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Nutrition and eating behaviour in older adulthood

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Nutrition and Eating Behaviour in Older Adulthood

Catherine Helene Matringe

A report submitted in Partial Fulfilment of the Requirements for the Award of

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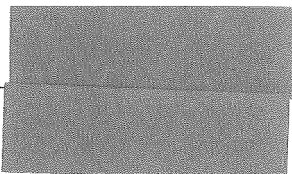
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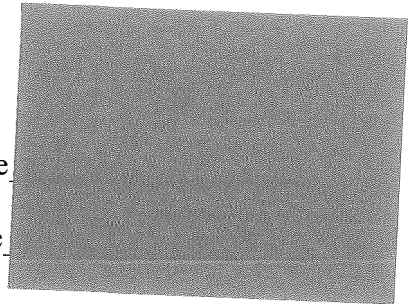
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Nutrition and Eating Behaviour in Older Adulthood

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August 2007

Abstract

In response to increasing number of older Australians (from 13% over 65 in 2004 to 28% by 2051), policy makers have been exploring strategies aimed at maintaining older adults' quality of life. Nutrition has been recognised as an effective preventive measure to promote well-being among older adults. The purpose of the current paper is to review relevant literature in the area of nutrition and eating behaviour in older adulthood. Biological issues, psychological factors, and social as well as environmental aspects are reviewed. Issues related to the ageing process, mental illness, chronic conditions, body image, social isolation and poverty represent barriers to healthy eating whereas factors such as self-motivation, positive perception of aging, social engagement and social support are facilitators to a healthy diet. However, much of the existing research focuses on describing eating behaviour rather than providing better understanding of its causes. It is concluded that research identifying the perspectives of older adults on nutrition is paramount to make significant contribution to the body of knowledge, inform policy makers and enhance practice.

Nutrition and Eating Behaviour in Older Adulthood

The population of Australia is ageing rapidly (Australia Bureau of Statistics, ABS, 2006a, 2006c) and as a result, the proportion of Australians aged over 65 is increasing significantly (from 13% over 65 in 2004 to 28% by 2051; ABS, 2006a). This demographic change is currently occurring in all industrialised countries as well as developing countries like China. Indeed, the number of Chinese people aged 65 years and over is expected to rise from 5.5% in 1990 to a predicted 13.3% in 2025 and 23% (114 million) by 2050 (Woo, Kwok, Sze, & Yuan, 2002). One of the most significant challenges related to population ageing is that of health care expenditure. Identifying effective strategies with which to face this challenge in Organisation for Economic Co-operation and Development (OECD) countries will reduce the social and financial impacts of their ageing populations as well as provide future guidance for developing countries. Consequently, research and programs that focus on keeping older adults in good health are paramount in terms of maintaining older adults' quality of life and reducing pressure on the world health services. So much so, that the Australian government declared Ageing Well Ageing Productively as an area of research priority.

Australians are living longer (ABS, 2006b; 2006c), which exposes them to greater risks of developing chronic conditions, such as coronary heart diseases, diabetes and osteoporosis. According to the Australian Institute of Health and Welfare (AIHW, 2006), more than 80% of people aged 65 years and over are suffering with chronic conditions. However, these conditions can be largely prevented by adopting healthy behaviours such as eating nutritious food, exercising and controlling body weight (AIHW, 2005a). Nutrition has been identified as one of the most significant preventive means by which to reduce and fight the development of chronic conditions. The evidence of a link between eating habits, health and chronic conditions has become stronger in recent years (Adams et al., 2006). On a global scale, 30 % of disease is associated with malnutrition and half of that is linked to over-

nutrition risk factors, such as being overweight, having high blood cholesterol, hypertension and different types of cancer (Lock, Pomerleau, Causer, Altmann, & McKee, 2005). The prevalence of chronic conditions is increasing and they have become the leading cause of death and disability worldwide (Lock et al., 2005). Thus, in the context of ageing, nutrition should be of top priority in contemporary research.

As well-being is often the result of body and mind interconnections, poor diet and chronic conditions have been both associated with mental illnesses (Johnson, 2005; Koenig, 2001). The interactions between individuals' physical and mental states are frequent and common, with each feeding and affecting the other (Dowrick, 2006). Associations between nutrition, chronic conditions and mental illnesses have been identified (Foley & White, 2002; Love & Love, 2007). However, the nature of this relationship remains unclear. According to Bhat, Chiu, and Jeste (2005), nutrition within geriatric psychiatry is a neglected field.

To this end, the purpose of this paper is to review the findings from empirical research concerning nutrition and eating behaviour with a particular focus on older adults. A summary of Australian eating trends will be examined in order to provide context and understand older people's eating behaviours in Australia. A biopsychosocial approach will be used to study issues affecting eating habits among older adults as well as identifying barriers and facilitators to healthy eating. Finally, directions for future research will be suggested. The following areas will be reviewed in turn in the context of eating behaviour: Australian eating trends; biological factors; psychological factors; and social as well as environmental issues.

It will be suggested that nutrition and eating behaviours are highly relevant to the quality of life for all Australians and that further research is needed to confirm their links to psychological health among older adults. Addressing this gap will have implications for health professionals working with older people and in the development of preventative and therapeutic interventions to help older adults maintain or develop healthy eating behaviours that promote physical and psychological well-being to enhance their quality of life.

Australian Eating Trends

Definition of Healthy Eating

Healthy eating commonly refers to consuming food rich in nutrients such as minerals, vitamins, fibre, proteins and carbohydrates. Defining healthy eating is quite challenging and some of the existing definitions are often too complex for lay people to understand and follow (Carlson & Juan, 2004). Recently, one way to promote healthy eating has been to focus on eating a variety of different foods, especially whole grain products, fruits and vegetables (National Health and Medical Research Council, NHMRC, 2005a). Indeed, consuming a range of foods daily ensures the intake of many nutrients and other substances essential for good health (Carlson & Juan, 2004). For example, Nutrition Australia recommends as dietary guidelines, via websites and publications, that older Australians enjoy a variety of foods (NHMRC, 2005a).

Similarly, the "Go for 2 and 5" campaign launched by the Australian government in April 2005, promotes the daily consumption of two serves of fruits and five serves of vegetables (AIHW, 2005b). A serve is equivalent to half a cup (125g) of cooked vegetables/legumes or one cup (250g) of raw vegetables/salad or chopped fruits (AIHW, 2005b). Based on these two national dietary recommendations, the current paper defines healthy eating as consuming an average of five serves of vegetables and two serves of fruits daily.

Obesity

In Australia, eating behaviour trends have become a paramount health issue. Dietary surveys, in 1983 and 1995 found an increase in average daily energy intake for adults, the equivalent of one slice of bread per day (AIHW, 2004). This increase in daily dietary energy consumption contributes to body weight gain. Overall, 54% of Australian adults are either overweight or obese (AIHW, 2006). Older adults are currently 6 - 7 kg heavier on average than their counterparts were 20 years ago. Increasing weight in an ageing population has

resulted in a growing number of obese older Australians, from 310,000 in 1980 to 940,000 in 2000 (AIHW, 2004). Adults are defined as being overweight when their body mass index (BMI) is over 25 and are obese when their BMI is over 30. The BMI is a ratio that is obtained by dividing the person's weight in kilogramme by their squared height in meters (Lee & Nieman, 2002). Overall, the rate of overweight and obese Australians is amongst the highest in the world and is continuing to increase (Jackson, Ball, & Crawford, 2001).

Obesity is a major public health problem. Indeed, a study of British men aged 60 to 79 years highlighted that body composition and body fat were associated with illness and physical disability (Ramsay, Whincup, Shaper, & Wannamethee, 2006). People with excess weight have a greater chance of developing chronic conditions, such as type-2-diabetes, coronary heart diseases, osteoarthritis and certain types of cancers (Ramsay et al., 2006). The fact that many Australians are overweight or obese may offer some explanations for why 75% of the population have a least one chronic condition. Looking at different age groups, 10% of children 14 years and younger have three or more long term chronic conditions and for older adults over 65 years old, this figure is more than 80% (AIHW, 2006). Older Australians account for a relatively large proportion of stroke sufferers, diabetics, those with osteoarthritis, osteoporosis and coronary heart diseases (AIHW, 2006). Despite the serious consequences of obesity in Australia, the existing literature appears to describe this phenomenon but does not offer strategies to address it (Jackson, Ball, & Crawford, 2001; Ramsey et al, 2006; Zimmet & James, 2006).

Undernutrition

Even though obesity is an important issue in Australia, undernutrition is quite common in primary care among older adults (Forman-Hoffman, Yankey, Hillis, Wallace, & Wolinsky, 2007). Undernutrition (BMI less than 21 kg/m^2) is a general term used when the consumption of essential nutrients is inadequate to maintain health (Furman, 2006). In Western countries such as Australia, it is estimated that 10% to 25% of adults aged 65 and

over are undernourished (Martin, Kayser-Jones, Stotts, Porter, & Froelicher, 2005). According to Visvanathan, Newbury, and Chapman (2004), hospital admittance of undernourished individuals was 28% higher than people who were well nourished. Furthermore, undernutrition among older adults is often misdiagnosed (Furman, 2006). Indeed, health professionals and older adults generally mistake the symptoms of undernutrition for aspects of normal ageing. Less than 5% of older adults with significant weight loss are identified as suffering from undernutrition, resulting in a delay of therapeutic intervention and the development of chronic illness (Martin et al., 2005). As an example, renal insufficiency among older adults is strongly associated with malnutrition independent of relevant demographic, social and medical conditions (Garg, Blake, Clark, Clase, Haynes, & Moist, 2001). Consequently, prevention and treatment of undernutrition in older adulthood are essential (Furman, 2006).

To understand the causes of weight loss among older adults, Martin et al. (2005) used in-depth interviews. Their results highlighted several factors that influenced the participants' dietary practices and eating habits. All the participants disliked eating alone and reported a loss of the social aspect of eating. Some felt socially isolated, even when living with family members. Social isolation refers to its literal meaning of "the personal isolation of individuals from one another" (Locher et al, 2005, p. 748). Finally, a few female participants had a false belief of what a normal weight was for their age and they felt overweight despite evidence of low weight (Martin et al., 2005). This study is one of the very few papers that used a qualitative approach and gave the opportunity for older adults to talk about weight problems. The literature on older adults and nutrition is often limited to quantitative designs, which describe an issue without providing a better understanding of its causes (Martin et al, 2005; Paquet, St-Arnaud-McKenzie, Kergoat, Ferland, & Dube, 2003).

In their review of the literature from 1995 to 2005, Martin et al. (2006) concluded that older adults generally did not believe that they were at risk for inadequate nutrition, even

though they did not consume the daily-recommended amount of most nutrients, proteins and caloric foods. Furthermore, the participants were not aware of the special nutritional requirements that older people should follow to maintain or improve their health (Martin et al., 2006). In summary, nutritional assessment as well as informing older adults about their nutritional requirements may be essential when dealing with medical issues such as osteoporosis and hypertension that are common in older age.

Financial Implications

Due to their high financial burden in Australia, chronic conditions have been classified as National Health Priority Areas (NHPAs, ABS, 2007). Twenty two billion were spend on NPHAs in 2000-2001, which accounted for 36% of the total health expenditure for that year. Hospital costs accounted for 48% of all NPHA's expenditure. The costs attributable to cardiovascular diseases, arthritis and other musculoskeletal conditions, accounted for \$10.1 billion or 20.1% of the total health expenditure (ABS, 2007). For older Australians aged 55 years and over, the prevalence of all circulatory system conditions is 46%, including hypertension 33%, coronary heart diseases 7% and stroke 2%. In 2004-05, over 3 million Australians (15%) had some form of arthritis and over half a million (3%) were suffering from osteoporosis (ABS, 2007). Thus, chronic conditions place a significant burden on Australia's budget. If current trends continue, this burden may become unsustainable due to the ageing of the Australian population.

