Construction Industry Apprentices: A review of related dietary and nutrition literature

Karin du Plessis
Incolink

A nutrient-rich diet could assist apprentices to maintain a healthy body and mind. The nature of most construction industry apprenticeships is such that it requires concentration and moderate to high levels of physical activity, and consequentially apprentices need a diet which can support these required high energy demands. Anecdotally, apprentices display a range of dietary practices, which appear to be moderated by their taste preferences, nutritional beliefs and knowledge, environment (e.g., availability of food; healthful dietary messages) and degree of prescription to traditional masculine stereotypes.

The determinants of healthy eating, the effect of nutrition on mental health, gender differences in nutrition, and workplace programs are discussed in this literature review. Although no studies which specifically focus on apprentices' diets have been identified, the literature will make inferences from related age groups and work environments. Due to this paucity of research, some researchers have specifically called for more focused nutrition interventions with young men (Walsh & Nelson, 2010). It is therefore estimated that the proposed research project on apprentice nutrition will contribute a valuable resource in the area of men's preventative health, particularly as it relates to young working men.

Introduction

Nutrients are consumed through the food that we eat, and through metabolic processes in the digestive system these nutrients are absorbed at a cellular level in the body (Gibney, Lanham-New, Cassidy, & Vorster, 2009). Optimum nutrition contributes to health, wellbeing, normal development, and high quality of life (Gibney et al., 2009). However, undernutrition, overnutrition, and malnutrition are linked to sub-optimal health outcomes (Gibney et al., 2009). Such poor diets have been linked to the occurrence of chronic diseases, including cardiovascular disease, Type-2 diabetes, cancer, osteoporosis and anaemia (Lytle, et al., 2002). For example, research reports that low intake of fruit and vegetables increases the risk for developing cancer (Steinmetz & Potter, 1996), as well as cardiovascular disease (Hung, et al., 2004), whereas low intake of dietary fibre has been linked to being overweight (Patrick, et al., 2004).

Obesity is a consequence of overnutrition, and it is an ever-increasing problem in both developing and food-secure countries, such as Australia (Gibney et al., 2009). A recent longitudinal study conducted in Victoria report on the significant increase of obesity from adolescence to adulthood (Patton, et al., 2010). This study of 1,520 adolescents tracked over a period of 10 years also highlights the decreased likelihood of overweight adolescents achieving a normal weight in adulthood (Patton, et al., 2010). Frequently linked with a greater proneness to Type-2 diabetes (e.g., Wang, Hoy, & Si, 2010), obesity severely affects health-related quality of life in a range of domains, including, physical, social and psychological (Mannucci, Petroni, Villanova, Rotella, Apolone, &

Marchesini, 2010). However, factors influencing obesity and chronic diseases are more complex than diet alone. For example, together with increased sedentary behaviour, decreased physical activity has been shown to play a crucial role in becoming overweight and obese (Patrick, et al., 2004). For the purposes of this project, and literature review, the focus will be on the diet and nutrition of apprentices, although the influence of other factors (e.g., lifestyle and environmental factors) is acknowledged, but noted as outside the scope of this project.

Determinants of healthy eating

Individuals' reasons for buying and eating particular foods have been described as a "complex bio-psychosocial process that is relative to person, place and time" (Walsh & Nelson, 2010, p. 194). Most researchers believe that dietary habits and food preferences develop in childhood, are established by age 15, and become habitual in due course (Birch, 1999; Sweeting & Anderson, 1994). Adolescence is thus still a key formative period in the development of eating habits (Walsh & Nelson, 2010). Of interest is that some studies have identified a negative shift in the recommended nutrient consumption during adolescence, with reports that few adolescents are meeting recommend dietary guidelines (Patrick, et al., 2004). For example, Lytle and colleagues (2002) conducted a large-scale longitudinal study of youth between the ages of 8 and 14, and found that their diets became less nutrient-dense over time. In particular, this study found that during adolescence young people's diets showed an increase in fat, saturated fat and sodium, and a decrease in vitamins, minerals and fibre – these nutrients are all those implicated in chronic disease (Lytle, et al., 2002). Adolescents have also been found to consume less than adequate amounts of fruits and vegetables. A large-scale study of 16,262 U.S. youth (with a mean age of 16 years) identified that only 22% of young women and 29% of young men consumed the recommended daily fruit and vegetable serves (Pesa & Turner, 2001).

Construction industry apprentices (most often young men aged 16-24 years) could be considered 'vulnerable' due to the number of transitional issues and changes they face as they move from school to work. These changes include: Changes to their physical environment (e.g., moving out of the parental home; cohabiting with friends or a romantic partner), changes to their peer group (as new employees on a worksite, fellow-apprentices, new friends), changes in financial responsibilities (e.g., paying rent, purchasing a vehicle, purchasing food, paying bills), and educational/work responsibilities (e.g., successfully completing apprenticeship, performing successfully at work).

