Nutrition and dementia in older people

Can diet and exercise help cognition in older people?

According to international data, the prevalence of dementia in NZ in 2011 is calculated to be 1.1% of the total population, i.e. 48,000 people, most over 65 years of age. Because New Zealand has an ageing population, especially in the over 80 year-old group, it is estimated the prevalence of dementia by 2050 will increase three-fold to 2.6%, i.e. 147,000 people (Alzheimer’s NZ 2012). Is this increase inevitable? Tantalising data has arisen in two recent international papers suggesting the incidence of dementia may be falling by as much as 3% per year (Schrijvers 2012, Langa 2008). This is unlikely to stall the increasing prevalence of dementia, but even a small reduction in incidence may have a significant impact on the burden of dementia. If this reduction is shown to be true, the authors suggest possible reasons such as higher levels of education in later cohorts, improvement in vascular risk from medications, changing lifestyle, and perhaps changing nutritional habits and physical activity.

Is there evidence for cognitive benefit from diet/supplements and physical activity?

1. Micronutrients. Researchers have paid particular attention to the antioxidant vitamins C and E. Vitamins B₆, B₁₂ and folate have also come under the spotlight for their recognised impact on plasma homocysteine which is a vascular risk factor. Numerous prospective observational studies have examined these nutrients in relation to cognition and incident dementia. Many have been positive, but results have not been consistent. The Rotterdam Study has recently reiterated the value of vitamin E in food (Devore 2010), but a Cochrane review has found no convincing evidence for vitamin E supplements in Alzheimer’s dementia (AD) and mild cognitive impairment (MCI) (Nicolas, 2012). [Ten years ago, at a psychiatry conference in Vancouver, a New Zealand physician was astonished at the sea of hands raised when the chairperson asked who was taking vitamin E!] Another Cochrane review points to a possible benefit from folate for cognitive function of healthy older people with high homocysteine, but comments more studies are required. (Malouf 2008)

2. Macronutrients. A famous prospective observational study showed an association between fish consumption and incident dementia (Barberger-Gateau 2002), but there are no randomised controlled trials (RCTs) to confirm this. Some excitement followed the report in 2006 of a large prospective US study showing an association between a Mediterranean-type diet and reduced incidence of Alzheimer’s disease (Scarmeas 2007). A later similar study from
France was much less positive (Feart 2009) however, and an editorial at the time noted ‘it is reasonable to nibble on these findings ... but not swallow them whole.’

The 2002 Rotterdam prospective observational study asked ‘does fat matter?’ and showed no increase in risk of dementia with ‘high intake of total saturated and trans fat, cholesterol, and low intake of monounsaturated and polyunsaturated fatty acids,’ with a mean follow-up of 6 years (Englehart 2002). A recent Cochrane review showed ‘no benefit for cognitive function with omega-3 polyunsaturated fatty acid supplements in cognitively healthy older people’ (Sydenham 2012). A further review relating Omega-3 to cognitive impairment is underway. Similarly, Cochrane reviews have not found evidence for an effect on cognitive function from carbohydrate (glucose drink), or the intensive management of diabetes although these areas suffer from a lack of published research. Interestingly for nutritionists and dietitians, a recent prospective cohort study puts inadequate intake of fruit and vegetables in the top four risk factors for dementia (Ritchie 2010). However this needs more research.

3. Alcohol. There are numerous observational studies showing lower risk of vascular disease and dementia with moderate alcohol intake, i.e. less than 3 glasses wine/day. On the other hand there are no RCTs to confirm this, and alcohol is a well-recognised neurotoxin with potential for addiction, and increasing risk of falls and dementia. These adverse effects probably outweigh any advantages. The decision to drink alcohol should be for enjoyment rather than a health choice.

4. Physical activity. It is fairly well established mortality rates in older people are reduced by physical activity, i.e. 75 minutes or more of moderate exercise weekly. But can physical activity help cognitive function? There is some evidence to suggest it can. Firstly, a meta-analysis of 16 prospective studies supported an association between physical activity and reduced incidence of dementia in follow-up for at least three years (Hamer 2008). Secondly, an RCT in Perth studied 170 people (mean age 68 years) with subjective memory impairment. A six month programme of physical activity provided a ‘modest but significant improvement in cognition over a period of 18 months’ (Lautenschlager 2008). Since then there have been at least three published RCTs of exercise in older people with mild cognitive impairment, all giving cautious optimism to a positive effect on cognition, especially executive function requiring high levels of intellectual skill, e.g. problem solving. Attention is now turning to strategies to enthuse sedentary elders to exercise beyond the duration of research trials (Lautenschlager 2013). Although some prospective cohort studies suggest exercise programmes delay the onset of dementia, this has yet to be confirmed in RCTs.

Are there useful conclusions?

It is not possible at this time to make firm recommendations about diet and exercise in relation to improving cognitive function or preventing dementia. The mixed findings above do not exclude positive associations being found in the future, and the work on physical activity is hopeful. In the meantime the combination of healthy diet and regular moderate exercise is safe, and may contribute to cognitive health through their effects on vascular risk factors—these factors are very important in both vascular dementia and Alzheimer’s disease.

It is likely intervention is more effective in early cognitive impairment than in established dementia. However researchers hope improving cognition in the younger old may delay the onset of dementia and hence its prevalence and morbidity in the older old.

A healthy diet and exercise need to be seen as just two of the multiple strategies that may improve cognitive function and delay onset of dementia.

www.nutritionfoundation.org.nz/about-nznf/NZNF-Committee-for-Healthy-Ageing
Tips for following the nutrition/dementia literature.

