing women in Australia and other countries. Such information will be beneficial in aiding the development and delivery of disease prevention programs and health promotion campaigns targeting midlife women. It will also make a major contribution to increasing our understanding of how to support women in ageing healthily.

The nature of midlife

Despite the plethora of studies portraying middle-age as stressful (e.g. Ballard, Kuh & Wadsworth, 2001; Glazer et al. 2002; Lyons & Griffith, 2003), some authors have suggested that midlife could also provide women with an opportunity to reassess their lives and to make new decisions. For example, a North American Menopause Society study by Utian and Boggs (1998) showed that over half of the 752 women surveyed viewed menopause and midlife as the start of many positive changes in their lives and their health. About 75% of the study participants reported making some type of health related lifestyle change at midlife. In addition, Finn (2000) argued that menopause may act as a wake-up call to midlife women to be more thoughtful about their eating habits.

Sampsel, Harris, Harlow, and Sowers (2002) concluded that the cessation of child bearing and rearing gave many women the chance to focus on themselves, perhaps for the first time in their lives. The women in their sample regarded midlife as a time of personal growth and greater self awareness and self-esteem.

Health issues in midlife

Midlife appears to be a time of increasing health concerns for women. For example, Wyn and Solis (2001), who studied the health issues of four age groups of American women, observed that in the 45-64 age group, the number reporting fair or poor health almost doubled compared with those in younger age cohorts. The main concerns for this group were arthritis, hypertension, obesity, and depression or anxiety.

The incidence of some chronic diseases increases in middle-age, particularly from age 45 (Mathers, Vos, Stevenson, & Begg, 2000). The major causes of death for midlife women are cancer and cardiovascular disease. As women age, cardiovascular disease takes over from cancer as the most likely cause of death. The most common cause of cancer-related death for Australian women is breast cancer, followed by lung cancer. The risk of breast cancer increases with age, and women in the middle years are particularly vulnerable. A 2006 report compiled by the Australian Institute of Health and Welfare (AIHW) and the National Breast Cancer Centre identified the breast cancer 'target age group' as women in their 50s and 60s.

Towfighti, Saver, Engelhardt, and Ovbiagele (2007) assessed sex differences in stroke prevalence among middle-aged men and women (aged 35-64) using data from over 17,000 participants in the United States National Health and Nutrition Examination Survey. They concluded that women aged 45-54 had significantly higher odds of having a stroke compared with men of the same age. In addition, several vascular risk factors, including systolic blood pressure and total cholesterol levels increased at higher rates among women compared with men in each successive cohort from 35 to 64 years.

In light of the range of physical and mental health problems impacting midlife and older women, this group clearly needs to be an important target for education initiatives and lifestyle interventions.

Obesity and chronic disease

Recent figures indicate that among Australian women, 30% are overweight and 22% are obese (AIHW, 2006). Middle-age appears to be a time when both men and women gain weight: the highest rates of obesity were seen among men aged 45-54 years and women aged 55-64 years. Researchers are still unclear as to what extent this tendency to gain weight, especially around the abdomen, is related to menopause, age or behaviour such as reduced activity levels (Dennis, 2007; Douchi et al., 2007; Morita et al., 2006; Evans & Racette, 2006; Sternfeld, Bhat, Wang, Sharp, & Quesenberry, 2005).

Midlife weight gain is an issue of major concern given the link between obesity and degenerative disease and disability (Adams et al., 2006; Janssen & Mark, 2006; Moore et al., 2004). Muennig, Lubetkin, Haomiao, and Franks (2006) argued that relative to men, women suffer a disproportionate burden of disease attributable to overweight and obesity, especially after age 45. In hypothesizing why this might be so, the authors noted that stress, anxiety and depression are associated with obesity in women, although it was not apparent whether obesity was the source of the stress or vice versa.

Obesity is also associated with higher levels of disability in midlife and older people (Angleman, Harris, & Melzer, 2006; Reynolds, Saito, & Crimmins, 2005; Pope, Sowers, Welch, & Albrecht, 2001; Simons, McCallum, Friedlander, & Simons, 2000). Pope et al. (2001) noted that "BMI (body mass index) is often one of the strongest predictors of functioning" (p.500).

