Eating for Old Age

Guidelines & recommendations

Antonella Rossino
Registered Dietitian

A natural consequence of living, ageing happens to us all. It is a multifactorial progression that is contributed by genetics, as well as our physical, personal and social characteristics. Whilst what contributes to healthy ageing is not consistent and can vary from person to person, lifestyle factors, such as nutrition, play a huge part, and food and fluid intake can be optimised to support our changing requirements as we age.

What contributes to ageing?

Over the years, life expectancy has risen, with approximately 8% of the world's population being over 65 years old. It is expected that in approximately 30 years, this figure will double.[1]

Ageing presents as a gradual decrease in physical and mental capacity, as well as an increased risk of disease and death, due to the impact of the accumulation of a variety of molecular and cellular damage over time.[2] Genetics have a substantial role in how we age; however, there are many multidimensional processes, including several physical, social and physiological alterations that occur across a person's lifetime.[3]

Despite the increasing life expectancy, an individual's later years tends to be accompanied by a decrease in quality of life.[4] How well we age is affected by our physical and personal characteristics, such as sex, ethnicity and socioeconomic status. Our social environments, including our homes, neighbourhoods and communities all have a significant effect. Indeed, what affects the ageing process is not an acute response; factors that we were exposed to right from foetal development and into childhood can be implicated in the long-term ageing process.[2]

Whilst the biological changes that occur through the natural process of ageing cannot be controlled, the risk factors associated with lifestyle can be manipulated in order to promote healthy ageing.[4] In particular, eating a balanced diet, taking regular physical activity and not smoking, all contribute to reducing the risk of non-communicable diseases, improving physical and mental capacity and delaying a person's dependency on care,[2] as well as conserving the functional abilities that help maintain wellbeing.[5]

Nutrition & ageing

Nutrition plays a central role in our lives, affecting our physical, mental and social health, as well as our quality of life. As age advances, it is common that food intake declines. This can lead to an increased risk of nutritional deficiencies and malnutrition, which contributes to increased hospital admissions, medication use, chronic disease development and medical complications. It is, therefore, paramount that nutritional interventions are implemented to help support healthy ageing.[3]

There is a causal link between nutrition and the development of many diseases. Studies have also shown that there may be links to nutrition and how well we age. For example, choosing diets rich in vegetables, fruits, nuts, cereals, fish and unsaturated fats, containing antioxidants, potassium and omega-3, decrease cardiovascular diseases and obesity risk, protect the brain from ageing, reduce the risk of telomere shortening and promote an overall healthier life.[4]

An important factor in maintaining a varied and balanced diet as we age, is to support our gut microbiome. Studies have shown that the complex microbiome of healthy people is characterised by the presence of many bacterial species. As we age, the diversity of our gut microbiome decreases and the microbiome of older people is less complex and characterised by the presence of more pathogenic bacteria.[6]

It has been found, in contrast, that the gut microbiome of people who live to an advanced elderly age – a group known as supercentenarians – contains microbes normally found only in younger people.[7]

Barriers to eating in old age

In a clinical setting, it is common for poor appetite to be reported in elderly patients. Research shows that older adults have less appetite and lower food intake than younger adults.[8]

As we age our sense of taste and smell can change and, unsurprisingly, this can have a knock-on effect on our appetite, which is a major cause of undernutrition.[9] As well as a reduction in appetite, there are multiple factors that can be barriers to eating a varied and nourishing diet for some people. Some of the factors are listed below:

Ability to prepare meals: The ability to prepare meals can be impacted by reduced mobility and muscle strength, which may make it difficult to stand for long periods in order to cook meals, as well as struggling with packaging or opening mechanisms of products. There may also be a reduced ability in using appliances (e.g. ovens) safely.

Access to food and drink: There may be difficulty in reaching shops, carrying shopping, no longer being able to drive or limited access to public transport.

Food poverty: Not being able to afford food, particularly in the current cost of living crisis, is evident. 7% of all aged 65 and over, and 16% of those in the lower socio-economic groups, cannot afford to buy a healthy balanced diet.[10]

Poor oral health: Loss of dentition is linked to malnutrition, and those with poor dentition tend to eat fewer fruits and vegetables and have lower intakes of some micronutrients.[11]

Cognitive impairment: Conditions such as dementia can affect a person's ability to access and prepare meals as well as the ability to eat.

Social isolation: It can lead to a loss of interest in food, particularly where previous social interactions may have been a positive factor in encouraging healthier eating. Loss of loved ones and not wanting to cook for one are also factors that may affect food intake.