Lytle and colleagues (2002) argue that the transition to adolescence, where young people experience an increased need for autonomy and a desire to express themselves, influences their food choices. Furthermore, young people experience peer pressure which significantly influences their food choices (Lytle, et al., 2002). In comparison to younger children, teens might also be exposed to more unhealthy food choices in their environment (Lytle, et al., 2002). Apart from transitional issues there are also a number of collective factors which influences the decisions individuals make about food, which includes familial factors, food supply, and food acquisition (e.g., at home, work, markets, and through fast-food outlets) (Taylor, Evers, & McKenna, 2005). Recent research conducted with Irish adolescents (Walsh & Nelson, 2010) indicates that parents are the biggest influencers in their children's diets. In particular, the frequency of shared dinners had a positive effect on adolescents' food knowledge (Walsh & Nelson, 2010). Other factors influencing

adolescents' diets included their nutritional knowledge, friends (with whom high-fat fast foods were often consumed), government health campaigns and cooking programs on television (Walsh & Nelson, 2010). However, this study found that celebrity endorsements of food products had the least influence on adolescents' diets (Walsh & Nelson, 2010). Other researchers note that the media, in particular television, promotes differential food marketing to youth (Lytle, et al., 2002). A study by Wiecha and colleagues highlights the important role of television in shaping young people's intake of increased calorie-rich, low-nutrient food often advertised on television, and also explicitly links increased television viewing with increased calorie intake (Wiecha, Peterson, Ludwigh, Kim, Sobol, & Gortmaker, 2006). Food labelling and marketing of products also influence the choices that individuals make around food. For example, Jalleh and Donovan (2001) demonstrated that even though two products were identical, the positive framing of product attributes (e.g., 75% fat free) as opposed to negative framing (e.g., 25% fat content) influenced consumers' choice of purchasing the positively-framed product, as well as their positive perceptions of the product's taste and quality.

Demographic factors, socio-economic status, as well as ethnicity, social, and cultural variables also influence food choices (Tepper, Choi, & Nayga, 1997). At the individual level numerous aspects such as hunger and satiety, food preferences, and attitudes and beliefs about food influence decisions around food (Tepper, et al., 1997). Gracey and colleagues (1996) identified that 15-year old adolescent boys report the effects of a healthy diet to be 'an improvement in health', 'feeling energetic', 'feeling good about myself', 'lowering cholesterol' and 'improving appearance'. These adolescent boys also identified some barriers to healthy eating, including healthy food not being available at home or in the school canteen, a lack of control over foods available at home, and a lack of nutritional knowledge (e.g., calorie content, sugar/fat content, fibre content) (Gracey et al., 1996). Nutritional knowledge has been indicated as a factor which influences food choice. However, some researchers question whether an increase in nutritional knowledge necessarily eventuates in improved food choices (Tepper, et al., 1997), whilst other researchers have found that nutritional knowledge alone is insufficient to motivate healthy eating (Gracey, Stanley, Burke, Corti, & Beilin, 1996).

Although fewer men than women report that they have 'dieted' (Liebman, Cameron, Carson, Brown, & Meyer, 2001), men's food choices have been found to be moderated by dietary restraint (defined as "the conscious attempt by an individual to regulate body weight", Tepper et al., 1997, p.308). In their study of 137 males in a U.S. community sample, Tepper and colleagues (1997) found that dietary restraint was a definite factor influencing food choices, with men high in restraint more likely to consume healthy foods and less likely to consume fast foods, fats and oils, and soft drinks. Others report that men, in general, give preference to taste and convenience, over healthful food choices (Wardle, Haase, Steptoe, Nillapun, Jonwutiwes, & Bellisle, 2004).

Effects of nutrition on mental health

Australian research indicates that between 1985 and 1995 there was an increase in total energy consumption (e.g., carbohydrates, sugars, soft drinks, and confectionary) in children and adolescents (Cook, Rutishauser, & Seelig, 2001). Approximately a quarter of Australian adolescents are overweight or obese, and the last 20 years saw an increase in children and adolescents who have become overweight (which has doubled) or obese (which has tripled) (Booth, Okely, Denney-Wilson,

Hardy, Yang, & Dobbins, 2006). During this same period physical exercise has decreased and there has been a marked increase in time spent on sedentary behaviours (e.g., watching TV and using computers) (Booth et al., 2006).

Research has found that mental disorders now account for 49% of the 'burden of disease' amongst Australians aged 15-24 years (AIHW, 2007), and it has risen 5 to 8-fold among youth of developing nations in recent decades (Eckersley, 2008). A recent large-scale Australian study of more than 10,000 students found that students' wellbeing particularly decreased during high school (Bernard, Stephanou, & Urbach, 2007). Eckersley (2008) comments that youth "appear to be suffering mental health problems at an earlier age than before, experiencing them at higher rates than older age groups, and retaining their increased risk beyond youth into older age" (p.10). A quarter of 16-24 year olds report experiencing a mental disorder (e.g., depression, anxiety, substance use disorders etc.) (ABS, 2008). Young men, in particular, are at risk of suicide with 24% of deaths in young Australian men aged 15-24 years accounted for by suicide (ABS, 2010).

Whilst the exact relationship remains undefined and causality cannot be inferred, there is some research to date which links poor nutrition with a decrease in mental health. Vitamins and minerals assist with optimal functioning of neurotransmitters in the brain and O'Sullivan and colleagues (2008) note that "neurotransmitters are directly responsible for aspects such as behaviour, mood and intellectual function" (p. 254). In relation to mental health and brain functioning Jacka and Berk (2007) note that at the neurochemical level oxidative stress can cause neuronal damage, however foods high in antioxidants (e.g., blueberries, grapes, and green tea) can reduce the occurrence of neuronal damage. The mechanism for this relationship is commented on by Jacka and colleagues which in relation to depression notes that it "is influenced by genetic, hormonal, immunological, biochemical, and neurodegenerative factors. Diet modulates each of these factors and, as a results, has a plausible impact on the development and course of this illness" (Jacka, et al., 2010, p. 5). Others, such as Smith (1991), have linked the immune system to depression, and the immune system is also thought to be influenced by dietary habits (Jacka & Berk, 2007). For example, magnesium deficiency (e.g., low intake of leafy green vegetables, nuts, legumes and whole grains) is associated with C-reactive protein – a marker for low grade inflammation (Jacka & Berk, 2007). Dietary habits are thus likely to be important factors in immune status, which these researchers suggest may influence depression over time (Jacka & Berk, 2007).