Physical activity among midlife women

One way to deal with the increase in obesity is to encourage greater participation in physical activity among women. Physical inactivity is considered the leading contributor to preventable illness and morbidity among Australian women (Baumann, Bellew, Vita,

Brown, & Owen, 2002). Besides helping prevent obesity, being active is important in the prevention of cardiovascular disease, diabetes, some cancers, injury and the promotion of mental health.

Sternfeld et al. (2004), who worked on a large American study of women's health called the Study of Women Across the Nation (SWAN), argued that while women commonly increase weight and waist size in midlife, this is related to their level of physical activity rather than their menopausal status. Sternfeld's later research (Sternfeld et al., 2005) with middle-aged (47-57 years) white and Chinese women indicated that despite the lack of certainty as to whether midlife changes in body composition are a function of chronological age or hormonal shifts associated with menopause, physical activity — particularly vigorous activity — was inversely related to percent body fat and waist circumference. She found that while weight did not differ according to menopausal status in this sample, lean mass and percent fat did. Similarly, the work of researchers such as Krumm, Olivera, Dessieux, Andrews, and Thompson (2006) and Holcomb, Heim and Loughin (2004) provided evidence that physical activity can mitigate the adverse changes in body composition experienced by many midlife women. Both Krumm et al. (2006) and Williams (2005) demonstrated that participation in walking contributed to more favourable body composition variables among middle-aged women. Christensen, Stovring, Schultz-Larsen, Shroll, and Avlund (2006) found a strong association between physical inactivity at age 70 and disability at age 75. They argued that physical activity is probably the most important factor for promoting health and quality of life in the later years.

Despite the vast array of evidence showing the importance of being active, data gathered in 2004-2005 revealed that 73% of Australian women reported sedentary or low exercise levels, compared with 66% of men (ABS, 2006b). Segar, Spruijt-Metz, and Nolen-Hoeksema (2006) also noted that women were less likely than men to meet physical activity recommendations, and that they became less active as they aged.

Motivators and barriers to physical activity among women

An investigation of the literature in this area shows that women are motivated to be active by a broad range of circumstances, including exercise becoming part of their identity, being enjoyable, increasing self-esteem and being a source of stress release, as well as factors such as the desire to be fit, and prevent weight gain and disease (Yarwood, Carryer, & Gagan, 2005). Also important are previous exercise experience, being able to financially afford to participate, having high self-efficacy (Young-Shin & Laffrey, 2006), time to exercise (Bittman & Wajcman, 2000; Segar et al., 2006), people to exercise with (McAuley, Jerome, Elavsky, Marquez, & Ramsey, 2003), and a safe and appealing place to exercise (Im, Chee, Lim & Kim, 2008; Cerin, Vandelanotte, Leslie, & Merom, 2008). On the other hand, barriers to participation include feeling too fat; being too tired; lack of quality time, support, previous exercise experience and suitable places to exercise; and poor weather (Osuji, Lovegreen, Elliott, & Brownson, 2006; Eyster et al., 2002; Marcus, Eaton, Rossi, & Harlow, 1994 and McAuley, 1992b).

METHODOLOGY AND CONCEPTUAL FRAMEWORK

Survey and interviews

The research was conducted in two phases: Phase 1 involved a cross-sectional survey and Phase 2 comprised semi-structured interviews. The survey sought information on socio-demographic factors (postcode, age, marital status, country of birth, education, employment status and annual gross household income), height and weight, chronic health conditions that participants had been diagnosed with, self-efficacy (see page 11), changes made to exercise and diet since age 40 (to denote the start of middle-age) and health-related quality of life (see page 11). Surveys were sent to 866 Queensland women in their 50s and 60s selected randomly from the electoral roll in six selected rural and metropolitan postcodes. Completed responses were received from 564 women aged 51-66 years. The quantitative (survey) analysis included the use of descriptive and bivariate statistics, as well as structural equation modeling to examine the relationships between the key variables. Interviews were undertaken with 29 women who completed the survey

to expand on the survey responses and develop a greater understanding of health behaviour change among midlife women. These were analysed using thematic analysis.

Self-efficacy framework

The conceptual framework for the study was based on Albert Bandura's (1977) Social Cognitive Theory and definition of 'self-efficacy', i.e., the belief that one can perform the specific behaviours required to achieve a goal. Bandura (1997) argued that efficacy expectations were central in determining people's choice of activities, the level of effort they would expend, and how long they would persist in the face of difficulties. Levels of motivation, affective states and actions are based more on what people believe than on what is objectively true, and their beliefs about their capabilities are a better predictor of their behaviour than are their actual capabilities. Bandura claimed that self-efficacy beliefs or efficacy expectations seemed to be the best predictor of healthy lifestyle behaviours.