Dysphagia: This has been found to be strongly linked with malnutrition and may also be an important predictor of malnutrition progression in older people.[12]

Loss of taste and appetite: Common in older adults and may be as a result of increasing age, medical conditions and side effect of medications.[9]

Malnutrition

It is undeniable that poor nutrition in the elderly population can lead to malnutrition. It is estimated that malnutrition costs the UK health and social care system £23 billion each year, and around 3 million people in the UK are at risk of malnutrition; it is a problem which remains prominent and costly.[13, 14] It is estimated that in the UK, malnutrition leads to a 65% increase in GP visits, 82% increase in hospital admissions and 30% increase in hospital stays.[15] It is, therefore, imperative that barriers to support are removed and that optimum oral intake in older adults is supported to help prevent malnutrition and its subsequent negative sequelae.

Pressure injuries

Certain disease states or medical circumstances may mean that there are additional requirements for certain nutrients in comparison to the general population. For example, pressure injuries – injuries to skin and underlying tissue caused by prolonged pressure – are more common in old age.[16] Poor intake of food and fluid can have a particular impact on the development and healing of pressure injuries, with those who are underweight and overweight being at particular risk. Therefore, maintaining a healthy weight and eating a balanced diet can help prevent pressure injuries.[16]

Nutritional guidelines recommend that the healing of pressure injuries is supported by the need for increased energy and protein requirements, with the aim of 30 to 35 kcal/kg body weight/day and 1.2 to 1.5 g protein/kg body weight/day for adults with a pressure injury who are malnourished or at risk of malnutrition. Some people may benefit from fortified foods, or an oral nutritional supplement (ONS) to support their protein and energy intakes if they cannot meet requirements through their diet alone.[17]

Requirements & recommendations

As we age, our requirements for both macro and micronutrients may change. For example, the requirements for protein, calcium, folate and vitamin B12 all increase after the age of 65 years.[18]

Table 1 shows an outline of the recommended daily allowance (RDA) for some of our required vitamins and minerals.[19]

On the whole, our increased requirements can be met through good oral intake. The inclusion of fortified foods, for instance breakfast cereals, may help

"An important factor in maintaining a varied and balanced diet as we age, is to support our gut microbiome. Studies have shown that the complex microbiome of healthy people is characterised by the presence of many bacterial species."

meet our daily vitamin B12 requirements for instance. Fortified meals and snacks, such as using the addition of full-fat dairy and oils, can help to increase calorie and protein intake, if needed, particularly in those who are at risk of malnutrition. Above all, trying to ensure that food is enjoyed, in a pleasurable environment, can help to support good oral intake.[18]

Particular consideration should also be placed on the need for maintaining optimum fluid intake in the elderly population. Ageing produces a decrease in thirst sensation so there is an increased chance of dehydration developing.[9] All adults should be encouraged to drink the 1600 ml recommended for women and the 2000 ml/day recommended for men to help prevent the risk of dehydration.[18]

Vitamin & mineral supplementation

As with any age group, having a healthy balanced diet is ideal for meeting the majority of the required macronutrients and vitamins and minerals. However, in practice, supplementation may provide an invaluable way to achieve recommended dietary allowances that cannot be met through diet alone, particularly for individuals who have a poor appetite or increased requirements.

For women, bone health is particularly affected after the menopause, where levels of bone protective oestrogen are reduced. The decreasing levels, alongside other risk factors, such as low levels of exercise and poor diet, can lead to a higher risk of developing osteoporosis.[20] Osteoporosis is characterise by reduced bone density, leading to fragile bones which are susceptible to breaking.[20] It is particularly important that older women have adequate intakes of calcium and vitamin D to support continued bone health and muscle strength into old age. As the majority of vitamin D is obtained from our exposure to sunlight during the summer months, it can be difficult to meet adequate requirements through diet and sunlight alone, particularly for those in care homes and those that are housebound.[21] The Department of Health and Social Care, therefore, recommends all adults, in particular those over the age of 65 years, take a supplement containing 10 ug of vitamin D, especially during the autumn and winter months.[21]

Conclusion

As we age, our nutritional requirements are juxtaposed with barriers that may affect our ability to eat a varied and nutritionally balanced diet. Meeting our nutritional needs into old age and, indeed, throughout our lives can help support healthy ageing.

Table 1: Adapted from Government recommendations for vitamins and minerals for males and females aged 19+ years[19]

Product	65-74		74+	
Gender	Males	Females	Males	Females
Vitamin A (ug/day)	700	600	700	600
Thiamine (mg/day)	0.9	0.8	0.9	0.7
Riboflavin (mg/day)	1.3	1.1	1.3	1.1
Niacin equivalent (mg/day)	15.5	12.6	15.1	12.1
Vitamin B6 (mg/day)	1.4	1.2	1.4	1.2
Vitamin B12 (ug/day)	1.5	1.5	1.5	1.5
Folate (ug/day)	200	200	200	200
Vitamin C (mg/day)	40	40	40	40
Vitamin D (ug/day)	10	10	10	10
Iron (mg/day)	8.7	8.7	8.7	8.7
Calcium (mg/day)	700	700	700	700
Magnesium (mg/day)	300	270	300	270
Potassium (mg/day)	3500	3500	3500	3500
Zinc (mg/day)	9.5	7.0	9.5	7.0
Copper (mg/day)	1.2	1.2	1.2	1.2
Iodine (ug/day)	140	140	140	140
Selenium (ug/day)	75	60	75	60
Phosphorus (mg/day)	500	500	500	500
Chloride (mg/day)	2500	2500	2500	2500
Sodium (g/day)	2.4	2.4	2.4	2.4