A number of Australian researchers have also recently begun conducting research on diet and its association with symptoms of mental illness. In a large-scale Western Australia study researchers examined 1,631 adolescents (14-year-olds) and found two main food patterns: a 'Western' dietary pattern, which consisted of high intakes of take-away foods, soft drinks, confectionary, refined grains and full fat dairy products; and a 'healthy' dietary pattern, which consisted of high intakes of whole grains, fruit, vegetables, legumes and fish (Ambrosini, et al., 2009). A study by the same research group identifies that higher scores of psychological symptoms relating to internalising (e.g., withdrawal/depression) and externalising behaviour (e.g., delinquency/aggression) were associated with a 'Western' dietary pattern, whereas a 'healthy' dietary pattern was associated with a decrease in symptoms (Oddy, et al., 2009). Another study also showed that a 'Western' diet was associated with a higher likelihood of depressive and anxiety disorders in women (Jacka, et al., 2010). Furthermore, it has been identified that a high quality breakfast, consisting of 3 of more food groups, is associated with better mental health scores in adolescence (O'Sullivan, et al., 2008). For

example, the researchers report that milk, fortified breakfast cereals and bread are good sources of nutrients (including carbohydrates, calcium, B vitamins, iron and folate) that positively affect brain function (O'Sullivan, et al., 2008).

Gender differences

Whilst unhealthy eating practices established during childhood and adolescence might interfere with optimal growth and development (Taylor, Evers, & McKenna, 2005), it is of greater concern that these food practices tend to endure into adulthood (Ambrosini, et al., 2009). Some researchers believe that this is a contributing factor to the eventual differences in life-expectancy between men and women (Wardle, Haase, Steptoe, Nillapun, Jonwutiwes, & Bellisle, 2004). The average life expectancy for Australian women is 84 years, whilst for men it is 79 years (Department of Health and Ageing [DOHA], 2010c). Health-related beliefs and behaviour significantly moderate these differences particularly in preventable/chronic diseases. The U.S. Preventive Services Task Force (1996) reviewed a large number of studies and estimated that half of all deaths could be prevented by making changes in personal health behaviours, such as diet.

Research confirms that Australian men consume less fruits and vegetables than women (Centre for Public Health, 2003). Compared to other groups, men aged 18-44 years also eat a smaller variety of vegetables (Centre for Public Health, 2003). Men consume less high fibre foods, less low fat foods and more soft-drinks than women (e.g., Wardle et al., 2004). In this regard, researchers have identified that men face specific barriers to eating foods like fruit and vegetables (Dumbrell & Mathai, 2008). This includes cost, time, lack of cooking skills, inconsistent quality, low availability, perishability and a lack of understanding as to recommended serving size (Dumbrell & Mathai, 2008). Furthermore, Dumbrell and Mathai (2008) identified in a sample of men aged 18-40 years that fruit and vegetables ranked lowly in Australian men's culture – this was particularly noticeable in younger men aged 18–25 years where they were unconcerned about the health risks of diets low in fruit and vegetables. The researchers (Dumbrell & Mathai, 2008) comment that Australian food marketing messages often link masculinity with animal products "or with the 'hunter' rather than 'gatherer' food traditions" (p. 217), whereas nutrition and cooking are socially constructed as feminine (e.g., far more women than men are cooks and homemakers on television) (Courtenay, 2000).

Gender differences in health beliefs and dieting status have been found to moderate food choices (Wardle et al., 2004). Wardle and colleagues (2004) conducted a large-scale study of 19,298 university students from 23 different countries and found that for men *health* is a less important motivational factor when making food choices, than for women. They comment that it was not that men were not interested in the nutritional and health benefits of food, but that this was a less important quality for men, than it was for women. However, the gender differences in this study were small. This could be explained by Wardle and colleagues' (2004) sample of university students which were mainly well-educated and from higher socio-economic circumstances – factors which could be limiting the extent of gender differentiation in that sample.

Other researchers comment on the socially prescribed male role, and that there are stereotypical or socially prescribed masculinities which influences men's health beliefs and behaviours (e.g., Courtenay, 2000). For example, Courtenay (2000) comments that:

> *A man who enacts gender as socially prescribed would be relatively unconcerned about his health and wellbeing and would place little value on health knowledge. He would see himself as stronger, both physically and emotionally, than most women. He would think of himself as independent, not needing to be nurtured by others….He would not be interested in learning about health, nutrition, or cooking, and he would be unconcerned about his weight, diet, or hygiene* (p. 11)

Courtenay (2000) argues that rather than gender residing in the person, men and women actively participate to construct these socially-based gendered norms. In turn the health beliefs and behaviours that an individual exhibit could characterize and enact representations of themselves and their gender (Courtenay, 2000). In his review of literature Courtenay note that "a growing body of research provides evidence that men who endorse dominant norms of masculinity adopt poorer health behaviours and have greater health risks than their peers who endorse less traditional norms" (p. 3). Thus, in contrast to Wardle and colleagues' study of university students from high socio-economic backgrounds (2004), it is possible that men from lower socio-economic circumstances, such as blue-collar workers (e.g., construction workers in jobs that are considered "men's work", Courtenay, 2000, p. 7), might adhere more to masculine stereotypes, which might in turn influence their dietary beliefs and choices. Although less is known about blue-collar workers' food consumption, research does show that white-collar populations have more favourable food patterns (Engbers, Van Poppel, Paw, & Van Mechelen, 2006).