In line with these assertions, people with high efficacy expectations regard difficult tasks as challenges, set high goals and stay committed to them, try harder when faced with challenges, and deal effectively with stress and depression. People with low self-efficacy, on the other hand, avoid difficult tasks, have low aspirations and a weak commitment to their goals, dwell on obstacles and their own shortcomings, give up in the face of challenges, and are easily susceptible to stress and depression.

According to Bandura (2004a), people's expectations of their efficacy in a particular situation are based on four sources of information: their past experience of success in accomplishing a task (*mastery experiences*), their experience of seeing others like themselves able to accomplish the task (*social modeling*), the receipt of assurance from others that they can succeed (*social persuasion*), and their own emotions such as fear, anxiety and fatigue from which they ascertain their likelihood of success (*physical and emotional states*).

The self-efficacy framework was chosen for two reasons: the first was that Social Cognitive Theory is widely accepted around the world and applied in studies of health behaviour; the second was that Bandura's (1997) work acknowledges that people interact with their environment — individuals both impact and are impacted by the world around them. A potential limitation of psychological approaches is that they risk overlooking the context in which individual behaviour is located. While self-efficacy is a psychological construct, the view taken in this study is that it is important to consider individual behaviour within a social and cultural context.

SUMMARY OF MAIN FINDINGS

1. What factors can influence exercise self-efficacy and dietary self-efficacy among midlife women?

The factors that were shown to influence exercise self-efficacy in this study were income, education, BMI and dietary self-efficacy. Dietary self-efficacy was influenced by BMI and exercise self-efficacy. Exercise self-efficacy and dietary self-efficacy were closely related. Support was provided for Bandura's (1977) assertion that mastery experiences, role models, support from others, and the participants' own self-appraisal contributed to self-efficacy.

How prevalent is positive health behaviour change among midlife women?

Almost 40% of the sample made a positive change to their exercise and about 60% had made an effort to improve their diet since turning 40. In both cases, most women believed that the changes they made had been large or moderate. Few indicated that they had no intention of making a change to their exercise or diet, reflecting considerable interest among midlife women in making lifestyle modifications. Both women who had increased their exercise and women who had increased their diet tended to be more educated than women who had not. Participants were more inclined to make an effort to improve their diet than to increase their exercise.

What are the main health behaviour changes made by midlife women?

Most women who increased their exercise since age 40 took on walking more (24.1%). The next most prevalent responses were doing less — mainly due to injury or illness (9.7%) and gym or weight training (8.3%).

The most popular dietary change was to eat less fat (e.g., by eating less fried food or choosing low fat products). The other main dietary changes were eating more fruit and vegetables (24.3%) and eating less sugar or sweet foods (12.8%).

There was a significant relationship between making an exercise change and making a dietary change.

Do exercise self-efficacy and dietary self-efficacy influence health behaviour change among midlife women?

Exercise self-efficacy was significantly related to making an exercise change, and dietary self-efficacy was significantly related to making a dietary change.

Does making a positive health behaviour change result in higher health-related quality of life?

Making a positive change to exercise was significantly related to physical health but not mental health, and making a dietary change was not significantly related to health-related quality of life at all.

What motivates midlife women to make positive changes to their exercise and dietary behaviour?

The factors that motivated this sample to make exercise and dietary changes were weight gain, injury and illness. In addition to the women's own health concerns, the illness of people close to them was important in encouraging improved health behaviours.

How do midlife women make positive changes to their exercise and dietary behaviour?

Participants made and sustained exercise and dietary changes mainly by repeating new behaviours and developing a routine, and by modifying what they already did.

What factors facilitate or impede self-efficacy and health behaviour change?

Health behaviour changes were facilitated by positive role models, more time due to retirement, and the support of organizations, health professionals and significant others (such as husbands or other family members). The main impediments to making positive changes were work, care giving, injury and illness. Injury and illness made some women determined to improve their health and fitness, but discouraged others. Some participants were dealing with a range of these impediments. This reduced the likelihood that they would make positive health behaviour changes, and in some cases led to overeating to cope with pain, grief and anxiety.