The role and importance of nutrition has been recognised in the development of various illnesses. For example, grants were allocated to studies on the effect of vitamin D supplementation on dementia (NHMRC, 2005b). Similarly, the Australian association of gerontology (AGG) strongly supports preventive health research that focuses on a multi disciplinary approach. In July 2005, the AAG highlighted several areas of interest such as nutrition and its role in the prevention and delay of dementia and Parkinson's disease (NHMRC, 2005b).

Despite increased interest in nutrition and its importance to health, the relative resources allocated to this field are still limited. The last dietary survey was conducted in Australia in 1995. The national nutritional survey is used by the health department to examine the diets of different segments of the Australian population and then, to assess the progress towards national goals and targets for the consumption of fruits, vegetables and other food groups (Wahlqvist, 2002). Consequently, determining if the Australian population is achieving national nutritional targets appears difficult to assess based on data collected 12 years ago.

Policy Implications

The Australian government has more than doubled the investment in health and medical research since 1999. During 2004-05, funding for health was more than \$420 million. Nevertheless, the percentage of government funding in the area of nutrition is still small in comparison to the overall health budget, with only \$12.1 million out of the \$420 million allocated in 2004 (NHMRC, 2005c).

In 2004, the department of ageing was responsible for highlighting the importance of healthy eating and increased physical activity to all Australians. The government launched a four year campaign named "A Healthy, Active Australia". Its aim was to provide families with reliable, practical and consumer friendly information on healthy eating and physical activity (AIHW, 2005b). This campaign included national mass media advertising for two months such as television advertising on all channels, magazines, radio, newspapers, online website, posters in shopping centres and support materials such as booklet and recipe card. Non-English speakers and Aboriginal and Torres Strait Islanders were also targeted (AIHW, 2005b). An evaluation of this campaign demonstrated that it had increased awareness and knowledge about healthier lifestyle among parents and children. However, it did not generate eating behavioural changes (Woolcott Research, 2007).

Other studies have also highlighted that health promotion does not produce changes towards eating more vegetables and fruits (Ashfield-Watt, 2006; Pomerleau, Lock, Knai, & McKee, 2005). According to Ashfield-Watt (2006), public confidence in health professionals and in nutritional campaigns has been undermined by the growing complexity of health sciences, which results in conflicting messages and confusion among consumers.

Furthermore, cost and convenience are two factors frequently perceived as barriers to eating more fruits and vegetables (Ashfield-Watt, 2006). However, these perceptions are not challenged by health professionals or government policies. For example, nutritional campaigns are not combined with a strategic plan to provide wider availability or cheaper healthy foods (Ashfield-Watt, 2006). According to Zimmet and James (2006), as long as there is no national strategic plan to improve Australian eating behaviours, the prevalence of obesity and chronic illnesses will continue to rise and will become the leading causes of death in Australia.

Furthermore, Australia has a worldwide reputation for outstanding research on obesity but does not have an effective national strategy to address it (Zimmet & James, 2006). The prevention of obesity and type 2 diabetes requires coordinated policy and legislative changes. For example, food labels are too complicated and are often not understood by lay people. Zimmet and James (2006) argued that statutory food labelling is essential. However, politicians often focus on short-term benefits as they are only in power for a few years. Politicians must look beyond the next election and push for long term policies, such as banning all marketing of junk food to children (Zimmet & James, 2006). In summary, there is still a lack of political action to effectively address eating behaviours and its consequences in Australia.

Biological Factors

The ageing process involves many biological and functional changes that can have an important effect on individuals' eating behaviours. The World Health Organisation (WHO, 2007) provides a comprehensive list of physiological modifications related to ageing. The most relevant changes identified that impact on individuals' eating patterns include alterations in the sensory function as well as changes to the gastrointestinal tract and body composition (Brownie, 2006). Another important aspect of ageing is the amount of prescribed medications that older adults take daily. Indeed, as will be discussed, medication can also interfere with people' nutritional status (Brownie, 2006).

Sensory Function.

Changes in taste and smell generally result from normal ageing and from diseases such as cancer, taking medications, malnutrition and environmental factors (Schiffman & Graham, 2000). Taste receptors are primarily located in taste buds of the tongue. With age, the number of taste buds diminished and the ones left have a higher stimulus threshold, which means that they require stronger stimulation (WHO, 2007). It takes more flavors or spices to stimulate taste. Changes of smell can impair the perception of how the food taste. Older people may progressively add excess of salt in their foods because it takes more salt for them to notice it.

Taste and smell influence appetite, food selection and nutrient intakes. Indeed, the chemosensory signals prepare the body to process food by triggering the various secretions required for digestion. They also enable the individual to detect and select food in terms of nutritional requirements or preferences (Schiffman & Graham, 2000). In the literature, taste and smell dysfunctions among older adults are associated with poor appetite, weight loss, inappropriate food choices and lower nutrient intake (Schiffman, 2000; Schiffman & Graham, 2000).

Gastrointestinal Tract

Decrease in the oral mucosa and the underlying connective tissues occur with age, causing the gums to recede at the base of the teeth. Changes in the mouth and gums can reduce the desire of food and consequently, the quantity of food eaten (WHO, 2007). Soini et al. (2006) examined the association between the oral health of older adults in nursing home and their nutritional status. The results highlighted that malnutrition relates to both oral status and oral health problems. Indeed, the more oral problems people had, the greater their risk for malnutrition (Soini et al., 2006). In addition to changes in oral health, the liver becomes lighter and consequently, less able to process hormones and drugs (WHO, 2007). Reduction in liver metabolism means that medications and drugs stay longer in the body and the evacuating of their metabolites is prolonged. Monitoring the medications and adjusting the quantities taken is important for older people (WHO, 2007).

Body Composition

With ageing, there is a decrease in both in size and number of muscle fibres. Muscle mass declines consistently after 30 years of age and this decline is more rapid after age 50 (WHO, 2007). Deficiency in protein, calorie and nutrients such as vitamin D or calcium, and lack of exercise further weaken muscles (WHO, 2003a). Osteoarthritis represents the most common musculoskeletal condition among older adults and is more prevalent in women than men (WHO, 2003b). Similarly, osteoporosis (excessive loss of bone tissues) is also more frequent in women (Nordin et al., 2007). Postmenopausal women seem to experience an acute loss of bone. Even though, these changes in bone density are most significant close to menopause, they continue to the end of life. Loss of bone density is associated with age-related declines in calcium absorption that is due to intrinsic changes in calcium transport mechanisms as well as an overall decline in vitamin D among older adults (Nordin et al., 2007). Whilst changes in body composition is linked to hormonal changes, the above sex

differences may be the result of women often experiencing poorer nutrition and more sedentary lifestyle than men (WHO, 2003b).

The loss of skeletal muscle mass is often a consequence of physical inactivity (Paddon-Jones, 2006). Inactivity among older adults has various causes, ranging from severe illnesses, through injury and physical frailty, to the ageing process itself. Furthermore, when physical inactivity is the result of trauma or disease, the loss of skeletal muscle mass is enhanced (Paddon-Jones, 2006). Frailty resulting from lack of lean tissue is linked to loss of strength, increased disability and increased risk for falls and injury. Falls are a significant cause of hospitalization, morbidity and mortality among the elderly (WHO, 2003a). Contrary to popular beliefs, senior citizens need more protein than any other age group in order to minimise the loss of lean tissue (Akamine, Filho, & Peres, 2007).

Medication

People over 65 consume about 30% of all prescription drugs while they only represent 13% of the United States population (Tufts University, 2004). Most elderly Americans consume three to five prescribed medications. Older adults often have several pathologies that require the use of multiple-drug therapy (Akamine, Filho, & Peres, 2007). Taking several different drugs may lead to many complications such as drug-drug interactions, adverse reactions and drug-nutrient interactions (Tufts University, 2004). According to Brownie (2006), medication may influence the way in which nutrients are absorbed, metabolised and excreted, resulting in changed food choices and sometimes, weight loss. For example, drugs that decrease or neutralise stomach acid, reduce iron absorption (Akamine, Filho, & Peres, 2007). Around 250 drugs directly and indirectly interfere with the sense of taste and smell. Further, some drugs have an unpleasant flavour that may change the taste of the food eaten (Brownie, 2006).

Cancer is the most common disease among older adults (AIHW, 2006). Radiation, surgery and chemotherapy have a negative impact on nutrition. Indeed, many people

suffering from cancer are developing anorexia and cachexia. Cachexia refers to profound physical wasting and malnutrition (Lee & Nieman, 2003). Some doctors prescribe appetite stimulants, anti-nausea and anabolic drugs to maintain patients' weight and eating behaviours (Akamine, Filho, & Peres, 2007).

Even though, biological and functional changes occurring during the ageing process are often perceived as barriers to healthy eating, ageing has also been associated with positive changes in food preference (Drewnowski, Anderson, Hann, Barratt-Fornell, & Ruffin, 1999). In a clinical sample of female participants with breast cancer, older participants ate more vegetables, fruits and less energy-dense food than younger ones. Age was the best predictor of healthy diet (Drewnowski et al., 1999). Older women (mean of 62 years) compared to younger women (mean of 37 years) preferred grains, vegetables and fruits. Drewnowski et al. (1999) concluded that ageing was associated with taste preference for healthier diets but also with food choices. However, these findings did not demonstrate if the difference in eating behaviours among participants was related to either taste preference, food choice or both. Taste preference refers to physiological chemosensory reactions to food (Shiffman, 2000) whereas food choice implies the influences of cognitive and psychosocial factors (Wetter et al., 2001). This study provided a description of age-related differences in eating behaviours but did not explore the reasons behind these differences. According to Wetter et al. (2001), psychological factors as well exert a significant influence on people's eating behaviour, and some of these factors are discussed next.

Psychological Factors

Mood and Eating Behaviour

People eat in order to meet physiological as well as psychological needs. Hunger and appetite are closely related to emotional needs (Fieldhouse, 2002). Indeed, Baucom and Aiken (1981) highlighted that depressed mood influenced eating behaviours. Moods are fundamental psychological states that can occur endogenously or in response to an external

event (McConville et al, 2005, p. S22) In their study, Baucom and Aiken (1981) examined the relationship between depressed mood, obesity, eating behaviours and people belonging to different dieting status (dieter and non-dieter). Dieters ate more when they were depressed. This was the opposite for non-dieters. The effects of depressed mood on eating behaviours depended mainly on participants' dieting status. The authors, thus, concluded that food consumption varied as an interactive function of both dieting status and level of depressed mood (Baucom & Aiken, 1981).

Similarly, scientists and lay people have been interested in the relationship between food consumption, food craving and mood in women throughout the menstrual cycle (Kurzer, 1997). Whilst some research suggested that women prefer food rich in energy such as chocolate during the premenstrual phase, these suggestions have not been replicated reliably. Indeed, women seem to eat more during their premenstrual cycle but the causes of such food cravings are still unknown (Kurzer, 1997). Today, there is no consensus in the literature about the relationship between food and mood. The various conflicting results are probably due to differences in research methodologies (Baucom & Aiken, 1981; Kurzer, 1997). Indeed, studies have applied various dietary, psychological and physiological measurement tools (McConville et al., 2005). Further research is necessary to understand the interaction between mood and eating behaviours.