Whilst dominant stereotypes have a powerful effect, others argue that the perpetuation of singular dominant masculine stereotypes is unhelpful in health promotion settings. For example, Smith (2007) cautions that these days the "masculine transition into adulthood has become more complex and transitional statuses (leaving home, marriage and employment) have become weakened" (p.22). As such, Smith (2007) argues for a greater acceptance of *multiple* masculinities in different groups of men, in order to target health promotion activities to the most vulnerable and marginalised men in society.

Nutrition education and intervention

One of the theoretical frameworks frequently mentioned in health literature which has relevance to the stages of change that people experience as they make behavioural changes (e.g., to their diet), is that of Prochaska and DiClimente's (1986) transtheoretical model. According to this framework behavioural change happens when individuals are ready to change, and it occurs in a cyclical process which might involve progress and relapse. The stages distinguished in the model include precontemplation (where behaviour change is not yet considered), contemplation (thinking about change), preparation (planning to change), action (actively changing) and maintenance (sustaining change) (Prochaska & DiClemente, 1986).

Gracey and colleagues note that nutrition intervention programs are more likely to be successful if it considers factors which influence food choice, as well as a theoretical framework which incorporates a focus on changes in health-related behaviours, for example Prochaska and DiClemente's stages of change model (Gracey, Stanley, Burke, Corti, & Beilin, 1996). More recently, Walsh and Nelson (2010) noted the importance of increasing young men's competencies in relation to food, and called

for educators to consider the variety of factors which influences how young men think about food and the role it plays in their lives. Other researchers have similarly called for 'innovative approaches', including the importance of using participant suggestions in developing nutrition programs and the use of internet-based nutritional information in informing young adults (Cousineau, Goldstein, & Franko, 2004).

Mass media campaigns focused on preventing weight gain have been successful both overseas and in Australia. A 3-year mass media campaign ('*Maak je niet dik!*' literally translated as 'Don't get fat') implemented in the Netherlands resulted in high campaign awareness, more positive attitudes, greater social support and positive intentions to prevent weight gain (Wammes, Oenema, & Brug, 2007). Similarly the 2009 Western Australian '*Draw the Line'* campaign, which aimed at maintaining a healthy weight, was effective in achieving high campaign awareness, understanding of campaign messages, and confidence in the target group's ability to implement and sustain weight-related behaviours (Ivery, French, Wood, & Rosenberg, 2010).

Nutrition education programs are frequently combined with exercise interventions in community health promotion programs. Targeting both physical activity and nutrition can offer a greater number of health promotion opportunities and maximise positive health outcomes for participants (Prochaska & Sallis, 2004). Researchers note that exercise and dietary behaviour are influenced by conscious choices (for which increasing health knowledge is useful) and unconcsious processes or habits (for which changes in the physical environment is beneficial) (Engbers, Van Poppel, Paw, & Van Mechelen, 2005).

Increasingly, multi-behaviour programs are taking a whole-of-community approach to target obesity (e.g., Victorian-based Health Promoting Communities: Being Active Eating Well initiative - De Silva-Sanigorski, et al., 2010). However, some researchers caution that multi-behaviour interventions are often costly to implement and need to be time-efficient to maximise its potential, without overloading participants (Prochaska & Sallis, 2004).

Settings approaches (e.g., schools/workplaces) have been acknowledged as a targeted means to reach specific populations (Smith, 2007). School-based interventions implemented as part of the curriculum have shown success in reducing obesity (particularly among girls), decreasing television viewing and increasing fruit and vegetable consumption (Gortmaker, et al., 1999). However, another multi-behaviour intervention which focused on environmental changes as opposed to changes incorporated in the curriculum, have shown limited effectiveness (Sallis, et al., 2003). Specifically these environmental changes included increased physical activity in physical education classes, regulated provision of low-fat foods in cafeterias, and health policy interventions such as health promotion newsletters to parents (Sallis, et al., 2003). This study (Sallis, et al., 2003) showed that making environmental changes improved boys' physical activity and BMI levels, but not dietary intake (and no changes were found to girls' physical activity levels or dietary intake). In another study brief school-based interventions (30 minutes targeting physical activity and nutrition) have also shown limited efficacy at improving adolescent boys' (M = 12 years) physical acitivity levels, however it had no effect on improving their fruit and vegetable intake (Prochaska & Sallis, 2004).

Implementing health promotion changes through the workplace can contribute to healthier lifestyles, reduced absenteeism, and increased productivity (e.g., DOHA, 2010b). A large portion of each day is often spent at work, as such it is a convenient site for intervention (i.e., the workers are

already there), often there is collegial support (or an opportunity to increase support) and, with the support of employers, space and time to implement health-related messages and make environmental changes. A review of workplace interventions show that they are successful in addressing dietary behaviours (Steyn, Parker, Lambert, & Mchiza, 2009). Some workplace interventions show changes in the psychosocial determinants of dietary behaviour (e.g., more collegial support to eat healthy in the workplace) (Engbers, Van Poppel, Paw, & Van Mechelen, 2006). However, others show tangible results. For example, a study of New Zealand blue-collar men in a manufacturing workplace compared an intervention group (nutrition displays in cafeteria and 30-minute monthly workshops) with a control group, and after 6 months demonstrated not only high retention in the workplace program, but also signficant changes in fat intake, fruit and vegetable intake and nutritional knowledge (Cook, Simmons, Swinburn, & Stewart, 2001).

