

An overview of appetite decline in older people

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Abstract

Poor appetite is a common problem in older people living at home and in care homes, as well as hospital inpatients. It can contribute to weight loss and nutritional deficiencies, and associated poor healthcare outcomes, including increased mortality. Understanding the causes of reduced appetite and knowing how to measure it will enable nurses and other clinical staff working in a range of community and hospital settings to identify patients with impaired appetite. A range of strategies can be used to promote better appetite and increase food intake.

Aim and intended learning outcomes

The aim of this article is to review knowledge and understanding of appetite in older people. After reading this article you should be able to:

- Discuss the normal control of appetite.
- Summarise the potential implications of poor appetite in older people.
- Identify what physiological, social and psychological factors can cause appetite impairment.
- Describe how to measure appetite.
- Discuss what options are available to manage appetite impairment.

Before reading on, do time out 1.

1 Consequences

Consider what the consequences of poor appetite might be for an older person.

Introduction

Appetite is the desire to fulfil a bodily need and can be divided into three components: hunger, satiation and satiety. Hunger is the sensation that promotes food consumption, satiation is the sensation of fullness during eating that leads to meal termination and satiety is the fullness that exists between eating (Mattes *et al* 2005).

Control of appetite

Regulation of the appetite is complex and not completely understood. It has control systems linking the brain, digestive system, endocrine system and sensory nerves. These systems act to govern appetite in the short and long term. In the short term, appetite is thought to be mostly controlled by sensors in the gut that respond to the physical presence or absence of food, and to the different components of the food, such as fat or protein.

In response to signals from these sensors the gut secretes a variety of hormones, for example, ghrelin is secreted by the stomach in response to fasting and increases appetite, peptide-YY is secreted by the ileum and colon in response to food intake and suppresses appetite, and cholecystokinin is secreted by the small intestine in response to fat and protein and suppresses appetite. Insulin is secreted by the pancreas in response to high blood glucose and also suppresses appetite (Parker and Chapman 2004).

Different hormones are released before, during and after eating, controlling feeding behaviour and how much is eaten. In the long term, appetite may be controlled by the composition of the body. Signals from the fat mass inhibit appetite through the hormone leptin, which is secreted by fat cells. There is some early evidence that fat-free mass (all the body components that are not fat, including muscle, bones and organs) may increase the desire to eat but the mechanism is unknown (Blundell *et al* 2012). These short and long-term

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systems can be thought of as homeostatic; maintaining the nutritional status of the body by helping it to meet its needs for energy and nutrients. These homeostatic systems can all be overridden by 'pleasure' signals, which are called hedonic systems. For example, the smell of a favourite food or being offered a tasty treat can stimulate appetite and cause a person to eat when they do not 'need' to.

Mood is an important part of the hedonic system, but mood will affect appetite in different ways: some people eat more when they are sad or anxious, whereas these moods will suppress appetite for other people.

Social and environmental cues such as walking past a shop selling food or it being 'mealtime' can also stimulate appetite. Conversely, people may ignore their appetite and inhibit their own eating for various reasons, such as wanting to lose weight (Berthoud 2011).

Appetite decline

Many older people experience a decrease in appetite. This decline was first described as the 'anorexia of ageing' in 1988 by John Morley (Morley and Silver 1988). Between 15% and 30% of older people are estimated to have anorexia of ageing, with higher rates in women, nursing home residents, hospital inpatients and with increasing age (Malafarina *et al* 2013). Reduced appetite can lead to reduced food and nutrient intake (Payette *et al* 1995), increasing risk of weight loss and nutritional deficiencies (Wilson *et al* 2005, Brownie 2006).

Nutritional deficiencies and weight loss have serious consequences for older people and these are summarised in Box 1.

Older people may also find it difficult to regain lost weight (Roberts *et al* 1994). Appetite may also decline sharply in response to an acute illness. Detecting loss of appetite before weight loss and nutritional deficiencies occur will enable healthcare staff to intervene at an early stage, preventing a decline in health.

Now do time out 2.

2 Awareness

Time out Think about the patients you are caring for now. How many of them do you think have impaired appetite? How do you know this?

Causes

Many changes occur as a person ages that can be responsible for loss of appetite. These include changes to physiology, psychological functioning, social

Box 1 Consequences of nutritional deficiencies and weight loss in older people

Increased risk of:

- Frailty
- Falls
- Pressure ulcers
- Longer length of hospital stay
- Osteomalacia
- Osteoporosis
- Hip fracture
- Muscle weakness
- Mortality

Impaired:

- Wound healing
- Immune function
- Quality of life

(Wilson *et al* 2005, Holick 2007, Agarwal *et al* 2013)

circumstances, acute illness, chronic diseases and use of medication (Malafarina *et al* 2013).