Motivation and Self-Perception

One of the important contributing factors to healthy eating is motivation (Hughes, Bennett, & Hetherington, 2004). Motivation refers to the physiological, cognitive and emotional forces that activate or direct behaviour (Domini, Savina, & Canella, 2003). For example, Hughes et al. (2004) examined the barriers to healthy eating in a group of older men living alone by looking at food choice, cooking ability and well-being. The findings highlighted that the men who had a healthy diet, were those who were motivated to cook (Hughes, Bennett, & Hetherington, 2004). In addition to that, Domini, Savina, and Canella

(2003) argued that some older adults become anorexic because they lose the motivation to eat. Likewise, this lack of motivation prevents older adults from engaging in preventive healthy behaviours despite their potential benefits (Levy & Myers, 2004). This loss of motivation may be due to depression (Domini, Savina, & Canella, 2003).

Levy and Myers (2004) examined the relationship between positive self-perceptions of ageing and preventive health behaviours over time. The results supported a positive correlation between positive self-perception of ageing and engaging in preventive health behaviours, including healthy eating. Even after controlling for age, education, functional health, gender, race and self-rated health, the results remained the same. Self-perception of ageing had a greater effect on preventive health behaviours than any covariates, with the exception of education. Similarly, the role of perceived control over one's life reduces the burden of diseases and promotes a greater level of psychosocial resources (Bowling, Seetai, Morris, & Ebrahim, 2007). Bowling et al (2007) focused on the "disability paradox" in which people with severe disabilities, and apparently poor quality of life (QoL) as judged by others, rate their own QoL positively (Bowling et al, 2007, p. 310). The findings highlighted that people with severe disability that perceived their QoL as "good" rather than "not good" tended to feel in control of their life. Consequently, they adopted a more positive approach to life and were more likely to engage in preventive healthy behaviours (Bowling et al., 2007). These results suggest a need for a medical model that incorporates psychological aspects as well as biological factors of illness and eating behaviours.

Nutrition and Mental Health

In recent years, there has been a growing interest in the association between nutrition and mental health, especially among older adults (Woo et al., 2003). Malnutrition, which is a general term for deviations from normal nutritional states such as under-nutrition and over-nutrition, appears to be associated with cognitive impairment and depression (Bhat, Chiu, & Jeste, 2005; Tiemeier et al., 2002). According to Love and Love (2007), elderly adults with

depression ate less fats and fibre but more carbohydrate than a non-depressed group. The findings of this study highlighted the poor diet of older adults suffering from depression. However, this study could not determine whether depression was the results of poor nutrition or vice versa (Love & Love, 2007). Similarly, Tiemeier et al. (2002) demonstrated that deficiency in vitamin B12 was related to an increase of depressive symptoms among older adults. Other associations such as antioxidants and Alzheimer's disease (Foley & White, 2002) or, more generally, between nutrients deficiency and impaired psychological health among elderly people have been reported (Woo et al., 2003).

Even though the overall findings demonstrated that there was a correlation between nutrients deficiency and mental illness, these results do not specify the nature of this relationship (Johnson, 2005; Woo et al., 2003). Similarly, the association between weight and depression has been demonstrated but the mechanism underlying this relationship is still unknown (Forman-Hoffman, Yankey, Hillis, Wallace, & Wolinsky, 2007). For example, even if weight loss and weigh gain can be symptoms of depression, weight changes and their interactions with depression are often disregarded (Forman-Hoffman et al., 2007). The effects of nutrition in geriatric psychiatry are often disregarded, which is surprising as for older adults, nutritional status is a major contributor to quality of life (Love & Love, 2007). As prevalence of cognitive impairment/dementia and depression increases with age (Johnson, 2005), relationships between nutrition and mental health should be investigated further by mental health professionals working with older adults.

Chronic Conditions and Mental Illness

Chronic conditions have been linked to mental disorders. According to Dowrick (2006), the relationship between chronic conditions and mental illness is complex and has different causal pathways. For example, chronic physical conditions may occur first and lead to mental issues. However, people suffering from mental illnesses are more likely to develop or maintain chronic conditions. Physical states influence one's mind and conversely, mental

issues affect individuals' body (Dowrick, 2006). Sometimes, both physical and mental problems may be the result of a common incident, such as a road accident or a physical trauma that affect both body and mind. In summary, interactions between individuals' physical and mental states are frequent and common, with each feeding into and affecting the other (Dowrick, 2006).

Around 70% of people suffering from type-2-diabetes experience a high level of distress related to their illness and its management (Fisher et al., 2007). Type 2 diabetes or non-insulin dependent diabetes (NIDD) is mainly associated with lifestyle factors such as physical inactivity and diet. According to Fisher et al. (2007), negative mood and emotional distress among type-2-diabetes sufferers may be linked to reduced general health, comorbidities and low treatment adherence. Illness that threatens one's life and lifestyle creates a combination of fear, frustration and sometimes, hopelessness (Koenig, 2001). Being chronically sick is often being perceived as a sign of decline, growing dependency and even the first step towards death. Consequently, the meaning of life may be lost and the person sees him or herself as a burden on society (Koenig, 2001). With such negative thoughts and feelings, learned helplessness, depression and anxiety are likely.

Conversely, mental illness affects people's physical well-being. Depression doubles the risk of developing type-2-diabetes and increases the likelihood of getting complications related to diabetes among diabetics (Williams, Clouse, & Lustman, 2006). Being depressed affects negatively a number of behaviours that can be relevant to chronic illnesses such as nutrition, physical activities, alcohol and tobacco use. However, Williams and colleagues (2006) argued that behavioural factors alone have been insufficient to explain the importance of depression in influencing chronic illness outcomes. Indeed, the mind influences physiological mechanisms. It has been demonstrated that depression increases individuals' weight, fatigue, insulin resistance and other physiological factors (Williams, Clouse, & Lustman, 2006). Thus, chronic illness and mental health are intertwined and treatment should

address both physical and mental aspects. However, individuals' mental state, self-perception or eating behaviours are the results of a person's social environment that includes friends and family.

Social and Environmental Issues

Social Environment

Social environments are paramount to people's eating behaviours. The presence of others and eating location can make a difference in terms of food quality and quantity (DeCastro, 2005). Indeed, older adults responded as well as younger adults to a number of social, psychological, and environmental stimuli. There seem to be a positive correlation between the number of others present and meal size (DeCastro, 2005). In terms of eating location, people appear to eat more in a restaurant than at home. The difference between home and restaurant meals was similar across age (Castro, 2005). Having a meal in a restaurant often implies being with others and consequently, highlights the importance of others and social interaction. In this study, DeCastro (2005) assumed that meals at home meant meal alone, which excluded having meal at home with friends and family. Furthermore, many older adults belong to low socio-demographic and consequently, going out for dinner may be out of reach (Raine, 2005). DeCastro's findings (2005) may be limited to a subgroup of older adults, the ones who can afford eating out.

Social Support

As discussed previously, sharing meals with others is important. Similarly, social support helps people to change their eating behaviours (Murphy, Prewitt, Bote, West, & Iber, 2001). Social support refers either to the frequency of contact or to the properties of networks and relationships (Murphy et al., 2001). In a study, in which older adults were encouraged to eat more fibre, vegetables/fruits and less fat, there was a significant positive relationship between social support and dietary changes (especially fibre and vegetables/fruits) (Murphy et al, 2001).

Due to the importance of social support on nutritional outcomes among older adults, a trial nutrition program was developed in Montreal. The aims of this program were to improve nutrients intake among Meals-On-Wheels clients and to reduce older adults' social isolation by offering an eating-out option in various restaurants (Richard, Gosselin, Trickey, Robitaille, & Payette, 2000). Participants responded positively to the invitation to participate in restaurant outings in the community. The success of this program demonstrated that an intervention designed to improve or maintain healthy eating behaviour among older adults has to take into account social and psychological factors. Furthermore, the various outings attracted a range of older people from different sociodemographics, health status and levels of social isolation (Richard et al., 2000).

Social Isolation and Social Engagement

Social isolation is a reality for many older adults, especially for people suffering from chronic conditions (Holley, 2007). Social isolation becomes a problem when it is perceived as involuntary and negative. Many chronically ill people suffer from loneliness due to social isolation. The negative feeling associated with isolation has a significant impact on health (Holley, 2007). Indeed, Walker and Beauchene (1991) examined whether loneliness, social isolation and physical health were related to nutrients consumption among older adults. They found a negative correlation between perceived loneliness and nutrients consumption (Walker & Beauchene, 1991). That is, greater perceived loneliness was associated with less nutrients consumption.

By contrast, social engagement promotes healthy behaviours such as adequate diet and is often regarded as an important factor of quality of life in older adulthood (Bukov, Maas, & Lampert, 2002). For example, Jang and his colleagues (2004) examined social engagement and its relation to life satisfaction among diseased and disabled older adults. They referred to social engagement as participants' social network as well as their participation in social activities. The findings highlighted that disabled people participated

less in social activities than non-disabled individuals but that their social engagement was significantly related to life satisfaction (Jang, Mortimer, Haley, & Borenstein-Graves, 2004).

In a combined cross-sectional and longitudinal study, Bukov, Mass, and Lampert (2002) focused on social engagement in older age. They found social disengagement to be a predictor of death. Indeed, social disengagement was compared to social dying and as a lead up to biological death. However, educational and occupational resources helped older people to enter old age with a higher degree of social participation (Bukov, Maas, & Lampert, 2002). Yet, social participation is influenced by other factors such as body image.

Body Image

Research on body image has mainly focused on adolescents and young adults. There has been a tendency to ignore older adults' perceptions of their physical appearance (Clarke, 2002). In Western societies, the ideal body is young, toned and thin. Consequently, weight gain is associated with ageing (Allaz, Bernstein, Rouget, Archinard, & Morabia, 1996). Allaz et al. (1996) studied desired weights as well as dieting behaviours in middle-age women and examined whether these variables change across age up to 75 years of age. The results highlighted that 62% of women over 65 years of age wanted to be thinner whilst two thirds of them were at a normal weight. One third of the women over 65 years of age had dieted to lose weight within the last 5 years although 62% of those had a normal weight (Allaz et al., 1996). Thus, body image concerns may be a significant in older adulthood.

In a similar study on body image, drive for thinness and attitudes toward eating among women 50 years old and over, Lewis and Cachelin (2001) found that elderly women showed the same degree of body dissatisfaction as younger women. The authors argued that sociocultural standards of body image and pressures to be thin affect different generations of women to a similar degree. Furthermore, there was a positive relationship between disordered eating and fear of ageing (Lewis & Cachelin, 2001). Both of the above studies used

quantitative methodologies and consequently, did not look at the personal perspectives of older women in terms of body image.

Clarke (2002) qualitatively explored the feelings of 22 older women aged 60 years and over. All the women who participated in this study were unhappy with their weight and offered various unsolicited explanations for their perceived excess weight. Health and beauty were the two main causes for weight management. Health was viewed as a legitimate reason for losing weight whereas physical appearance was perceived as being vain. Despite the need to deny the importance of beauty, physical appearance was the key motivation behind losing weight. Clarke (2002) also found that many participants learned to diet and control their weight by watching their mothers or siblings and most expressed anti-fat prejudice. In summary, older women have similar body image concerns as younger women. These findings are worrying, given the nutritional consequences of dieting and weight loss for the elderly. Nutritional programs targeting older adults need to consider body image issues and dieting as potential health concerns for elderly women. To date, older men's body image concerns are poorly understood as this has not been systematically investigated. According to Calasanti (2005), appearance is important for both men and women but there may be gender differences in terms of specific areas of concerns.