Engbers, Van Poppel, Chin and Van Mechelen (2005) conducted a systematic review of 13 randomised control trials which implemented workplace health promotion programs. Their review found strong evidence that workplace health promotion programs can successfully influence dietary intake. Modifying the environment, including food labelling, displaying promotional posters and brochures, expanding the available healthful food choices, and product placement, all contributed to successful dietary changes (including increased fruit and vegetable intake and reduced fat intake) (Engbers et al., 2005). However, there was inconclusive evidence that environmental changes affected anything but dieatary intake (e.g., physical activity levels or health risk indicators) (Engbers et al., 2005).

More recently Steyn and colleagues (2009) systematically reviewed 30 workplace interventions with a nutrition component (Steyn, Parker, Lambert, & Mchiza, 2009). They found that in the most successful programs there were a number of key factors which contributed to its success, including (p.111):

I. *There was a nutrition and physical activity component;*
II. *Dietitians were involved in nutrition education;*
III. *Changes occurred in the cafeteria/canteen, which increased the availability of healthy food options and advertised them accordingly;*
IV. *Tailored feedback on diet (and clinical values) was given to subjects;*
V. *Employees were involved in planning and managing programs;*
VI. *The reduced prices (of healthy food items) in vending machines encouraged employees to buy healthier options; and*
VII. *The 'stages of change' theory was most commonly associated with best practice outcomes.*

Australian Policies and Practice

Data from the *National Health Survey* of 2007-2008 indicate that most Australians consider their health to be very good/excellent (56%) or good (29%) (ABS, 2009). However, self-reported health is not an accurate, objective or complete measure of health status (Eckersley, 2008). Given the

increase in chronic diseases and greater awareness of risk factors, the next Australian Health Survey (from April 2011) will therefore focus on preventative factors and health modification strategies (www.abs.gov.au).

One of the key documents in relation to healthy eating is the Australian Government's *Dietary Guidelines for Australians,* which includes healthful tips for adults to include a wide and nutritious range of foods in their diet, whilst limiting saturated fats, salt, sugar and alcohol (DOHA & NHMRC, 2005). It also encourages physical activity on a daily basis and includes tips on the safe storage of foods.

In February 2006 the *Australian Better Health Initiative* was announced by the Council of Australian Governments (COAG). One of the campaigns featured in this initiative is the *Measure Up* campaign, which through national social marketing activities (e.g., television advertisements) aims to raise awareness of healthy lifestyles and reduction of risk factors (http://www.measureup.gov.au).

In Australia, the *National Preventative Health Taskforce* (NPHT) was established in April 2008 by the Hon Nicola Roxon MP, the Minister for Health and Ageing. The NPHT called for urgent, comprehensive and sustained action to implement a number of reforms relating to preventative health action, and sets itself the challenge of making Australia the healthiest country by 2020 (NPHT, 2008). In relation to this literature review's topic of apprentice nutrition, the NPHT specifically called for targeted approaches to people from low socio-economic backgrounds. The contribution from Australian industry, in particular the food and beverage industry, to provide product labelling, prominent placement of healthful foods, increasing the affordability of healthful foods and developing a more environmentally sustainable food chain, is also called for (NPHT, 2008).

As a flow-on from the NHPT, the National Partnership Agreement on Preventive Health was agreed to in November 2008 by the Council of Australian Governments (COAG, 2008) to address the prevalence of chronic diseases. This is to be achieved by:

> *a) laying the foundations for healthy behaviours in the daily lives of Australians through social marketing efforts and the national roll out of programs supporting health lifestyles; and,*
>
> *b) supporting these programs and the subsequent evolution of policy with the enabling infrastructure for evidence-based policy designs and coordinated implementation.*
>
> (COAG, 2008, p.3)

Amongst its initiatives, the National Partnership Agreement wants to support healthy living programs in workplaces in States and Territories, which would include focusing on topics such as physical activity and healthy eating (COAG, 2008). More recently, the first *National Male Health Policy*, also encouraged the workplace as a setting for targeted health promotion interventions, awareness raising and health checks (DOHA, 2010c). An example of how these programs are implemented is the Victorian Government's *WorkHealth* checks across Victorian workplaces, including the construction industry (www.workhealth.vic.gov.au). These 15-minute health checks delivered by endorsed clinical practitioners in the workplace tests key risk factors (e.g., cholesterol, blood pressure, blood sugar) and includes the provision of targeted educational materials to encourage preventative action in specific areas (e.g., increasing fruit and vegetable intake). As part

of their initiatives WorkSafe also implement targeted and tailored workplace programs in conjunction with employers. For example, this might target increasing physical activities (e.g., lunch-time walking groups) or dietary changes (e.g., provision of fresh fruit and vegetables by employers).

More recently, the Australian Government announced its *Food and Health Dialogue*, which together with industry and public health groups aims to address poor diet and promote healthy food choices (DOHA, 2010a). A Reformulation Working Group has been established under this initiative to investigate a number of food categories, including bread and breakfast cereals, savoury pies, and sweet biscuits. To date the Working Group has secured an agreement with industry to reduce salt in bread and breakfast cereals (DOHA, 2010a).