Physiological The physiological changes that occur with ageing that can impair appetite include changes to the digestive system, hormonal changes, disease, pain, changes to smell, taste and vision and decreased need for energy.

Changes to the digestive system can contribute to declining appetite. An estimated one third of people over 65 years of age have reduced saliva production, causing difficulties in eating that may impair appetite (Ship *et al* 2002). Decreased saliva production is not a part of normal ageing and is most often caused by the side effects of medication (Ship *et al* 2002).

Older people are more likely to have poor dentition, and wearing dentures and chewing difficulties are associated with loss of appetite (Lee *et al* 2006). Poor oral health is more common, reducing sense of taste and can contribute to poor appetite (Solemdal *et al* 2012). Gastric emptying is slower so food remains in the stomach longer, prolonging satiation and reducing appetite (Nieuwenhuizen *et al* 2010).

Constipation can cause reduced appetite (Landi *et al* 2013), with between 30% and 40% of community-dwelling older people and more than 50% of nursing home residents complaining of chronic constipation (Gallagher and O'Mahony 2009).

Changes in levels of and responsiveness to some of the hormones involved in appetite control have been found in older people. There is some evidence that fasting levels of ghrelin are lower (Di Francesco *et al* 2008), fasting and post-prandial levels of cholecystokinin are higher (de Boer *et al* 2013) and baseline levels of leptin are higher (de Boer *et al* 2013). Additionally,

cholecystokinin suppresses appetite more strongly in older people (Parker and Chapman 2004).

All these hormonal changes will contribute to appetite impairment with ageing.

Any acute illness can affect a person's appetite, especially infection (Langhans 2007). Many chronic diseases can also worsen appetite and these include cardiac failure, chronic obstructive pulmonary disease, renal failure, chronic liver disease, Parkinson's disease and cancer. All of these conditions are more prevalent in older people. Anorexia in acute and chronic disease is mainly caused by pro-inflammatory cytokines (Langhans 2007) and also by nausea, sensory changes (Lee *et al* 2006) and medication side effects.

Chronic disease can also impair appetite through impaired dexterity and pain. Impaired dexterity interferes with the eating process: food takes longer to eat and may become cold, reducing the appetite usually stimulated during a meal.

Chronic pain is associated with poor appetite and since as many as half of all community-dwelling older people have chronic pain (Bosley *et al* 2004), this may contribute significantly to loss of appetite. Pain is most commonly experienced in the back and knee (Patel *et al* 2013).

Smell, taste and vision are all involved with the enjoyment of food, and impairments of these senses with ageing can cause reduced appetite. The smell of food stimulates appetite and taste promotes the enjoyment of food and further stimulates appetite during eating. Many older people have an impaired sense of smell and taste that will cause them to have worse appetite (Nieuwenhuizen *et al* 2010).

Good eyesight helps to stimulate appetite and older adults with poor vision are more likely to report poor appetite (Lee *et al* 2006). Visual impairment is increasingly common with increasing age, with one in five people aged over 75 years and one in two aged over 90 years reported as having sight loss (Royal National Institute of Blind People 2015).

Individuals' energy needs are determined by their body composition, especially fat-free mass, and their levels of physical activity (Campbell *et al* 1994). Most older people lose fat-free mass as they age, with skeletal muscle being lost at a rate of around 1% per year in those over 70 (Goodpaster *et al* 2006) and many are less physically active (Taylor *et al* 2004). Therefore older people have lower requirements for energy, which may contribute to a reduction in appetite. This will vary between individuals, reflecting differences in their body composition and levels of physical activity.

Now do time out 3.

Psychosocial Appetite is influenced by the environment and mood. Therefore, many of the psychological

and social changes that can occur with ageing will influence appetite.

Depression is known to impair appetite (Engel *et al* 2011) and is common, with reported rates of 9% in community-dwelling older people, 27% in those who live in care homes in the UK (McDougall *et al* 2007) and 24% in older inpatients (Goldberg *et al* 2012). People with dementia can have reduced appetite (Ikeda *et al* 2002). Delirium is associated with poor nutritional intake (Mudge *et al* 2011), but it is not clear if this is connected with reduced appetite. Living and eating alone can cause reduced appetite, possibly because those who have difficulties with shopping and cooking lack support to overcome these problems and become less motivated to cook and eat.

Additionally, eating alone is less pleasurable and people living alone have fewer social cues to eat. As more than one third of over 65s and half of over 75s live alone (Age UK 2015), this may affect their appetite. Determination to eat to maintain weight and health is an important factor in the eating behaviour of older people, helping to overcome any reduction in appetite (Wikby and Fägerskiöld 2004).