Gender Differences

There are gender differences in terms of ageing and nutrition. As individuals age, their body and activity levels change (Calasanti, 2005). In Western societies, women are seen to age sooner than men. Words such as sagging are used for women but not for men. Wrinkles and grey hair are generally perceived as negative for women whereas they give men some status (Calasanti, 2005). The anti-ageing industry focuses on man's sexual competency and on woman's appearance. According to this industry, men need products, such as Viagra, to remain sexually active while women require cosmetics to continue to be attractive even to

men of their own age (Calasanti, 2005). Such culture promotes anti-ageing but does not foster good health or healthy behaviours.

Recent research has shown that there is a gender difference in food preferences. Men prefer meat dishes and a combination of fat and proteins, whereas women like sweet treats such as dessert, ice cream and chocolate (Nestle et al, 1998). Similarly, Paquette (2005) found a gender discrepancy in attitude towards food. Light, sweet and easy to digest food (fruits and vegetables) were associated with women, whereas meat and food that is harder to digest were related to men (Paquette, 2005). In term of eating behaviours, women generally have healthier eating habits and choose better quality food than men (Beardsworth et al., 2002). In a study that examined the relationship between self-esteem, gender differences and nutrients consumption, women ate more fruits, vitamin A, vitamin C, folate and fibre than men (Schafer, Schafer, Keith, & Bose, 1999). The authors argued that women choose food quality over quantity compared to men. Typically, men ate more calories than women (Schaffer, Schaffer, Keith, & Bose, 1999). These findings are consistent with other studies that demonstrated that women are more likely than men to follow official dietary guidelines (Beardsworth et al., 2002; Paquette, 2005). Another major gender difference is that women often have a lower income than men and consequently, are more vulnerable to nutritional risks (Locher et al, 2004).

Socio-Economic and Environmental Factors

According to Raine (2005), the most significant barrier to a healthy diet is low income. Inadequate income is a major determinant of healthy eating among several social groups, particularly children, older adults and aboriginal people. Dubois and Girard (2001) examined the relationship between diet quality and socio-economic status in the United States. Middle-class people generally had healthier diets than individuals from lower class did. This study highlighted the importance of social status in the quality of the diet (Dubois & Girard, 2001). Similarly, Hupkens, Knibbe, and Drop (2000) found that middle-class mothers

considered health more frequently than costs in their food choice compared to lower socioeconomic-class mothers.

However, income also influences physical accessibility to food (Raine, 2005). Many supermarkets have moved to the suburbs and consequently, inexpensive healthy foods may be less available for low-income shoppers, especially older adults. For example, shopping centers are generally located close to major transportation routes, which imply car access (Raine, 2005). By contrast, food outlets such as fish and chips, pizza delivery services that offer less healthy food alternatives are present in most urban areas, and more particularly in lower-income suburbs. The issue of transportation is important in term of healthy diet. Locher et al. (2005) examined the relationship between various factors and nutritional risks among older black and white men and women. They found that nutritional risk among older adults was associated with not having reliable transportation. As older adults are often unable to drive to do their food shopping, their access to healthy food products is compromised (Locher et al., 2005). Another area that exerts significant influence on people's eating behaviors is culture, which is discussed next.

Culture

Culture is defined as patterns of behaviours, which are influenced by knowledge, beliefs, art, morals, laws, customs and any other habits acquired by people as members of society (Fieldhouse, 2002). As discussed previously, food and eating have meanings far beyond biological and emotional nourishment of the body. In every society, there are dietary customs that play socio-cultural and symbolic roles (Fieldhouse, 2002). There are rules on what people can eat, where, with whom and when. For example, Westerners generally do not eat horses or dogs while these are an integral part of the diet of other cultures (Abdussalam & Kaferstein, 1996). Thus, culture restricts people's food choices.

Similarly, James (2004) examined the relationship between culture and nutritional attitudes including food choices and dietary consumption among African Americans. African

Americans felt that they were asked to conform to the dominant culture's eating behaviours. Indeed, participants thought that changing their eating behaviours was a way to disregard their own culture and traditions. According to Bermudez and Tucker (2004), by 2025 more than a quarter of older Americans will be from an ethnic minority group. For migrants, traditional foods and its preparation are both sources of comfort in a foreign environment and a mean of maintaining their cultural identity. Thus, nutritional programs should take into consideration the cultural value of traditional food and include it in their nutrition plans.

As discussed previously, culture is a complex concept that includes many factors such as education, age and knowledge. According to Lin and Lee (2005), ethnic differences and educational backgrounds influenced eating behaviours among the Taiwanese elderly. The aim of their study was to examine older Taiwanese's knowledge and general attitudes towards nutrition. Taiwanese elderly had poor knowledge of nutrition, especially about its relationship with disease. Eighty percent of the participants had no formal education, or only primary school education. Consequently, it may be difficult for them to access written educational materials. The major sources of nutritional information for the Taiwanese elderly included their children or relatives, TV and general practitioners (Lin & Lee, 2005). In a similar study, Fischer, Crockett, Heller and Skauge (1991) found that the younger age group of participants (60 to 70 years of age) had greater knowledge about nutrition than the older age group (75 to 85 years of age). The younger age group had a better diet and made healthier food choices than the older age group (Fischer et al., 1991). Thus, older adults' education about nutrition is paramount and nutritional interventions should consider the educational levels of older adults.

The literature reviewed thus far makes evident that although healthy eating is paramount for the well-being of older adults, various variables influence nutritional behaviour. There include biological issues, psychological factors, and social as well as environmental aspects. Future research can further our knowledge and thus will be discussed next.

Directions for Future Research

Campaigns and educational activities aiming to promote healthy eating are often based on nutritional studies that focus on methods of natural sciences such as population surveys, epidemiological and biomedical research (Maynard et al., 2005). According to Lee and Nieman (2002), population surveys indicate that the diet of many older adults is inadequate and epidemiological as well as biomedical studies (Wahlqvist, 2002) reveal that eating behaviour is linked to a range of chronic conditions. While examining and monitoring dietary trends are paramount in order to know more about eating behaviours, more studies are needed to address the multiple factors that influence food consumption.

The existing body of research focuses on describing the type and quantity of food eaten by various groups but does not systematically explore the reasons behind these eating behaviours. For example, the literature on older adults and eating behaviours is often limited to quantitative designs, which typically describe issues without providing a deeper understanding of their causes (Martin et al., 2006; Paquet et al., 2004). Furthermore, the majority of studies reviewed do not offer strategies to address undernutrition or obesity. Similarly, research has shown that there is a relationship between nutrient deficiency and mental well-being but the nature of this relationship is still unknown.

In order to expand on the current knowledge regarding eating behaviours among older adults, future research should include a multi-disciplinary approach. It is important to bear in mind that eating behaviours are influenced by biological, psychological, social and environmental factors (Paquette, 2005; Payette & Shatenstein, 2005; Raine, 2005).

Furthermore, a review of various types of interventions aimed to promote the consumption of fruits and vegetables to the general population showed that these interventions were not effective in changing individual diets (Pomerleau, Lock, Knay, & McKee, 2005). However, programs involving a more individual approach such as face-to-face education or counseling were more effective in changing eating behaviours (Pomerleau et al., 2005). Considering time

and costs, printed-tailored information and computer-based interaction may be an alternative to face- to-face or telephone contact (Pomerleau et al., 2005).

Conclusion

The Australian population is ageing rapidly and a pressing issue, relevant to this demographic change is the investigation of nutrition and eating behaviours among older adults. As discussed previously, the increasing proportion of Australian aged 65 and over, places a significant burden on the nation's budget and health care services (NPHAs, ABS, 2007). Further research is needed to identify factors that hinder and promote healthy eating behaviours among older adults and it is proposed that older adults themselves are the best source to provide this information.

Given the ageing of the Australian population, keeping older adults in good health is paramount in terms of maintaining older adults' well-being and reducing pressure on health services. An understanding of nutritional issues and eating behaviours from older adults' perspectives will add to the current body of knowledge and will identify those areas that need to be addressed in order to assist in the development of effective nutritional programs, campaigns and in informing practitioners.

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An Exploration of Older Adults' Perspectives on Nutrition and Healthy Eating

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An Exploration of Older Adults' Perspectives on Nutrition and Healthy Eating

Abstract

The ageing of the Australian population (from 13% over 65 in 2004 to 28% by 2051, Australian Bureau of Statistics, 2006a), has highlighted the importance of studies that focus on maintaining older adults' quality of life. Nutrition has been recognised as an effective preventive measure to promote well-being among older adults. The present study was designed to qualitatively explore older adults' perspectives concerning nutrition and healthy eating behaviours beyond the age of 65. Data were collected through the use of in-depth, semi structured interviews with eight participants aged 65 and over. Thematic content analysis was conducted in order to identify core issues and themes. Three major themes emerged from the data: Perception and attitude toward nutrition, psychosocial aspects of eating; and challenges of the ageing process. These demonstrated that older adults value nutrition for its link to health and well being. The findings indicated that older adults aspire to have a healthy diet despite the perceived lack of existing nutritional services aimed at seniors and scepticism toward health promotion. This study has identified several barriers and facilitators of healthy eating among older adults and can make a significant contribution to the body of knowledge, inform policy makers and enhance practice.

Keyword: Ageing, Older, Nutrition, Eating, Health, Barriers, Well-being.

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An Exploration of Older Adults' Perspectives on Nutrition and Healthy Eating

As a result of population ageing and its impact on health care expenditure, older adults' well-being has become the focus of policy makers, health professionals and researchers. The increasing proportion of older Australians (from 13% over 65 in 2004 to 28% by 2051; Australian Bureau of Statistics, ABS, 2006a) highlights the importance of keeping older adults healthy. So much so, that the Australian government identified Ageing Well Ageing Productively as an area of research priority.

Due to the ageing of the Australian Population (ABS, 2006b; 2006c), there is an increase in chronic conditions, such as coronary heart disease, diabetes and osteoporosis. Indeed, more than 80% of people aged 65 years and over are suffering from chronic conditions (Australian Institute of Health and Welfare, AIHW, 2006). However, these conditions can be largely prevented by adopting healthy behaviours such as eating nutritious food, exercising and controlling body weight (AIHW, 2005). Nutrition has been identified as one of the most significant preventive means by which to reduce and fight the development of chronic conditions. The evidence of a link between eating habits, health and chronic conditions has become stronger in recent years (Adams et al., 2006). Consequently, in the context of ageing, nutrition should be a focus in contemporary research.

Defining healthy eating is challenging and some of the existing definitions are too complex for lay people to understand and follow (Carlson & Juan, 2004). Healthy eating generally refers to consuming nutritious food containing various nutrients such as minerals, vitamins, fibre, proteins and carbohydrates. Recently, eating a variety of different foods, especially whole grain products, fruits and vegetables has been a simpler and understandable way to promote healthy eating (National Health and Medical Research Council, NHMRC, 2005). Consuming a range of foods daily ensures the intake of various nutrients and other elements essential for good health (Carlson & Juan, 2004). For example, Nutrition Australia recommends as dietary guidelines that older Australians enjoy a variety of foods (NHMRC,

2005). Based on the Dietary Guidelines of Older Australians (Appendix A), the present paper defines healthy eating as consuming a wide variety of nutritious foods and having three meals per day including plenty of vegetables and fruits.

