

Older adults face nutrition challenges

Carol Wham, Massey University

Currently adults over the age of 65 comprise 15% of the New Zealand population (Statistics NZ, 2016) and with life expectancy increasing, those over 85 are the most rapidly expanding age group. Older adults are a heterogeneous group: the process of ageing occurs at different rates in different people. Nutrition is an important modifiable lifestyle factor; eating well can play an important role in prevention of many of the changes once thought to be inevitable consequences of ageing.

Effects of aging

Characteristically both muscle mass and basal metabolic rate tend to decline with age, concurrent with body composition changes slowly over time. There is a decrease in skeletal muscle and muscle that affects vital organ function. A loss of cardiac muscle for example, may reduce cardiac capacity. Gastric atrophy has an increased prevalence in older people; levels of hydrochloric acid secretion is reduced and may contribute to impaired absorption of nutrients such as calcium, iron and vitamin B12. These changes in body composition affect the body's metabolism, nutrient intake, absorption and overall nutrient requirements. As basal metabolic rate declines proportionately with the decline in muscle tissue, energy requirement is reduced. As such older adults may be vulnerable to eating too little food (energy) with associated weight loss.

Nutrition screening studies in New Zealand have reported that about a third of community- living older adults are malnourished or at malnutrition risk (1-3). Key risk factors are living alone and depressive symptoms which impact taste and appetite leading to a lower intake of food. Those identified to be at nutrition risk tend to have a lower BMI, swallowing problems and more co-morbidities (3). Findings indicate a vicious cycle between poor nutrition status, altered body composition and poor physical functioning (i.e. slower walking speed). In most cases malnutrition is amenable to intervention.

What is healthy ageing?

Healthy ageing has been defined as the process of developing and maintaining the functional ability that enables well-being in older age (World Health Organisation 2016). The challenge is to prevent the reduction of muscle mass and muscle strength associated with loss of physical function during typical daily living activities. Prevention is the most effective and least costly way to maintain and promote an older person's physical function.

Eating well is not only a key determinant of successful ageing but also contributes to social, cultural and psychological quality of life (4). A variety of physical, social and psychological factors may contribute to increased risk of malnutrition. Older people have a higher prevalence of

chronic disease, tend to be sedentary and higher patterns of morbidity occur in malnourished older people (5).

Differences in gender may be evident. Older women are more likely than men to report poorer health and have multiple chronic diseases (6) which can escalate age related muscle loss and result in poor function (7). They are more likely to be widowed and live alone compared to men, both of which are known nutrition risk factors. In living alone people have higher levels of weight loss (4) decreased energy intake and poorer dietary variety perhaps resulting from decreased interaction at meal times (8). Women who lose their spouse report higher levels of food insecurity and difficulty accessing food due to transport difficulties (9).

Companionship is an important preventative measure especially after the loss of a spouse. Meal sharing increases food intake which is positively correlated with nutritional quality as well as health outcomes (10).

Although not a normal part of ageing, depression is a common problem in older adults and depressive symptoms are a risk factor for impaired nutrition status (11). Depression is likely to increase the risk of malnutrition through reduced appetite, food intake and physical capacity (12). Studies of older people also show a relationship between nutrition risk and health- related quality of life (HRQOL) (5) and underpins the importance of optimising the nutritional health of older people.

What should older people eat?

Setting nutritional recommendations for older adults is fraught with difficulty as individual differences become more pronounced as people grow older. In general, energy needs decrease with age and older people need to select mostly nutrient-dense foods to make sure nutrient requirements are met. Protein needs are generally higher and food sources of high quality protein help to prevent infections, muscle wasting and to optimise bone mass. Sufficient carbohydrate is needed to protect protein from being used as an energy source. Complex carbohydrates such as whole grains, fruit and vegetables are also rich in valuable fibre. Consumption of high fibre foods and an adequate water intake can help alleviate constipation which is a common problem in older adults, especially those who are physically inactive and take multiple medications. Some micronutrients are required in larger amounts in older age but these amounts are achievable within a healthy, well-balanced diet which contains a variety of foods from the major food groups. Generally the nutritional requirements of older adults, especially the oldest old are not well defined and there is a scarcity of information regarding their specific nutrient needs. The unique nutritional needs of older people is a challenge for the future but with life expectancy at its highest throughout many parts of the



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world there is a pressing need for nutritional recommendations to be consistent with the best available evidence and feasible at the practice level to help maximise healthy ageing.

Energy

The challenge for older people is to meet the same nutrient needs as when they were younger, yet consume fewer calories. As such the consumption of foods high in nutrients in relation to their energy content is a prudent choice. Such foods are considered "nutrient-dense." For example, low-fat milk is more nutrient dense than regular milk. Its nutrient content is the same, but it has fewer calories because it has less fat.