Summary

Consuming a nutrient-rich diet provides the body and mind with the energy it requires and assists individuals in maintaining optimum health and wellbeing. Self-report surveys indicate that most Australians consider their health to be very good or excellent. However, there has been a rise in lifestyle-related chronic diseases (e.g., Type-2 diabetes, cardiovascular disease) which would appear to question accuracy of these health perspectives. From recent research it is also evident that there is likely link between nutrition and mental health. Jacka and Berk (2007, p. 322)comment that:

> *Given the substantial direct and indirect action of various nutritional compounds on gene expression, immune function, the endocrine system, biochemistry and ageing, it is therefore appropriate and important to recognise that diet must be considered as another environmental factor with the potential to influence the course and outcome of many psychiatric illnesses.*

Apart from a rise in chronic diseases – many attributed to overnutrition and being overweight – men consume less healthy food (e.g., less fruit, vegetables, land low fat foods) than women, and are also less proactive about preventing ill-health. In turn, these dietary behaviours would appear to place men and women on different trajectories which contribute to the 5-year difference in life-expectancy.

Most apprentices are young men at the start of their career who face a number of transitional challenges. Maintaining mental fitness and a healthy body contributes to apprentices being able to successfully face these transitional challenges, and helps them to perform physically demanding work roles. Early adulthood is a phase of greater independence where young men are starting to make a range of decisions, including food choices. Research indicates that becoming overweight in adolescence makes is much more difficult to obtain a healthy weight in adulthood. The literature also indicates that by the age of 15 years food preferences are becoming habitual. Apart from food preferences there are also a number of aspects such as personal factors (e.g., taste, health beliefs), environmental factors (e.g., availability of food) and social factors (e.g., peers/family) which affects people's food choices. The literature indicates that men, in particular, face perceived obstacles to consuming particular foods such as fruit and vegetables, including a lack of nutritional knowledge and a lack of cooking skills. Fruit and vegetables, for example, also rate lowly in Australian men's

culture, and the literature indicates that men who prescribe to stereotypical masculinities (e.g., blue-collar men) would be relatively unconcerned with their health, nutrition and dietary practices.

Studies have shown that settings-based nutrition intervention approaches (e.g., workplace interventions) can be successful in achieving their aims if they consider factors which influence food choice, including nutritional knowledge and environmental changes. A systematic review of 30 workplace interventions also found that multi-pronged approaches which incorporate physical activity components, changes to the environment (e.g., greater availability of healthy food options) and involvement of participants in planning and managing programs, are more successful. Although little is known about implementing nutrition intervention approaches with apprentices, it is likely that the transitional issues and blue-collar context that apprentices face might also colour the manner in which they engage with food and health messages in the workplace/Training and Further Education Institutions (TAFEs)/Group Training Organisations (GTOs).

Through a range of initiatives and dedicated funds the Australian Government has taken a proactive stance in aiming to reduce the incidence of chronic diseases. Through social marketing campaigns the populace is encouraged to consume healthy diets and take part in physical activities. Reforms are also occurring at the industry level where the Government is engaging with the food and beverage industry to label, promote and make healthful foods more affordable. The importance of promoting health is indicated in a number of Government documents and policies, including the new National Male Health Policy, which specifically targets the workplace as an ideal setting for health interventions.

Clearly, healthy lifestyles, of which dietary behaviour is an important aspect, has become a focus for the Australian Government as it sets out to reduce the burden of chronic disease on Australians. To date the link between nutrition and mental health in terms of Government policies has been less overt. From the literature reviewed, it is clear that the workplace provides an ideal setting to implement nutritional programs. Young working men are key contributors to the Australian economy and their sustained health and wellbeing makes economic, social and moral sense. However, not much is known about the dietary beliefs and practices of young men. To this end it is difficult to implement targeted health-focused nutrition programs. Some of the questions which this project will address therefore includes: To which degree do young construction workers adhere to stereotypical masculinities and does this influence their dietary beliefs and practices? What, in their minds, constitute a healthy diet? How far removed is their concept of a healthy diet from recommended nutritional standards, and what, in their opinion, can be done to address their dietary behaviour? Are there collective barriers which young men face in sourcing nutritious food? Do these barriers vary across districts (e.g., metropolitan and rural)?

This project will aim to address these questions by directly engaging with, and researching the opinions of, young working men.

Bibliography

ABS. (2008). *2007 National Survey of Mental Health and Wellbeing: Summary of Results (4326.0).* Canberra: Australian Bureau of Statistics.

ABS. (2009, August 25). *4364.0 National Health Survey: Summary of Results, 2007-2008 (Reissue)*. Retrieved September 6, 2010, from Australian Bureau of Statistics: www.abs.gov.au

ABS. (2010). *Australian Social Trends - Men's Health 4102.0.* Canberra: Australian Bureau of Statistics.

AIHW. (2007). *Young Australians: Their health and wellbeing 2007. Cat. No. PHE 87.* Canberra: Australian Institute of Health and Welfare.

Ambrosini, G. L., Oddy, W. H., Robinson, M., O'Sullivan, T. A., Hands, B. P., de Klerk, N. H., et al. (2009). Adolescent dietary patterns are associated with lifestyle and family psycho-social factors. *Public Health Nutrition , 12* (10), 1807-1815.

Bernard, M., Stephanou, A., & Urbach, D. (2007). *The ASG Student Social and Emotional Health Report.* Oakleigh: Australian Scholarships Group.

Birch, L. L. (1999). Development of food preferences. *Annual Review of Nutrition , 19*, 41-62.

Booth, M., Okely, A., Denney-Wilson, E., Hardy, L., Yang, B., & Dobbins, T. (2006). *NSW Schools Physical Activity and Nutrition Survey (SPANS) 2004: Summary Report.* Sydney: NSW Department of Health.