In Australia, eating behaviour trends have become an important health issue. Older adults are, on average 6 - 7 kg heavier than their counterparts 20 years ago. Increasing weight in an ageing population has resulted in a growing number of obese older Australians, from 310,000 in 1980 to 940,000 in 2000 (AIHW, 2004). Overall, the rate of overweight and obese Australians is amongst the highest in the world and is continuing to increase (Jackson, Ball, & Crawford, 2001). Excess weight increases the likelihood of developing chronic conditions such as type-2-diabetes, coronary heart diseases, osteoarthritis and certain types of cancers (Ramsay, Whincup, Shaper, & Wannamethee, 2006). More importantly, obesity has a debilitating effect on older adults' ability to function physically and consequently, on their quality of life as well as psychological well being.

Chronic conditions have been linked to mental disorders. This association is complex and has different pathways (Dowrick, 2006). For instance, people suffering from mental illnesses are more likely to develop or maintain chronic conditions. However, chronic physical conditions may occur first and lead to mental issues. According to Dowrick (2006), physical states influence one's mind and conversely, mental issues affect individuals' body. Sometimes, a common incident such as a traffic accident or physical trauma that affect both body and mind, may trigger the development of mental as well as chronic illness. In summary, individuals' body and mind are intertwined, with each feeding into and affecting the other (Dowrick, 2006). However, the ageing process increases the likelihood of developing chronic conditions and consequently, influences food choices.

The process of ageing involves various physiological modifications (World Health Organisation, WHO, 2007). Biological and functional changes can have an important effect on individuals' eating behaviours. The most relevant factors that impact on older adults'

eating patterns include alterations in the sensory function (Schiffman & Graham, 2000) as well as changes to the gastrointestinal tract (Sioni et al., 2006) and body composition (Nordin et al., 2007). Another important aspect of ageing is the amount of prescribed medications that older adults take daily. For instance, combining different drugs may lead to many complications such as drug-drug interactions, adverse reactions and drug-nutrient interactions (Brownie, 2006).

Even though, the physiological modifications, due to the ageing process, are often perceived as barriers to healthy eating, getting older has also been associated with positive changes in food preferences (Drewnowski, Anderson, Hann, Barratt-Fornell, & Ruffin, 1999). For examples, in a clinical sample of female participants with breast cancer, older women (mean of 62 years) ate more grain products, vegetables and fruits than younger women (mean of 37 years). Drewnowski et al. (1999) concluded that ageing was associated with both taste preference for healthier diets and food choices. According to Wetter et al. (2001), not only biological factors but also psychological parameters exert a significant influence on people's eating behaviour.

People eat in order to satisfy physiological as well as psychological needs. Hunger and appetite are closely related to emotional needs (Fieldhouse, 2002). For example, mood (Baucom & Aitken, 1981), motivation (Hughes, Bennett, & Hetherington, 2004) and self-perception (Levy & Myers, 2004) influence individuals' food consumption. In recent years, there has been a growing interest in the association between nutrition and mental health, especially among older adults (Woo et al., 2003). Associations such as depression and undernutrition (Love & Love, 2007), deficiency in vitamin B12 and depressive symptoms (Tiemeier et al., 2002), antioxidants and Alzheimer's disease (Foley & White, 2002), or more generally between nutrients deficiency and impaired psychological health among older adults have been reported (Woo et al., 2003).

Even though the overall findings demonstrated that there was a correlation between nutrients deficiency and mental illness, these results do not specify the nature of this relationship (Johnson, 2005; Woo et al., 2003). According to Bhat, Chiu, and Jeste (2005), nutrition within geriatric psychiatry is a neglected field, which is surprising as for older adults nutritional status is a major contributor to quality of life (Love & Love, 2007). As prevalence of cognitive impairment/dementia and depression increases with age (Johnson, 2005), there is a need for a model that incorporates psychological as well as biological factors of illness and eating behaviours.

In addition to psychological and biological factors, there are dietary customs that play socio-cultural and symbolic roles in every society (Fieldhouse, 2002). There are rules regarding what people can eat, where, with whom and when. For instance, a person's cultural, social and environmental contexts influence his/her mental well-being, self-perception and eating behaviours (Raine, 2005). Overall, the scientific community has recognised the importance of factors such as social support (Murphy, Prewitt, Bote, West, & Iber, 2001), being socially engaged (Bukov, Maas, & Lampert, 2002), body image (Clarke, 2002), gender (Paquette, 2005), socio-economic and environmental factors (Dubois & Girard, 2001) as being parameters that alter eating behaviours. In summary, eating behaviours are influenced by all the factors of the biopsychosocial model as well as environmental issues.

However, the existing body of research focused on describing the type and quantity of food eaten by various groups but does not systematically explore the reasons behind these eating behaviours. For example, the literature on older adults and eating behaviours is often limited to quantitative designs, which typically describe issues without providing a deeper understanding of their causes for the participants (Martin et al, 2006; Paquet, St-Arnaud-McKenzie, Kergoat, Ferland, & Dube, 2003). Research has shown that there is a relationship between nutrients deficiency and mental well-being but the nature of this relationship is still unknown. Similarly, associations between nutrition, chronic conditions and mental illnesses

have been identified (Foley & White, 2002; Love & Love, 2007). However, the direction and nature of these relationships remain unclear.

Given the ageing of the Australian population, keeping older adults in good health is paramount in terms of maintaining older adults' well-being and reducing pressure on health services. An understanding of nutritional issues and eating behaviours from older adults' perspectives will add to the current body of knowledge and will identify those areas that need to be addressed in order to assist in the development of effective nutritional programs and campaigns. Further research is needed to identify factors that hinder and promote healthy eating behaviours among older adults and it is proposed that older adults themselves are the best source to provide this information.

In response to the lack of information on older adults' perspectives on nutrition and healthy eating behaviour, the present study aimed to explore the perspectives of older adults and provide information to policy makers as well as practitioners and the wider community for promoting healthy eating in older adulthood. Issues that influence healthy eating from the point of view of older adults were explored and barriers as well as facilitators to healthy eating behaviours were tapped. The research questions were:

- 1 What are older adults' perspectives on nutrition and eating past the age of 65?
- 2 What factors do older adults perceive as promoting healthy eating behaviour?
- 3 What factors do older adults perceive as hindering healthy eating behaviour?

Method

Research Design

A qualitative design incorporating interpretative phenomenological analysis (IPA) to compile a list of themes and sub-themes that reflected the participants' experiences (Liamputtong & Ezzy, 2005) was used. This approach was chosen to collect emergent data and gain richer, deeper understanding of the issues from the perspectives of older adults (Miles & Hubberman, 1994). A qualitative design was most suited given the explorative

nature of the research and the lack of literature addressing older adults' perspectives on nutrition and eating behaviours.

Participants

A purposive sampling approach was used to engage eight older adults (aged 65 years of age and over). The sample consisted of five women and three men, ranging in age from 68 to 87 years of age ($M = 74.4$, $SD = 6.5$). Participants were recruited through advertisements published in the Council on the Ageing, Western Australia (COTA, WA) newsletters, and advertisements at the Citiplace community Centre Perth Railway Station and at the Bassendean Senior Citizens Centre. All participants lived independently in the community and reported that they have no diagnosed cognitive impairments.

Materials

A semi-structured interview schedule (Appendix B) consisting of open-ended questions such as "could you please tell me when I say the word nutrition, what comes to mind?" was used to elicit participants' responses. The open-ended questions ensured that participants expressed their own subjective views. The interview schedule was allowed to evolve through a theoretical sampling approach (Strauss & Corbin, 1998), in which data collection and analysis were intertwined so that emerging themes and sub-themes guided subsequent questions and data collection in order to explore more fully the emerging issues.

Procedure

After receiving approval from the ethics committee of the Faculty of Computing, Health and Science at Edith Cowan University, the advertisement was published in COTA, WA newsletters and enlarged copies of the advertisement were placed at the Citiplace community Centre Perth Railway Station and at the Bassendean Senior Citizens Centre. Potential participants contacted the researcher by phone to arrange an interview and to clarify any questions about the nature of the study. Data were collected over two months. Interviews were conducted in places that were agreed upon between the participant and researcher.

Participants were provided with an information letter (Appendix C), which outlined the aim and procedure of the study. Following a further verbal explanation of the project, all participants signed an informed consent form (Appendix D) to indicate their willingness to participate in the study. This consent form also acknowledged the use of an audio-recorder device during the interview. Finally, participants were informed their participation was voluntary and that they could refuse to answer any of the questions, and/or to withdraw from the study at any time without negative consequences.

Data was collected through the use of face-to-face, in depth, semi-structured interviews (Liamputtong & Ezzy, 2005; Miles & Huberman, 1994) allowing the researcher to gain insight into the emerging issues by building rapport with the interviewees and clarifying information during the interview. The interview schedule was developed to provide a structure to the interview whilst allowing for flexibility to respond to issues considered relevant to individual participants. The open-ended questions led the interviewees to discuss their own issues, which were then explored further by probes (Berg, 2001) and in subsequent interviews with other participants. The interviews lasted between 45-90 minutes, with most taking approximately 60 minutes. At the end of each interview, the participants were thanked, debriefed and given the opportunity to ask any questions or add any thoughts relevant to them. The interviews were then transcribed verbatim removing any identifying information to maintain confidentiality, and thematic content analysis (Liamputtong & Ezzy, 2005) was used to reduce and interpret data.

Data Analysis

Each transcript was analysed using interpretative phenomenological Analysis (IPA) to generate a list of themes and sub-themes that reflected the study participants' experiences. IPA aims to explore the participants' perspectives on their social world in order to reveal how they try to make sense of their experience (Liamputtong & Ezzy, 2005). The initial analysis involved repeated reading of each transcript and the recording of initial observations and

interpretations. During the second stage, emerging themes for each participant were identified. Significant words and concepts were highlighted and coded (Liamputtong & Ezzy, 2005; Miles & Huberman, 1994). Each transcript underwent the same analytic process, from which a list of master themes was compiled with extract from each of the participants. Finally, higher order themes and sub-themes were identified both across participants and per participant. Additionally, notes were made of observations and reflections immediately after each interview and during the analytic process.

To enhance trustworthiness of the findings and address threats of researcher bias, triangulation was used (Nagy & Viney, 1994). Several transcripts (using the transcript with participants' identifying information removed) were analysed by another researcher. This process showed high level of congruency across researchers (internal validity). Subsequently, a process of member checking (Miles & Huberman, 1994) was applied, in which several participants were contacted to verify themes/sub-themes and to confirm that the results reflected their perceptions and experiences. Given that data saturation has been reached and all participants had expressed the same themes, this verification of the findings strengthens the trustworthiness of the researcher's interpretations (Morse, 1994).

Results

The three major themes that emerged from the data were Perceptions and Attitudes toward Nutrition; Psychosocial Aspects of Eating; and Challenges of the Ageing Process. These themes, along with the sub-themes that generated them, are presented in Table 1. The participants' experiences of nutrition and eating behaviours were diverse and complex. All participants identified nutrition and eating behaviour as an important positive aspect of their life because of its association with well-being. The identified themes and sub-themes are explored in the following section.

Perceptions and Attitudes toward Nutrition

Positive attitude: Overwhelmingly, participants perceived nutrition positively.

Nutrition included three aspects: the food itself, the action of eating and food preparation.

The food itself, such as vegetables and fruits, was related to physiological health. For example, one participant said:

“One apple a day does help keep the doctor away”.