ISSUES ARISING FROM THE FINDINGS

Overweight and obesity

About 63% of the women in the sample had a BMI of 25 or over (i.e., they were overweight or obese according to WHO classifications). In light of Pope et al.'s (2001) claim that BMI is often one of the strongest predictors of functioning, and the vast amount of literature linking obesity and chronic disease, the relatively high BMI levels among the sample and among middle-aged women generally suggest that the 'baby boomer' generation may have to deal with a considerable amount of degenerative disease and disability.

Exercise and diet are mainly portrayed in the media as ways to improve appearance, and little attention is paid to the link between obesity and incontinence, disability, hot flushes and night sweats, and anxiety and depression. Similarly, there is little recognition that

being active is a key factor in women's quality of life as they age. More information needs to be made available to women on the potential benefits of adopting a healthy lifestyle, beyond appearance.

The influence of education on exercise and dietary behaviour

Women with higher education levels were more likely to make a positive change to their exercise and diet in midlife. Since education was also shown to be linked with BMI and exercise self-efficacy, it seems that women with lower education levels are less likely to believe that they can eat healthily or exercise regularly, and they are more likely to be overweight or obese, compared to women with more education. The study suggested that when a woman is dealing with a range of variables that could impact self-efficacy (e.g., low education level, a high BMI, and poor mental health) it may be extremely difficult for her to adopt positive health behaviours. This needs to be considered in health promotion programs targeting women. It also implies that overweight and obese girls who leave school at a young age are at risk of moving down a path that could lead to chronic disease later in life.

The importance of mastery experiences

Young-Shin and Laffrey's (2006) contention that previous exercise experience was central to whether women exercised in older age was generally supported in this study. Women who had been overweight in childhood tended to be overweight in their 50s and 60s, with low self-efficacy for exercise or diet. They were also more likely to be impeded by work, care giving, stress, injury, illness, pain and fear. Being fit and active as a girl may well be a factor in determining whether women seek to improve their exercise and diet in midlife.

Schools provide an opportunity to expose girls to positive experiences of being active and eating healthily and to address the gendered views of girls and women's roles that prevent women from taking the best care of their health. In recent years, however, daily physical education has become a lower priority in schools in the face of pressure from parents for academic performance. The importance of physical education and an

education in nutrition needs to be re-established in schools across all grades. Mothers' attitudes and behaviours also have a huge impact on girls, and a program for schools which involves both mothers and daughters could have considerable merit.

Healthy lifestyle programs aimed at midlife women need to recognize that some women have not had previous experiences to provide them with the belief that they can be successful in exercising regularly or eating healthily. This would require a focus on the information sources identified by Bandura (1977) as being critical to the development of self-efficacy, such as helping women to develop those experiences in a supported environment, identifying credible role models, and encouraging positive self-appraisal.

Chronic health conditions

The conditions most commonly reported by participants (back problems, arthritis or rheumatism, hypertension, incontinence and headaches) were similar to those identified by Wyn and Solis (2001). While a lack of appropriate exercise or physical activity could contribute to the development of some of these ailments, most could also act as a deterrent to women to be more active. Education would seem to be the only way to encourage women to regard exercise as both a means of preventing illness and disability and a way of alleviating existing symptoms.

In this sample the women aged 60 and over experienced more hypertension and arthritis than the younger women. At the same time, they experienced better mental health. This needs to be recognized by people conducting lifestyle programs for women in this age group. If late middle-aged women appreciate that conditions such as hypertension and arthritis will benefit from moderate exercise, given their relatively high level of mental wellbeing at this stage, they could well become regular participants in exercise programs.

Exercise and dietary changes among midlife women

Almost 40% of the sample increased their level of exercise after age 40 — the interview data suggested that for many the increase actually came after they turned 50 or after they retired — and almost 30% of the sample made, what was to them, a large or moderate

increase in their exercise. This was despite the prevalence of obesity, back problems, headaches, arthritis, hypertension and incontinence reported. Segar et al. (2006) argued that women become less active as they age, and while that may be generally true, this study showed that the downward trend makes an about-turn in middle-age.

In addition, just over 60% of the sample took on eating more healthily, and over half made a large or moderate increase in their intake of healthy food. Dietary changes were clearly more popular among the participants than increasing exercise levels.

Although many of the participants were willing to adjust their lifestyles, the level of overweight and obesity among them suggests that few succeeded. This raises the question of what it would take to increase women's effectiveness in this area. The answer may lie in promoting the importance of exercise as a normal part of life to women across the lifespan, and in educating them on the dangers of being obese as they age. Women also need to appreciate the realistic level of effort and persistence that may be required to reach a healthy weight in midlife.