Centre for Public Health. (2003). *Report on the consumption of vegetables in fruit in NSW: 2003.* Sydney: New South Wales Department of Health.

Cook, S., Simmons, G., Swinburn, B., & Stewart, J. (2001). Changing risk factors for non-communicable disease in New Zealand working men. Is workplace intervention effective? *New Zealand Medical Journal , 114* (1130), 175-178.

Cook, T., Rutishauser, I., & Seelig, M. (2001). *Comparable Data on Food and Nutrient Intake and Physical Measurements from 1983, 1985 and 1995 Surveys.* Canberra: Austrlian Food and Nutrition Monitoring and Surveillance Unit, University of Queensland and Commonwealth Department of health and Aged Care.

Council of Australian Governments [COAG]. (2008). *National Partnership Agreement on Preventive Health.* http://www.coag.gov.au/intergov_agreements/federal_financial_relations/docs/national_partnership/national_partnership_on_preventive_health.pdf: COAG.

Courtenay, W. H. (2000). Engendering health: A social constructivist examination of men's health beliefs and behaviors. *Psychology of Men and Masculinity , 1* (1), 4-15.

Cousineau, T. M., Goldstein, M., & Franko, D. L. (2004). A collaborative apprach to nutrion education for college students. *Journal of American College Health , 53* (2), 79-84.

De Silva-Sanigorski, A. M., Bolton, K., Haby, M., Kremer, P., Gibbs, L., Waters, E., et al. (2010). Scaling up community-based obesity prevention in Australia: Background and evaluation design of the Health Promoting Communities: Being Active Eating Well initiative. *BMC Public Health , 10* (65), http://www.biomedcentral.com/1471-2458/10/65.

Department of Health and Ageing [DOHA] & National Health and Medical Research Council [NHMRC]. (2005). *Food for health. Dietary guidelines for Australians: A guide to healthy eating.* Canberra: DOHA & NHMRC.

Department of Health and Ageing [DOHA]. (2010a, March 26). *Food and Health Dialogue*. Retrieved September 6, 2010, from Department of Health and ageing: www.health.gov.au/internet/main/publishing.nsf/Content/food-health-dialogue

Department of Health and Ageing [DOHA]. (2010). *National Male Health Policy. Supporting document: Healthy Workers.* Canberra: DOHA.

Department of Health and Ageing [DOHA]. (2010c). *National Male Health Policy: Building on the strengths of Australian males.* Canberra: DOHA.

Dumbrell, S., & Mathai, D. (2008). Getting young men to eat more fruit and vegetables: A qualitative investigation. *Health Promotion Journal of Australia , 19* (3), 216-221.

Eckersley, R. (2008). *Never better - or getting worse? The health and wellbeing of young Australians.* Canberra: Australia 21.

Eckersley, R. (2008). *Never Better or Getting Worse? The Health and Wellbeing of Young Australians.* Canberra: Australia 21.

Engbers, L. H., Van Poppel, M. N., Paw, M. C., & Van Mechelen, W. (2006). The effects of a controlled worksite environmental intervention on determinants of dietary behavior and self-reported fruit, vegetable and fat intake. *BMC Public Health , 6* (253), http://www.biomedcentral.com/1471-2458/6/253.

Engbers, L. H., Van Poppel, M., Paw, M., & Van Mechelen, W. (2005). Worksite Health Promotion Programs with Environmental Changes: A systematic review. *American Journal of Preventive Medicine , 29* (1), 61-70.

Gibney, M., Lanham-New, S., Cassidy, A., & Vorster, H. (2009). *Introduction to human nutrition* (2nd ed.). San Francisco: Wiley-Blackwell.

Gortmaker, S. L., Peterson, K., Wiecha, J., Sobol, A. M., Dixit, S., Fox, M. K., et al. (1999). Reducing obesity via a school-based interdisciplinary intervention among youth. *Archives of Pediatric Adolescent Medicine , 153*, 409-418.

Gracey, D., Stanley, N., Burke, V., Corti, B., & Beilin, L. J. (1996). Nutritional knowledge, beliefs and behaviours in teenage school students. *Health Education Research , 11* (2), 187-203.

Hung, H.-C., Joshipura, K. J., Jiang, R., Hu, F. B., Hunter, D., Smith-Warner, S. A., et al. (2004). Fruit and vegetable intake and risk of major chronic disease. *Journal of the National Cancer Institute , 96* (21), 1577-1584.

Ivery, P., French, S., Wood, L., & Rosenberg, M. (2010). *Healthy weight 'Draw the Line' campaign evaluation. Final evaluation report: Findngs form post media wave one and three surveys.* Perth: School of Sport, Exercise Science and Health & Centre for the Built Environment and Health (School of Population Health). The University of Western Australia.

Jacka, F. N., Pasco, J. A., Mykletun, A., Williams, L. J., Hodge, A. M., O'Reilly, S. L., et al. (2010). Association of Western and traditional diets with depression and anxiety in women. *American Journal of Psychiatry* , doi:10.1176/appi.ajp.2009.09060881.

Jacka, F., & Berk, M. (2007). Food for thought. *Acta Neuropsychiatrica , 19*, 321-323.

Jalleh, G., & Donovan, R. J. (2001). Beware of product labels! *Journal of Research for Consumers* (2), http://www.jrconsumers.com/Consumer_Articles/issue_2.

Liebman, M., Cameron, B. A., Carson, D. K., Brown, D. M., & Meyer, S. S. (2001). Dietary fat reduction in college students: Relationship to dieting status, gender and key psychosocial variables. *Appetite , 36*, 51-56.