The action of eating was described as a psychological, social and pleasurable experience. Participants viewed eating as a precious part of daily life, as illustrated by the following:

“A great deal of eating is the social part of it, the atmosphere. For us, from 4.30 to 7.30pm is sort of a sacred time as far as we're concerned. It's our main meal of the day. It's relaxing, it's refreshing and energising and it has become very important”.

The pleasurable experience of eating included flavours and the taste of the food.

Pleasure was essential and the majority of participants specified that they ate what they enjoy eating. For example, one participant stated:

“I love avocados and may be, I've been eating a lot of avocados because my girlfriend now has got an avocado tree and, oooh, they taste beautiful”.

Furthermore, the participants in the present study enjoyed different foods and experienced cuisines from countries such as Spain, India or China. The variety of tastes that participants become acquainted with over time has promoted a new interest in food and nutrition. For instance, one participant said:

“As far as I am concerned, my family was brought up on a very, very ordinary diet and, I think what happened over the years is that we learned to, well, know what spaghetti is. And Chinese cooking, we did not know anything about that. So, once we started to get a taste for a few of those things, then we realised how interesting eating can be and also, how important it was”.

In terms of food preparation, cooking was combined with the pleasure of eating.

Indeed, the participants reported having good cooking skills and enjoyed cooking. For example, one participant stated:

"I enjoy food. I look forward to the food I cook, really all my meals. I prepare all my meals".

The pleasure of cooking often involved looking at recipes or simply being interested in food.

Consistent with their perspectives on nutrition, the interviewees had wide knowledge of nutrients, vitamins and various foods. For examples, one participant talked about his interest and knowledge on this topic.

"I like food. I like all of it but I am also interested in looking at nutrition though. How things work together and what is going to be good for you, to balance your greens and other things and your vitamins and your minerals".

Nutrition linked to health: The positive attitude towards nutrition was related to the association between eating behaviour and health. This link between food and health was mentioned in every interview. For example:

"The food you eat makes all the difference in your health", and from another participant, *"but at the time I was ill, which was about 4 years, I stick rigidly to the diet, vegetarian. I did not drink alcohol, never had any meats and did exactly what I was supposed to eat".*

From the perspectives of the participants, the concept of "eating well" meant a balanced diet including vegetables and fruits, a variety of foods, three meals a day and eating in moderation. For instance:

"Older adults should have a breakfast in the morning, you know and have something at lunch time and they have a meal at night, even if it's a soup, you know".

From another participant:

"I'm very much aware of the value of fruits and vegetables and a balanced diet".

And finally:

"I might find myself a really nice cake, you know \$4 or \$5 worth, and I slice that, and use only a little bit. So that spread it out. I found that the wise way over my indulgence".

The concept of healthy eating was also conceptualised in interviewees' narrative as choosing fresh food and home made meals over processed food and take-away. One participant stated:

"I like to prepare fresh food, you know, fresh. I don't like take-away and very rarely, I buy processed food and things like that".

Overall, the majority of the interviewees reported that they had a healthy diet according to the Dietary Guidelines for Older Australians (NHMRC, 2005).

Psychosocial Aspects of Eating

Psychological factors: The determinants of healthy eating include food preferences and psychological aspects such as personality traits, mood and emotions (Raine, 2005).

Indeed, eating was associated with pleasure and more generally with emotional states. For example:

"If I feel that the body can't cope with food, I'll try to go easy but, then when you get in an emotional state, sometimes, all that goes out the window".

In addition to this, another participant argued that the type of emotion that people are experiencing while eating can compromise the benefit of the food consumed:

"One thing that is terribly important is that you should never feel guilty about what you've eaten".

Interviewees also perceived cooking and eating nutritious foods as means to maintain and be in control of their own health, but this was mediated by having an internal locus of control and self-discipline. There were two categories of participants. The ones, who felt that they were in control of their eating (internal locus of control). For example, one participant stated:

“It doesn't seem to be much in our diet that we can change for the better. I think that we are quite satisfied that we are doing the right thing, well the great majority of the time”.

These participants had difficulty understanding why others would behave differently. As an example:

“if people are not doing what I do and if they are gobbling fat, well, if people are doing that they've just have no brain that is just as far as I'm concerned because they know that's bad for them”.

Other participants were lower on self-discipline and described eating and food choice as a daily psychological struggle between what they wanted to eat and what was reasonable to eat. Two participants described this psychological conflict:

“I know that it's not the best for me but I like to finish off with something sweet” and “It's very hard with chocolate. I know that I actually start eating and will have another and another piece until I actually feel sick and, I still eat the next piece”.

Social factors: Healthy eating behaviours depend on individual factors in food selection and collective parameters such as social, cultural and environmental factors (Raine, 2005). Eating has many social functions such as expressing friendship and socialising (Kifleyesus, 2002). Participants illustrated that eating habits are learned and highlighted the importance of childhood in acquiring these habits. Indeed, the influences of the participants' childhood and maternal cooking were highlighted in the majority of the interviews. One participant explained his current eating habits by saying:

“When I was eight or nine back in 1929, my mother went to see an American lady who was preaching on diet. Basically food like oatmeal bread, oatmeal flour, plenty of vegetables and salad and eating skin of the vegetables and eating raw vegetables. My mother got hooked on this and more or less, I followed that sort of things all my life, eating food like that”.

While another participant remembered her childhood and stated:

“Like lentils and pulses. We used to have a lot of that because we were nine of us. Our mum will cook and sometimes, she will make a pot of lentils, you know, or split peas or something like that, and I do like to cook things like that”.

According to DeCastro (2005), the presence of others during meals influences food quality and quantity. This was particularly relevant in the present study as five out eight participants lived on their own and consequently, had their meals alone. One participant believed that the social aspect of eating was paramount and said:

“The most important thing after the age of 65 is that you should eat more with friends because that, that not only helps your nutrition but also helps your immune system”.

Another participant discussed how losing a companion can influence what older adults eat:

“I have a friend, whose husband passed away, and she used to be a very good cook and now, she said to me that sometimes, she just has a toast. When her children come over, ..., and then she cooks a good meal”.

Loneliness and social isolation is a reality for many older adults (Holley, 2007). There has been a growing acknowledgment of the association between nutrition and mental health, especially among older adults (Woo et al., 2003). This relationship between mental well-being and eating behaviour was apparent in the narrative. For example:

“Meals on wheels, I was actually enjoying the contact with the person coming with the meal. I was enjoying that person coming in, even briefly. You don't have anybody to talk to anymore”.

And another participant:

“I enjoy cooking my meals but a lot of people can't be bothered. It's very difficult, especially with people living by themselves, because you have to give them a push to do anything like that (cooking)”.

When one participant was asked if she thought that many older adults were suffering from depression, she replied:

"It can be another side of loneliness as well".

Feeling alone and isolated played an important role in participants' eating behaviours. Indeed, the participants that expressed the highest levels of loneliness appeared to perceive food and its preparation as a chore or a psychological struggle rather than a pleasurable experience.

Challenges of the Ageing Process

Ageing: The ageing process involves many biological and functional changes that can have an important effect on individuals' eating behaviours (WHO, 2007). Physiological changes such as physical fatigue, chewing difficulties and taste alteration were identified in the data. For instance, when a participant was asked if he will change his eating behaviour in the future, he answered:

"That always changes a bit and that because of some problems with chewing anyway by lack of teeth or things like that".

Similarly, another participant found that her taste in food had changed with time.

"I find that as I have gotten older that the things that I really enjoyed when I was young, I don't really enjoy them anymore".

In the interviews, participants did not mention directly physical fatigue when they were talking about themselves but seemed to relate to it indirectly. For instance, one participant stated:

"I supposed when you get old, you become a bit lazy"

However, the idea of preserving physical strengths and finding ways to reduce fatigue were highlighted by the participants' comments on frozen vegetables as being much easier and simpler to process than raw vegetables. When referring to other older adults, being tired seemed to be less of an issue, as illustrated by the following:

"A lot just get too tired to do anything, to want to cook".

Overall, the interviewees ate smaller portions, less red meat and reduced their fat and sugar intakes compared to when they were younger.

Due to these physiological changes, the participants appeared to have an increased awareness to their body and its limitation, as illustrated by the following:

“I’ve become more consistent in going to the things that I need. When you realise that you become more frail, your body is not able to cope with things that it did before, then if you’re wise, you’ll adjust”.

From another participant:

“I was not given a special diet at all by the hospital. Perhaps, I could have asked. I recently rang the heart foundation and said, what can I do to help myself? So, I am going to the cancer foundation/association or something and, is to learn how to cook different beans”.

Ageing involves psychological as well as physiological changes (WHO, 2007). As reported by several participants, older adults become afraid of the outside world and feel safer in their home. For instance:

“We need to find out some means of getting people together more but a lot, I do not know why, are scared to leave their house or something”.

Similarly, driving or attending crowded places promote anxiety, as illustrated by the following:

“It was wiser to sell it (car) to keep myself going. It was a real relief to go on an air-conditioned bus with a driver and the same with the train. It gets longer to get there sometimes but it was no effort’.

From another participant:

“Subiaco market was very good but it’s so crowded and so pushy”

Environmental factors, such as needing to use public transport, influence the ability to access cheap and fresh food. According to Raine (2005), shopping centres are generally

located close to major transportation routes, which imply car access. For instance, a participant who discussed wanting to go to the vegetables market said:

"I am considering perhaps on Sunday, to find the railway, walk down the railway to go to Midland. There is a market but the military market is no longer but I believe is some market".

And another participant said:

"Nearest market from here is Fremantle. I do not bother to go there".

Other important issues were food prices and packaging. Many products, especially meat, are offered in family size pack. Participants who live by themselves, complained about the lack of food packaging for single people, as illustrated by the following:

"..the big package of meat, not just individual chops just for me".

Even though, the majority of participants reported having enough money to eat well, food price was a determining factor in choosing food. For instance:

"Mostly I love to buy veggies in season because when they're in season, they're fresher and cheaper". Another participant stated:

".. I like any other type of fish if it's at a reasonable price".

Whilst some environmental factors hinder healthy eating other, such as changes in income and having more time, promotes it. As reported by the participants.

"When we were young, we did not have what we have now. We couldn't take the kids, when we were young to a fancy restaurant because we couldn't afford it, you know. Well, we've got time now and we've got a couple of dollars. We can do that now and again, so we do it."

Existing information and services: The majority of interviewees offered scepticism or criticisms of nutritional programs or information concerning healthy eating. Many objections were voiced and a degree of cynicism was generally evident. For example, information on diet and health was linked to scepticism:

"The heart foundation... I know down well that you have to buy that little red tick.."

I know that if money changes hand before they get the red tick. Well, I'm not interested in red ticks, for that reason".

From another participant:

"I think that a lot of them (nutritional programs) are a joke...And most of them are based on dieticians and I don't know what they teach dieticians. But, I am thinking, you know, when you look at the things that they give you in hospital, it's not what I will feed an invalid, you know".

Similarly, participants reported that choosing the most appropriate food was very difficult because food labels are confusing and complicated to read, as illustrated by the following:

"If you want low sugar, you should know which one or it should be a sign saying ok that is low in sugar because, sometimes it's very hard to read the labels. So many different things that they call different names, they use the scientific words. Well, with sugar, there are so many different words used instead of sugar".

The word "diet" commonly used in nutritional information refers to the usual food and drinks a person consumes. However, participants understood the term diet as "being on diet in order to lose weight" and consequently, had a negative attitude towards this term. For instance:

"I think that diets, may be, they've got a place in life but I think well, if there is so many diets, they don't work! With all the diets around, it should be no fat people but there is. If you reduce your eating when you're still hungry, I think that is pretty dangerous to my point of view.. I don't like diets. I really don't like diets".