References: **1.** United Nations: Department of Economic and Social Affairs (2019). World Population Ageing 2019. Accessed online: www.un.org/en/development/desa/population/publications/pdf/ageing/WorldPopulationAgeing2019-Report.pdf (Feb 2024). **2.** World Health Organization (2022). Ageing and health. Accessed online: www.who.int/news-room/fact-sheets/detail/ageing-and-health (Feb 2024). **3.** Kaur D, *et al.* (2019). Nutritional Interventions for Elderly and Considerations for the Development of Geriatric Foods. Curr Aging Sci.; 12(1): 15-27. **4.** Leitão C, *et al.* (2022). The Effect of Nutrition on Aging-A Systematic Review Focusing on Aging-Related Biomarkers. Nutrients; 14(3): 554. **5.** World Health Organization (2020). Healthy Ageing and Functional Ability. Accessed online: www.who.int/news-room/questions-and-answers/item/healthy-ageing-and-functional-ability (Feb 2024). **6.** Ghosh TS, Shanahan F, O'Toole PW (2022). The gut microbiome as a modulator of healthy ageing. Nat Rev Gastroenterol Hepatol.; 19(9): 565-584 **7.** Wilmanski T, *et al.* (2021). Gut microbiome pattern reflects healthy ageing and predicts survival in humans. Nat Metab.; 3(2): 274-286. **8.** Giezenaar C, *et al.* (2016). Ageing is associated with decreases in appetite and energy intake-a meta-analysis in healthy adults. Nutrients.; 8(1): 28. **9.** The British Nutrition Foundation (2016). Eat an enjoyable and varied diet. Accessed online: www.nutrition.org.uk/life-stages/older-people/healthy-ageing/eat-an-enjoyable-and-varied-diet/ (Feb 2024). **10.** Age UK (2014). Age UK enquiry submission. APPG on Hunger and Food Poverty Inquiry, June 2014. Accessed online: www.ageuk.org.uk/globalassets/age-ni/documents/reports-and-publications/consultation-responses-and-submissions/equality-and-human-rights/crs_june2014_appg_food_hunger_response_june_2014.pdf (Feb 2024). **11.** Kikutani T, *et al.* (2013). Relationship between nutrition status and dental occlusion in community-dwelling frail elderly people. Geriatr Gerontol Int.; 13(1): 50-54. **12.** Takeuchi K, *et al.* (2014). Nutritional status and dysphagia risk among community–dwelling frail older adults. J Nutr, Health Aging.; 18(4): 352-7. **13.** Managing Malnutrition in the Community (2023). Presentation: Counting the Cost of Malnutrition and its Management. Accessed online: www.malnutritionpathway.co.uk/library/cost.pdf (Mar 2024). **14.** BAPEN (2011). Vera Todorovic, Christine Russell and Marinos Elia (Eds) iThe MUST Explanatory Booklet. Accessed online: www.bapen.org.uk/pdfs/must/must_explan.pdf (Feb 2024). **15.** Correia MI1, Waitzberg DL (2003). The impact of malnutrition on morbidity, mortality, length of hospital stay and costs evaluated through a multivariate model analysis. Clin Nutr.; 22(3): 235-9. **16.** The BDA (2022). Prevention and management of pressure. February 2022 injuries. Accessed online: www.bda.uk.com/resource/pressure-ulcers-pressure-sores-diet.html (Feb 2024). **17.** Prevention and treatment of pressure ulcers/injuries (2019). Quick reference 2019 Published by European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel and Pan Pacific Pressure Injury Alliance. Accessed online: https://static1.squarespace.com/static/6479484083027f25a6246fcb/t/647dc6c178b260694b5c9365/1685964483662/Quick_Reference_Guide-10Mar2019.pdf (Feb 2024). **18.** The BDA (2023). Eating, drinking and ageing well. Accessed online: www.bda.uk.com/resource/eating-drinking-ageing-well.html (Feb 2024). **19.** Public Health England (2016). Government Dietary Recommendations for energy and nutrients for males and females aged 1-18 years and 19+ years. Accessed online: https://assets.publishing.service.gov.uk/media/5a749fece5274a44083b82d8/government_dietary_recommendations.pdf (Feb 2024). **20.** NHS (2022). Osteoporosis. Accessed online: www.nhs.uk/conditions/osteoporosis/ (Feb 2024). **21.** Gov.UK (2021). Vitamin D and clinically extremely vulnerable guidance. Accessed online: www.gov.uk/government/publications/vitamin-d-for-vulnerable-groups/vitamin-d-and-clinically-extremely-vulnerable-cev-guidance (Feb 2024).