Protein

Older adults have a higher requirement for protein compared to younger adults. Older adults usually eat less overall, including less protein (13), but have higher protein needs to offset the resistance to the positive effects of dietary protein on protein synthesis (anabolic resistance) as well as the elevated metabolism of inflammatory conditions such as chronic obstructive pulmonary disease (14). There is mounting evidence that the existing recommended dietary intakes (RDI) for protein is too low for older people (15) and do not take into consideration age-related changes in metabolism and immunity (16). Findings suggest that protein intake greater than the RDI can help older

people to improve immune status, wound healing as well as muscle mass, strength and function (17).

In New Zealand the Adult Nutrition Survey data are aggregated over age 55 years for Maori and over 70 years for non-Maori (University of Otago and Ministry of Health 2011) and there has been little information available about the nutritional status of those aged 80 years plus. As part of *Life and Living in Advanced Age: A Cohort Study in New Zealand*

dietary intake was assessed in 216 Maori and 362 non-Maori octogenarians (18). Energy adjusted protein was low compared to the nutrient reference value for Australia and New Zealand (15-25%) met by 39% and 46% of Maori and non-Maori women and 36% and 45% of Maori and non-Maori men respectively. The median weight-adjusted protein intake for Maori and non-Maori men was 1.05 and 0.98g/kg/day, respectively versus the EAR 0.86g/kg/d; for Maori and non-Maori women 0.87 and 0.91g/kg/day respectively versus the EAR of 0.75g/kg/d). Protein intakes observed appear to meet the EAR for people over age 70 but may be low, especially for women, when compared to newer recommendations (1.0 to 1.2g/kg/day to preserve and regain lean body mass and function) (15).

Older adults tend to eat less protein compared to younger adults and often consume less high biological value animal protein (19) due



The New Zealand Nutrition Foundation runs *Just Cook for Healthy Ageing* programmes to help older adults improve nutrition

to factors such as chewing difficulty, fear of increasing cholesterol, perceived intolerances and cost (20). Although muscle mass decreases in older people, the formation of muscle protein can be stimulated by higher availability of protein. An adequate protein intake is important to maintain a healthy functional status and decrease the risk of prolonged infections that lead to hospitalisation (21). The pattern of protein intake may also be important to stimulate protein synthesis; there is some evidence that spreading protein intake evenly over meals may be beneficial (22).

Fat

The recommendations for dietary fat are based on an acceptable macronutrient distribution range (AMDR), reported as a percent energy from fat. The nutrient reference value for Australia and New Zealand is 20-35% (23). Recommendations concur that saturated fats should be kept as low as possible within the context of a nutritionally adequate diet as well as trans fats, which are not required by the body.

Carbohydrate

While there are no dietary recommendations in the form of EAR and RDI for carbohydrate as there is insufficient evidence to support these, the acceptable intake of carbohydrate is implicit for reducing chronic disease risk. Diets containing between 45-65% of daily energy from carbohydrates, combined with reduced fat and saturated fat intake, improve metabolic risk factors for chronic disease (NHMRC, 2006).

Dietary Fibre

Recommendations for dietary fibre and its components (cellulose, hemicellulose, lignin, pectin, resistant starch) have been established with consideration given to gastrointestinal function and adequate laxation. Based on the available evidence on bowel function, the Adequate Intake (AI) for Australia and New Zealand 25g/d for women and 30g/d for men.

Water

Water is particularly important in older age due to the decline in kidney function, use of medications such as diuretics and subsequent consequences of dehydration including constipation, confusion,

bladder infections, functional decline, falls or stroke. Inadequate fluid intake can also affect saliva production which is essential for the maintenance of good oral health.

However it may be challenging for older adults to achieve adequate fluid requirements as a result of a reduction in the thirst mechanism that occurs with age.

It is important for older people to drink regularly even when they are not thirsty because of their potentially low water reserves and to moderately increase their salt intake when they sweat. Foods such as fruit and vegetables contribute an important proportion of water to total intake and need to be encouraged.

Observed water intakes in older people appear to be lower than in younger adults (24). Even when offered a highly palatable selection of drinks following fluid deprivation, older adults appear to fail to ingest sufficient fluid to replenish their body water deficit (25). Older adults may also be more sensitive to heat stress and subsequent water depletion leading to heat exhaustion (26) and ultimately heat stroke.

In Australia and New Zealand the adequate Intake for older adults (>70 years) is 2.8L/d for women and 3.4 L/d for men (23) and is based on the median total water intake of young adults in order to ensure that total water intake is not limited as a result of a potential declining ability to consume adequate amounts in response to thirst.

Micronutrients

An older adult who is eating well in terms of quality and quantity and is not experiencing or recovering from an acute illness will likely achieve an adequate intake of all micronutrients. While some micronutrients are required in larger amounts in older age, these amounts are easily achievable within a healthy, well balanced diet which meets energy and macronutrient recommendations. In some circumstances there may be risk of inadequacy (e.g. poor appetite or limited access to food, gastrointestinal disease, recovery from illness or surgery, drug-nutrient interactions) and there are key micronutrients that are generally affected