There was confusion between nutritional programs and cooking shows. When participants were asked if they knew any nutritional programs, the majority were not aware of any or talked about cooking shows. For instance:

“No. I am not really (aware of nutritional programs) and cooking sessions bore the tears out of me. I can stand watching these cooking sessions on TV; I will never cook that sort of thing, why do I look at it?” From another participant:

“I don't think that there are many programs for the elderly in ways of nutrition.. Have they got a program which is aiming at elderly actually, you know”

In terms of existing services such as meals on wheels and the food served in nursing homes, the participants' comments were quite negative, as illustrated by the following:

“I often think, you know of these poor people in hostels and nursing homes and what not, and some of the bloody rubbish that is dished out for them, you know. I think that I rather not eat at all rather than eat some of the stuff, they dish out”.

From another interviewee:

“I know a lot of people who are not very happy in homes (nursing homes); the main thing is the food taste... always the same. Some of them say that it's a bit bland, you know”.

When another participant was asked why she stopped using meals on wheels, she answered that:

“You just get tired of looking at the same menu every week”.

It appears that the food offered to dependent older adults did not address their psychological needs such as pleasure and the excitement of eating.

The majority of participants were aware of the common nutritional messages as recommended in the Dietary Guidelines for older Australians (NHRMC, 2005), as illustrated by the following quotes:

“I think that if you eat plenty of fresh vegetables, fruits, salads, you get enough...you get the vitamins in there without taking supplementary stuff”.

From another participant:

“I buy 99% fat free.. I always cook in olive oil... I don't want to eat as much like when I was young.. The portion, I try to make smaller portions.. ”.

As well as:

“I do like bread, good quality bread, and that could be a 12 seeds loaf or something like that..”.

And finally:

“We are conscious of not eating too much of the same food”.

Discussion

Nutrition was highly valued by the participants of the present study in terms of its link to health and well-being. The positive attitude toward eating behaviour was consistent across participants and was related to wider ageing and well-being in general. It was clear that interviewees acknowledged the importance of a healthy diet. However, there was a varied understanding of nutrition. The present study has identified the following factors that were relevant to the interviewees: psychosocial aspects, barriers and facilitators of healthy eating.

Psychosocial aspects of eating, in terms of childhood, social presence of others, loneliness/social isolation, depression, self-perception of ageing and locus of control will be discussed first. Secondly, barriers and facilitators, including physiological changes, the ageing process itself, environmental factors (transport, price and time), confusion and cynicism toward nutritional information will be addressed. Finally, conclusions and recommendations will be made in order to assist the development of effective nutritional campaigns and inform practitioners.

In the present analysis, psychosocial aspects of eating were very important for all participants. Indeed, childhood, the influence of others such as family and friends, pleasure or guilt associated with eating, loneliness and depression were issues that the participants related to eating behaviours. According to Eertmans, Baeyens, and Van den Bergh (2001), individual differences in eating behaviour, such as food choice and nutritional knowledge, suggest important direct and indirect social influences. Indirect social influences relate to aspects such as socially acquired values and beliefs whereas direct social influences refer to the

presence of others (Eertmans, Baeyens, & Van den Bergh, 2001). The present study highlighted the importance of the participants' childhood and maternal cooking in acquiring eating behaviours, which is consistent with other research on eating habits. For instance, Savage, Orlet-Fisher, and Birch (2007) argued that parental modelling and food familiarity significantly influence the development of food preferences among children. What children eat, like or dislike is a reflection of the foods that are available and accessible to them (Savage, Orlet-Fisher, & Birch, 2007). Furthermore, dietary habits are learned early in life and once established are likely to be long lasting and resistant to change (Fieldhouse, 2002). Thus, health professionals may need to acknowledge the difficulty of changing dietary habits and provide behaviour modification programs to support older adults in modifying and improving their diets.

Family and friends exert a more direct social influence on food consumption. Through social facilitation, the presence of others affects eating behaviours (Eertmans, Baeyens, & Van den Bergh, 2001). According to DeCastro (2005), individuals ate more when in the presence of others than when alone. However, eating alone, being or/and feeling socially isolated is a reality for many older adults (Holley, 2007). Eating alone is not an issue by itself but when coexisting with depression or loneliness, it may become a sign for poor diet (Martin, Kaye-Jones, Stotts, Porter, & Froelicher, 2005). Indeed, Walker and Beauchene (1991) examined whether loneliness, social isolation and physical health were related to the amount and quality of food consumed by older adults. They found a negative correlation between perceived loneliness and the quantity and variety of food eaten (Walker & Beauchene, 1991). That is, greater perceived loneliness was associated with less nutrients consumption.

Consistent with these findings, the majority of participants in the present study reported that sharing a meal with others and the social context were fundamental aspects of enjoying food and more generally, influence eating behaviours. Similarly, many studies have

highlighted the role of social support and network in healthy behaviours, especially among older adults. For example, Richard and her colleagues (2000) designed a program to increase nutrients intake among Meals-On-Wheels clients and reduce older adults' social isolation by offering an eating-out options in various restaurants. Participants responded positively to the invitation to participate in restaurant outings (Richard, Gosselin, Trickey, Robitaille, & Payette, 2000). The success of this program demonstrated that an intervention designed to improve or maintain healthy eating behaviour among older adults needs to take into account social factors.

The analysis of the transcripts highlighted that interviewees, who expressed the highest level of loneliness and reported suffering from depressive symptoms, perceived food and its preparation as a chore. It is consistent with broader research that showed an association between eating behaviours and mental health (Bhat, Chiu, & Jeste, 2005; Woo et al., 2003). Loneliness and depression often increase negative self-perception toward ageing. Levy and Myers (2004) examined the relationship between positive self-perceptions of ageing and preventive health behaviours. There was a positive correlation between favorable self-perception of ageing and engaging in preventive health behaviours. Similarly, Sarkisian, Hays, and Mangione (2002) found that older adults who expected their health to deteriorate with ageing were less likely to seek health care. For instance, depressed older adults who attributed depression to ageing were four times more likely to think that it was not important to discuss their depressive symptoms with health care professionals than those who attributed depression to illness (Sarkisian, Lee-Henderson, & Mangione, 2003).

From the present data, positive self-perception of ageing was associated with healthier eating behaviours because nutritious food was viewed as a mean to maintain and be in control of one's health. Furthermore, there was a relationship between positive self-perception of ageing and strong feelings of personal control. That is, interviewees who perceived ageing positively had strong feelings of personal control over their health and well-being.

The present study was not designed to examine the nature of this relationship. According to Krause (2007), strong feelings of personal control (internal locus of control) are fundamental to successful ageing. Internal locus of control refers to individuals' perception that they have significant influence on things that happen to them, whereas people with an external locus of control, feel unable to change what happens to them. Strong internal locus of control is associated with better physical health and the adoption of preventive health behaviours (Krause, 2007).

Similarly, Campbell, Busby, Robertson, and Horwath (1995) found that older adults who felt that they had control over their future health were less disabled and ill than the participants who had a weaker health locus of control. In the present study, participants that reported having health issues, such as coronary heart disease, were the individuals who viewed ageing negatively and expressed weaker feelings of personal control. They described eating as a daily psychological struggle. Indeed, there was a conflict between what they wanted to eat (liking on the short-term) and what they should eat (health consequences on the long-term). By contrast, participants with both, a high sense of control and a positive attitude toward ageing described eating as a pleasurable experience. These findings highlighted the importance of attitudes towards ageing and internal locus of control on eating behaviours among older adults. In summary, the psychosocial aspects of eating deserve to be considered as fundamental factors in understanding older adults' approach to health preventive behaviours. The barriers and facilitators identified in the transcripts will be discussed next.

All participants reported ageing-related physiological changes that affect their food choices. Chewing difficulties, losing teeth and physical fatigue were the three main issues raised. According to Brownie (2005), changes in the mouth, such as loss of teeth or ill-fitting dentures can profoundly alter the ability to chew among older adults, with subsequent avoidance of many foods. These changes are often perceived as barriers to healthy eating because they reduce the variety of food that older adults consume. Alterations in sensory

functions have however been associated with positive changes in food preferences (Drewsnowki, Henderson, Hann, Barratt-Fornell, & Ruffin, 1999). Research on taste and ageing has highlighted an age-related decline in taste function (Schiffman, 2000; Shiffman & Graham, 2000). As a result, older adults often prefer bitter over sweet foods. This change in food preference is associated with lower consumption of sweet beverages and fat rich desserts. Older adults like the taste of vegetables more than younger adults do (Drewsnowski et al., 2000). In summary, biological changes occurring during the ageing process are often perceived as barriers to healthy eating. However, ageing has also been associated with positive modification in food preference. A better understanding of shifts in food preference due to ageing may aid in the design of better strategies for the prevention of chronic conditions.

Similarly, the ageing process by itself can promote healthy eating behaviours. For instance, participants were motivated to maintain as long as possible their physical strengths because they were well aware of physical decline and body limitations. This awareness and motivation influenced their food choices and increased their interest in means to maintain their physical strength. Worsley (2002) examined the relationship between nutritional knowledge and eating behaviours by reviewing several studies. He argued that nutrition interest is the key mediator between personal values and food choices. For instance, nutritional interest was positively associated with nutritional knowledge (Worsley, 2002). Similarly, Petrovici and Ritson (2006) found that health motivation and nutritional knowledge were two significant positive predictors of dietary health preventive behaviour. The present study highlighted similar findings. Indeed, the majority of the participants had good knowledge of nutrition because of its perceived health benefits and consequently, reported having healthy diets.

By contrast, environmental factors are often barriers to healthy eating among older adults (Raine, 2005). The physical environment refers to location of markets, supermarkets

and transportation. In urban areas, supermarkets and markets are often located near major routes, such as freeways, that require private transport (Raine, 2005). The majority of the participants in the present study had their private car. However, they avoided driving and preferred buying their food in their respective suburb. Furthermore, they commented positively on the transportation services offered to seniors. Tannenbaum and Shatenstein (2007) reported similar responses in their research, examining physical exercises and diet among women of different age groups. When the participants were asked to identify the most relevant aspect of an intervention, the women in the older age group (75 years and over) responded that good transportation was a key issue for them (Tannenbaum & Shatenstein, 2007). These findings suggest that transportation and access to healthy food outlets should be taken into account by any program aimed at promoting healthy eating among older adults.

Food price was an important environmental factor that affects eating behaviours among the participants. Irrelevant to their incomes and assets, price was mentioned as significant in food choice across all interviews. High price was a barrier to healthy eating. By contrast, being retired and having more time promoted healthy eating. In the present study, interviewees could go to the shops daily, be aware of the “specials” available, plan and organise their meals without time constraints. There were no studies found on time influencing eating behaviours among older adults. Jeyanthi and Ziebland (2004) suggested that time was a barrier to healthy eating. It is important to consider that the participants in this study represented the general working population that often faced the difficulties of raising a family while working. Consequently, time or lack of time was an issue for them (Jeyanthi & Ziebland, 2004). Thus, the effect of time and more generally, eating habits among older adults should be investigated further in order to assist the development of effective nutritional services.