While exercise and diet have been examined separately in this study, exercise self-efficacy and dietary self-efficacy were highly correlated and there was a strong relationship between exercise change and dietary change. Making a change in one area may predispose a woman to making a change in the other area. Since most women preferred making dietary changes to exercising more, perhaps lifestyle modification programs need to start with food and encourage women to exercise to support their dietary initiative. The findings from this study suggest that an effective way to encourage women to develop new habits is to develop routines and to make modifications to their existing behaviours.

Facilitators and impediments to exercise and dietary changes

The facilitators of and impediments to health behaviour change identified in this study largely reflected the literature on motivators and barriers to being more physically active. For instance, themes such as having role models, support from others and more time after

retirement were mirrored in the work of Eyer et al. (2006), Osuji et al. (2006), and Bandura (1977). Role models tended to be women from the participants' lives, such as their mothers, a sister or a Weight Watchers instructor. Sampsel et al.'s (2003) contention that midlife gives women an opportunity to focus on themselves seemed to be born out for many women with moderate to high self-efficacy.

The findings suggest that in the years when women are busy managing a family, and often combining that with paid work, they are time poor and may pay little attention to themselves. It is only when their children are grown, and they are confronted with their own weight and existing or potential health issues that they make the time for themselves. However, many in this sample were still caring for husbands, parents and grandchildren. Lack of time due to work and family commitments was a major obstacle for women in the studies by authors such as Segar et al. (2006), and was often cited by the participants in this study, particularly those with low self-efficacy.

Stress (often an outcome of care giving or dealing with an illness or injury) was raised by several women as a factor in their overeating, poor sleep and poor health. Muennig et al. (2006) linked stress, anxiety and depression with obesity in women over 45. It is vital to address this link between stress and midlife weight gain to support women in living longer, healthier lives. Exercise and healthy eating clearly need to be promoted as ways of managing stress, but stress management also needs to be a key part of health education for women at all life stages.

Particular attention needs to be paid to women who are care givers. In our society, care giving is often blurred with the family roles of being a wife, daughter or grandmother and so on, and the burden of care giving on women's health passes largely unnoticed. Caregivers need to be both recognized and provided with additional support to maintain their own health. This could take the form of local support groups that provide education on topics such as healthy eating and coping with stress.

Since the preferred form of exercise for women is walking, local governments need to ensure that there are safe and attractive neighbourhood places to walk and be active.

Another response to that concern is to encourage women to be active in groups. There is now a plethora of research data on physical environments that are conducive to physical activity and governments at all levels need to be made aware of this.

Health education programs for women

Health education programs are needed at key life stages: in childhood, the teen years, pregnancy, motherhood, menopause, retirement and older age to encourage girls and women to live healthy, active lives. Women need specific education in middle-age to avoid gaining excess weight. Those dealing with conditions such as obesity, back problems, arthritis, hypertension and incontinence also need support to be active, since many would avoid exercise in the face of managing these kinds of ailments. Since the most popular physical activity for women is walking, women's walking groups could well provide a basis for further education and support.

It is important that lifestyle programs aimed at women address the kinds of issues that impede women's participation such as their feelings of guilt about time out for themselves or embarrassment about their bodies. When women can appreciate that these are cultural as well as personal experiences, it may give them the impetus to begin finding time for themselves within the demands of their lives. McAuley et al. (2003) noted the importance of social support in the maintenance of exercise programs. This includes support from significant others to exercise and having others to exercise with (e.g. buddy groups). At every life stage it is vital to educate women about making time for themselves rather than assuming that a good wife, mother and grandmother is one who puts herself and her needs last.

CONCLUSION

It is critical that solutions are found to the growing levels of obesity and disease among women in Australia and other countries. An important finding from this study is that

midlife and older women are willing to make positive changes to their exercise and diet, mainly in response to weight gain, illness or injury. At this stage women are open to modifying their habits, and issues like weight gain, illness and injury provide opportunities to develop new behaviours that will hold them in good stead in future years. The development of healthy lifestyle habits could also go a long way to relieving some of the social and economic burden of disability and degenerative disease among populations of ageing women. In light of the willingness of many midlife women to incorporate exercise into their lives, it should be possible to impact the high levels of obesity among this group, provided they receive appropriate education and support.

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