Lytle, L. A., Himes, J. H., Feldman, H., Zive, M., Dwyer, J., Hoelscher, D., et al. (2002). Nutrient intake over time in a multi-ethnic sample of youth. *Public Health Nutrition , 5* (2), 319-328.

Mannucci, E., Petroni, M. L., Villanova, N., Rotella, C. M., Apolone, G., & Marchesini, G. (2010). Clinical and psychological correlates of health-related quality of life in obese patients. *Health and Quality of Life Outcomes , 8* (90), http://www.hqlo.com/pubmed/20731871.

National Preventative Health Taskforce [NPHT]. (2008). *Australia: The healthiest country by 2020 - A discussion paper.* Canberra: National Preventative Health Taskforce.

Oddy, W. H., Robinson, M., Ambrosini, G. L., O'Sullivan, T. A., de Klerk, N. H., Beilin, L. J., et al. (2009). The ssociation between dietary patterns and mental health in early adolescence. *Preventive Medicine , 49*, 39-44.

O'Sullivan, T. A., Robinson, M., Kendall, G. E., Miller, M., Jacoby, P., Silburn, S. R., et al. (2008). A good quality breafast is associated with better mental health in adolescence. *Public Health Nutrition , 12* (2), 249-258.

Patrick, K., Norman, G. J., Calfas, K. J., Sallis, J. F., Zabinski, M. F., Rupp, J., et al. (2004). Diet, physical activity, and sedentary behaviors as risk factors for overweight in adolescence. *Archives of Pediaric Adolescent Medicine , 158*, 385-390.

Patton, G. C., Coffey, C., Carlin, J. B., Sawyer, S. M., Williams, J., Olsson, C. A., et al. (2010). Overweight and Obesity Between Adolescence and Young Adulthood: A 10-year Prospective Cohort Study. *Journal of Adolescent Health* , doi:10.1016/j.jadohealth.2010.06.019 .

Pesa, J. A., & Turner, L. W. (2001). Fruit and vegetalbe intake and weight-control behaviors among US youth. *American Journal of Health Behavior , 25* (1), 3-9.

Prochaska, J. J., & Sallis, J. F. (2004). A randomized controlled trial of single versus multiple health behavior change: Promoting physical activity and nutrition among adolescents. *Health Psychology , 23* (3), 314-318.

Prochaska, J. O., & DiClemente, C. C. (1986). Towards a comprehensive model of change. In W. R. Miller, & N. Heather, *Treating addictive behaviors: Processes of change.* New York: Plenum Press.

Sallis, J. F., McKenzie, T. L., Conway, T. L., Elder, J. P., Prochaska, J. J., Brown, M., et al. (2003). Environmental interventions for eating and physical activity: A randomized controlled trial in middle schools. *American Journal of Preventive Medicine , 24* (3), 209-217.

Smith, J. A. (2007). Beyond masculine stereotypes: Moving men's health promotion forward in Australia. *Health Promotion Journal of Australia , 18* (1), 20-25.

Smith, R. S. (1991). The macrophage theory of depression. *Medical Hypotheses , 35*, 298-306.

Steinmetz, K. A., & Potter, J. D. (1996). Vegetable, fruit and cancer prevention: A review. *Journal of the American Dietetic Association , 96* (10), 1027-1039.

Steyn, N. P., Parker, W., Lambert, E. V., & Mchiza, Z. (2009). Nutrition interventions in the workplace: Evidence of best practice. *South African Journal of Clinical Nutrition , 22* (3), 111-117.

Sweeting, H., & Anderson, A. (1994). Socio-demographic correlates of dietary habits in mid to late adolescence. *European Journal of Clinical Nutrition , 48*, 736-748.

Taylor, J. P., Evers, S., & McKenna, M. (2005). Determinants of healthy eating. *Canadian Journal of Public Health , 96* (Suppl. 3), S20-S26.

Tepper, B. J., Choi, Y.-S., & Nayga, R. M. (1997). Understanding food coice in adult men: Influence of nutrition knowledge, food beliefs and dietary restraint. *Food Quality and Preference , 8* (4), 307-317.

U.S. Preventive Services Task Force. (1996). *Guide to clinical preventive services* (2nd ed.). Baltimore: Williams & Wilkins.

Walsh, A., & Nelson, R. (2010). The link between diet and health: An exploratory study of adolescents in Northern Ireland using foodmaps. *International Journal of Consumer Studies , 34*, 190-195.

Wammes, B., Oenema, A., & Brug, J. (2007). The evaluation of a mass media campaign aimed at weight gain prevention among young Dutch adults. *Obesity , 15* (11), 2780-2789.

Wang, Z., Hoy, W. E., & Si, D. (2010). Incidence of type 2 diabetes in Aboriginal Australians: an 11-year prospective cohort study. *BMC Public Health , 10* (487), http://www.biomedcentral.com/1471-2458/10/487.

Wardle, J., Haase, A. M., Steptoe, A., Nillapun, M., Jonwutiwes, K., & Bellisle, F. (2004). Gender differences in food choices: The contribution of health beliefs and dieting. *Annals of Behavioral Medicine , 27* (2), 107-116.

Wiecha, J. L., Peterson, K. E., Ludwigh, D. S., Kim, J., Sobol, A., & Gortmaker, S. L. (2006). When children eat what they watch: Impact of television viewing on dietary intake in youth. *Archives of Pediatric Adolescent Medicine , 160*, 436-442.