In terms of nutritional information and campaigns, all the participants were aware of the common messages regarding portion size, reducing fat as well as eating more vegetables

and fruits. However, there was confusion regarding food labels, which is consistent with broader research on food legislation. Chan, Patch, and Williams (2005) found that, when consumers checked claims about fat offered on food labels, many claims were perceived as misleading, deceptive and confusing. People misunderstood claims such as "X% less free". According to Sullivan (2003), low income earners needed help in understanding packaging nutritional information, even though they believed that food label was important for individuals with particular health conditions (Sullivan, 2003). However, Garretson and Burton (2000) argued that consumers' knowledge about checking fat content on food packaging may be more associated with physical appearance rather than health benefits. Indeed, many consumers focus more on food fat levels than on other key nutrients (Garretson & Burton, 2000)

Another perceived barrier to healthy eating was the scepticism expressed by the participants about claims related to food and health. This concern about the truth of health claims is congruent with existing literature on this topic. Sullivan (2003) found that her participants perceived health claims as marketing strategies to mislead consumer and nutrition information on labels as being untrue. In an exploratory study examining eating behaviours among older men, media health messages were regarded with cynicism (Gough & Conner, 2006). Furthermore, the participants perceived the information as misleading and ideologically motivated because of its moralistic approach, according to which following health related advice is being a good citizen (Cough & Conner, 2006, p. 393). Due to this consumers' scepticism, Williams (2005) argued that people want health claims on food products to be endorsed by government. Thus, partnership could be formed between dieticians, governments and other stakeholders so appropriate course of action can be implemented to address scepticism toward health messages.

A strength of the present study was its exploratory approach. An exploratory qualitative designed allowed for an exploration of the participants' perspectives on nutrition

and eating behaviours. Considering the diversity and richness of the findings in terms of the various factors promoting and hindering eating behaviours among older adults, the exploratory design proved to be appropriate.

A limitation of the present study is that the self-selected nature of the sampling employed may have attracted those who are more interested in nutrition and eating behaviours than the general population. In addition to that, the relatively homogenous sample limits transferability. All participants reflected the views of older white Anglo-Saxon Australians, who lived independently in the community. Future studies could include larger samples incorporating people from different ethnic groups and suffering from chronic conditions such as obesity, osteoporosis, diabetes and mental illness, for more meaningful understanding of similarities and differences in eating behaviours among older adults.

Conclusion

The aim of the present study was to explore the perspectives of older adults on nutrition and eating behaviours. Issues that influence eating behaviour from the point of view of older adults were explored and barriers as well as facilitators to healthy eating were tapped. An important conclusion drawn from the present study was that older adults have a positive attitude toward nutrition because of its perceived health benefits.

The present study has extended previous research by exploring the importance of multiple variables that influence eating behaviour. The results showed that all participants perceived psychological and social aspects of eating as key influences on their eating behaviours. From the researcher's perspective, the most salient factors in healthy eating that emerged from the interviews were: childhood; social interactions; attitude toward ageing and feelings of control. Due to the limited scope of the present study, the nature of the relationship between attitude toward ageing and feeling of control was not examined but could be investigated further in order to understand its effect on food choice and eating behaviours.

Recommendations for Future Research

As the Australian population is ageing rapidly, the increasing proportion of Australians aged 65 and over, places a significant burden on the nation's budget and health care services (NPHAs, ABS, 2007). Further research and programs that focus on keeping older adults in good health are paramount in terms of maintaining older adults' quality of life and well being.

A healthy lifestyle is conducive to longevity, longer years of independence, and reduced morbidity (AIHW, 2005). In the United States, nutrition has been recognised as an essential part of any health promotion and risk reduction initiatives (Wellman, 2007). As healthy eating behaviour is the key factor for successful ageing, it is urgent to provide more nutritional services to the community (Wellman, 2007). Furthermore, food choices and eating patterns are influenced by biological, psychological, social and environmental factors (Paquette, 2005; Payette & Shatenstein, 2005; Raine, 2005). Future research on eating behaviours could include a multi-disciplinary approach.

The inconsistency of health messages and nutrition information in the media has been documented (McKay, Houser, Blumberg, & Goldberg, 2006). Food and nutrition professionals could work with media in order to help the development of health messages that are meaningful and clear to the public. It is the role of health professionals and government agencies to translate nutrient-based dietary goals into practical and achievable food based dietary messages for various target audiences (Charlton, 2002). To address scepticism toward health messages, dietary recommendations need to be evidence based and endorsed by government.

A review of various types of interventions aimed to promote the consumption of fruits and vegetables to the general population were shown to be ineffective in changing individual diets (Pomerleau, Lock, Knai, & McKee, 2005). However, programs involving a more individual approach such as face-to-face education or counseling were more effective in

changing eating behaviours (Pomerleau et al., 2005). Considering time and costs, printed tailored information and computer-based interaction may be an alternative to face- to-face or telephone contact (Pomerleau et al., 2005). For example, interactive computer software could be utilised to analyse personal details and produce individually tailored nutritional programs. This could be trialed by general practitioners and later utilised as a web-based service by the health department.

Table 1. *Themes and Sub-themes Related to the Association of Nutrition and Well-being*

Major Themes	Sub-Themes
Perception and Attitudes toward Nutrition	<p data-bbox="812 323 1395 377">Positive attitude</p> <ul data-bbox="840 409 1395 517" style="list-style-type: none"> <li data-bbox="840 409 1395 441">• Food itself <li data-bbox="840 441 1395 474">• Action of eating <li data-bbox="840 474 1395 517">• Food preparation <p data-bbox="812 549 1395 603">Nutrition linked to health</p> <ul data-bbox="840 636 1395 743" style="list-style-type: none"> <li data-bbox="840 636 1395 668">• Balanced diet <li data-bbox="840 668 1395 700">• Fresh food <li data-bbox="840 700 1395 743">• Homemade meals
Psychosocial Aspects of Eating	<p data-bbox="812 765 1395 819">Psychological factors</p> <ul data-bbox="840 851 1395 959" style="list-style-type: none"> <li data-bbox="840 851 1395 883">• Emotional states <li data-bbox="840 883 1395 916">• Self-discipline <li data-bbox="840 916 1395 959">• Psychological struggle <p data-bbox="812 991 1395 1045">Social factors</p> <ul data-bbox="840 1078 1395 1185" style="list-style-type: none"> <li data-bbox="840 1078 1395 1110">• Learned behaviour <li data-bbox="840 1110 1395 1142">• Presence of others/ loneliness <li data-bbox="840 1142 1395 1185">• Eating and mental well-being
Challenges of the Ageing Process	<p data-bbox="812 1196 1395 1250">Ageing</p> <ul data-bbox="840 1282 1395 1390" style="list-style-type: none"> <li data-bbox="840 1282 1395 1315">• Physiological and psychological changes <li data-bbox="840 1315 1395 1347">• Awareness of body limitations <li data-bbox="840 1347 1395 1390">• Environmental factors <p data-bbox="812 1422 1395 1476">Existing information and services</p> <ul data-bbox="840 1509 1395 1617" style="list-style-type: none"> <li data-bbox="840 1509 1395 1541">• Cynicism <li data-bbox="840 1541 1395 1573">• Confusion <li data-bbox="840 1573 1395 1617">• Knowledge of common messages

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Appendix A

Dietary Guidelines for Older Australians (NHMRC, 2005)

1. Enjoy a wide variety of nutritious foods
2. Keep active to maintain muscle strength and a healthy body weight
3. Eat at least three meals every day
4. Care for your food: prepare and store it correctly
5. Eat plenty of vegetables (including legumes) and fruit
6. Eat plenty of cereals, breads and pastas
7. Eat a diet low in saturated fat
8. Drink adequate amounts of water and/or other fluids
9. If you drink alcohol, limit your intake
10. Choose foods low in salt and use salt sparingly
11. Include foods high in calcium
12. Use added sugars in moderation

Appendix B

Interview Schedule

Q1. When I say the word nutrition, what comes to mind?

Q2. In the context of nutrition, how do you feel about food?

What are some things you enjoy (ed) about eating and food?

What, for you, are the best aspects of eating? Where do you eat? When? How?

Do you eat alone? What other issues can you think of?

Q3. Could you please describe what you eat daily?

Could you please describe how you will prepare your meals? How many vegetable and fruit serves would you have? Can you please describe your ideal meal?

Is food important to you? What does food represent for you?

Q4. How do you decide what to eat?

Could you please discuss those things that you thought about in making your food selection? How did you feel at the time? Are you aware of any specific emotions that you felt at the time?

What were the most important issues? Why?

Q5. What are your thoughts on food and eating past the age of 65?

In your experience, did your thoughts about eating change over time? How?

In your opinion, what are some of the issues that older adults face in relation to food and eating?

Are there other issues you can think of? What is healthy eating for you?

Q6. Have your eating habits changed overtime?

How? Why? Have you experienced any difficulties in terms of eating habits? If yes, could you please describe them for me? What other issues can you think of?

Q7. Do you think that it is important to have a healthy diet?

Why? Do you like healthy food such as fruits and vegetables? How does it make you feel to eat healthy? Do you think that eating well can help you to be healthier and feel good?

Q8. Are you aware of existing nutritional programs?

On television or radio or in the newspaper?

Q9. In your opinion, how could a nutritional program support and encourage older adults to eat better?

What will help you or encourage you to eat healthier? What support or help would you like?

Q10. What is your expectation on your future eating habits/behaviour? What type of food do you see yourself eating in five years time?

What issues might influence this? How? What other issues do you think might come up?

How do you feel about that?

Is there anything else that you would like to share with me?

Appendix C

Information Letter

Dear participant,

This study will form part of my course requirement as a psychology honours student and aims to improve our understanding of older adults' perspectives on nutrition and issues that affect eating. This is an important and topical matter for older adults, health professionals, and policy makers. Your participation in this research is appreciated and valued. This study has gained ethics approval from the Ethical Committee of the faculty of Computing, Health and Science (FCHS) at Edith Cowan University.

Thank you for your interest in my research project regarding older adults' perspectives on nutrition and eating behaviours. This letter is designed to give you some information about my research project and how I intend to gather the data. I am interested in talking with you about your thoughts, feelings, and experiences regarding nutrition and issues that affect eating behaviour.

I will be asking you to share your thoughts and feelings. If you should not wish to answer a particular question, or if you wish to withdraw your participation, you may do so at anytime without penalty. You are welcome to contact the Honours co-ordinator (details below) to discuss any difficulties or questions you may have regarding the process.

The interview is expected to take approximately 60-90 minutes. It will be audiotaped and then, transcribed verbatim. No identifying information will be included in the transcripts and important word will be replaced with pseudonyms or simply blanked out eg. XXXX. After the completion of the study, audiotape will be destroyed.

In the unlikely event that you feel distressed after the interview, please contact Crisis Care on
9223 1111

Or Lifeline on 13 11 14.

If you require further information about this project please contact me on –
Catherine Matringe ph. [REDACTED]

Or my Supervisor, Dr. Eyal Gringart on ph. [REDACTED]

If you have concerns about the project or would like to talk to an independent person, you may contact the Honours Co-ordinator, Edith Cowan University –
Dr. Dianne McKillop (ph [REDACTED])

Appendix D

Consent Form

Exploring Older Adults' Perspectives on Nutrition and Healthy Eating Behaviour

I _____ (the participant) have read the information sheet provided with this consent form and any questions I have asked have been answered to my satisfaction.

I agree to participate in this study, realising I may withdraw at any time without penalty.

I understand that I will be interviewed and that the interview will be audio recorded.

I agree that the research data gathered for this study can be used to complete a publishable research report provided that I am not identifiable.

Participant's signature _____ Date

Interviewer's signature _____ Date

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