- Be clear about what is being researched: Is it a study of improved cognition, prevention of dementia or amelioration of dementia? The literature suggests the hardest area to change is that of established dementia. Conversely the easiest is likely to be the prodromal phase of dementia, i.e. very early.
- Be clear about whether the trials are prospective observational studies or randomised controlled trials. The former have problems with causation, i.e. did diet prevent the dementia or was the dementia pre-existing and therefore influencing the diet? Look for lengthy studies in which patients making an early transition to dementia can be excluded. RCTs are the gold standard but often suffer from small sample size and insufficient duration. This can be helped by meta-analysis but to date there are disappointingly few RCTs in this area.
- An unanswered question is whether diet and exercise have a direct effect on the brain or through vascular protection, if indeed they have an effect at all.
- Nutrients in food may have a different impact to administered supplements.

Reading


References


www.nutritionfoundation.org.nz/about-nznf/NZNF-Committee-for-Healthy-Ageing
Undernutrition in people with dementia

Undernutrition is common in older people. Statistics of prevalence are variable but about 5% of older people at home, 25% in acute and rehabilitation hospitals and over 50% in nursing homes have been found to be undernourished. There is limited information on people with dementia, but a Swedish study indicated a 10% greater prevalence of undernutrition than in people with normal cognition. Dementia contributes to undernutrition in many ways, including loss of initiative for shopping and food preparation, altered behaviour with distractibility, loss of appetite, difficulties with feeding and swallowing, and social dislocation (e.g. in a shift to residential homes).

What can we do?

1. **Cognitive challenges.** People with dementia may forget to eat, become distracted, be unable to tell caregivers they are hungry or thirsty, or have difficulty choosing what to eat if there are too many options available. They may forget they have eaten and want to start over again. Meal time cues can be helpful such as the smell of food cooking or routines to signal a meal is soon to start, e.g. hand washing, placing chairs ready at the table and setting the table ready to eat. It may be helpful to serve only some components of the meal at one time so the choice does not appear overwhelming. Brightly coloured foods and naming them may be helpful.

2. **Appetite, taste and smell.** These may all be reduced. People with dementia often have a preference for sweet over savoury foods. To improve intake of savoury foods, add a little honey, fruit or dried fruit to meats, salads and sandwiches.

3. **Dyspraxia.** People with dementia may find the physical act of eating difficult. In addition to holding cutlery it may also be a struggle to peel or unwrap items. Finger foods that are easy to pick up and ready to bite into can make feeding easier while still maintaining a sense of independence. Good examples are protein sandwiches with egg, minced cooked chicken, tinned fish and grated cheese. Also small ice creams in cones or wafers, crumbed bite-sized foods and drinks with straws. A discussion about the food offered, and a gentle hand to help guide the eating utensil or a reminder to swallow a mouthful are suggested.

4. **Preventing weight loss.** One solution is to offer extra drinks and nutritious snacks throughout the day (along with three smaller main meals). Fortify foods with extra calories as follows:

   - Smoothies during summer months and cuppa soups during winter months in place of tea or coffee.
   - Full cream milk with meals.
   - Complan, Sustagen and Ensure powder drinks made up and offered during the day, hot or cold.
• Regular milk and fruit-based desserts, e.g. creamed rice, custard and fruit, dairy dessert, fruit yogurts.
• Frequent cooked breakfasts as the beginning of the day is often when older people eat more.
• Adding skimmed milk powder (easier to mix than full fat) to porridge, milk desserts or milk based drinks.

Weight loss in older people with dementia is usually slow and progressive, but can be sudden and severe, often because of an illness. It is therefore important to recognise older people do not make up lost ground unless strongly encouraged to eat more after an illness.

5. The kitchen as social hub. A concept known as the ‘Green House concept’ prepares meals in an open kitchen so residents and visitors can see, smell and help with cooking, aiming to de-institutionalise care. Music, flowers, bright tablecloths, a variety of table sizes, chair arms that go under tables, staff eating with residents, avoidance of cleaners at meal times, and snacks freely available between meals, all help the ambience which has been shown in trials to be associated with increased food intake.

6. Tips to enhance the dining experience

• Avoid unnecessary noise
• Establish food likes and dislikes of residents, including personal recipes
• Good lighting
• Consistency in carers helping individuals
• Remembering eating is a social experience

7. Nutritional supplements. Trial evidence is lacking for the value of oral supplements in community and long term care settings. However if supplements are used, there is evidence giving these with meals does not reduce food intake. In addition supplements are more likely to be taken if given at meal times rather than between meals (see Australian and New Zealand Society of Geriatric Medicine guidelines).

8. Tube feeding (percutaneous endoscopic gastrostomy (PEG) or nasogastric feeding). The Australian and NZ Society of Geriatric Medicine guidelines state ‘PEG feeding in advanced dementia has not been shown to prolong survival, improve nutrition, maintain skin integrity, prevent (lung) aspiration or improve quality of life’. This does not necessarily preclude short-term use in earlier dementia where there may be benefit in ‘quality of life and physical function’. End-of-life wishes should be discussed with the person and their family.

9. The essence. The joys of food—gardening, cooking, aromas, dining with family, nourishment—stay with us to the end of our lives, and are even more acutely felt if we have dementia.

Reading


www.nutritionfoundation.org.nz/about-nznf/NZNF-Committee-for-Healthy-Ageing