Finally, large portion sizes may be off-putting, particularly where standard portion sizes are used, such as in hospitals. Robison *et al* (2015) found this was a common issue in their study involving hospitalised older women. Retirement can also alter meal patterns and food choices because of change in routine, location, social contact and finances (Alvarenga *et al* 2009).

Now do time out 4.

Pharmacological Older adults are likely to be taking at least one medication (Qato *et al* 2008). More than 200 commonly used drugs are known to alter taste

3 Physiological causes

Time out Pause to review what you have learned about the physiological causes of impaired appetite. Make a list of the main causes and check your answers. Have you or your relatives noticed changes to your appetite as a result of changes in health?

4 Psychosocial risks

Time out Reflect on the patients you care for. Can you identify any with risk factors for developing poor appetite?

Box 2 Drugs that can impair appetite

Class	Agents
Antibiotics	Ampicillin, macrolides, quinolones, trimethoprim, tetracycline, metronidazole
Antifungals	Fluconazole, posaconazole, amphotericin, caspofungin, micafungin, griseofulvin, terbinafine, itraconazole
Antivirals	Ganciclovir, foscarnet sodium, valganciclovir, telbivudine, boceprevir, ribavarin
Antiparkinsons	Quinagolide
Muscle relaxants	Baclofen, dantrolene sodium
Migraine medications	Eletriptan, frovatriptan, rizatriptan
Antihypertensives	Hydralazine hydrochloride, iloprost
Diuretics	Amiloride hydrochloride
Statins	Atorvastatin
Heart failure medication	Angiotensin-converting enzyme inhibitors
Antiarrhythmics	Adenosine, dronedarone, amiodarone, propafenone hydrochloride
Thyroid medications	Carbimazole, propylthiouracil
Tricyclic antidepressants	Amitriptyline, clomipramine, dosulepin, doxepin, imipramine, lofepramine, nortriptyline, trimipramine
Antipsychotics	Trifluoperazine, aripiprazole, risperidone
Mood stabilisers	Lithium carbonate, lithium citrate
Hypnotics	Zaleplon, zopiclone
Bronchodilators	Formoterol fumarate, tiotropium
Anti-inflammatories	Celecoxib, etoricoxib

(Douglass and Heckman 2010)

and smell or cause nausea, and may therefore affect appetite (Schiffman 1997). Some of the drugs that can impair appetite are shown in Box 2.

Now do time out 5.

5 Appetite measurement

Time out Have you ever asked an older person about their appetite? Discuss with a colleague the challenges of measuring appetite in an older person.

Measurement of appetite

Measuring appetite is challenging because it is subjective and experienced differently by individuals. Previously appetite was inferred from the results of

other measurements such as food intake, nutritional assessment, weight or body mass index (Mattes *et al* 2005). Clinical laboratory studies have used visual analogue scales or a single question such as 'how hungry are you right now?' but these are not validated for use in other settings to measure usual appetite.

The Simplified Nutritional Appetite Questionnaire (Wilson *et al* 2005) was developed to predict greater than 5% weight loss over six months in community-dwelling older people and asks four simple questions (Box 3). Those identified as having poor appetite using this screening tool will need further investigation to identify the cause.

Now do time out 6.

Management options

The first line of treatment should always be to identify and treat any underlying cause. Patients with a dry

6 Management

Time out

Before reading the next section think about the patients you care for who have poor appetite. Consider the reasons that their appetite might be poor and how you might help them improve their appetite. What measures to promote appetite do you already use and what could supplement these in the future?

mouth can be helped by offering them regular sips of water, avoiding hard, dry foods, and using saliva replacement products (Gupta *et al* 2006). Check the patient has dentures if needed and that they fit comfortably. Nurses can help patients to maintain oral hygiene and refer to a dental hygienist if necessary. Treat constipation if present (Gallagher and O'Mahony 2009). Acute infections should be treated as appropriate and chronic illnesses managed, with particular attention paid to symptoms such as nausea and pain.

If a patient has impaired smell or taste then appetite may be improved by enhancing the flavour of food. This can be done on an individual basis, as likings for certain flavours vary. Adding extra salt and sugar is not recommended, but pepper, herbs and spices can be safely used, according to personal preference (Schiffman

1997). Patients can also be encouraged to eat a wide variety of foods at each meal to help sustain appetite (Nieuwenhuizen *et al* 2010).

If the patient is visually impaired then make sure he or she has the correct spectacles and is referred for further investigation if necessary. Using crockery of a colour that contrasts with the colour of the food and good lighting will also help visually impaired patients, and plate sides and non-slip mats will promote independence, which should all improve appetite. Plate sides and non-slip mats will also benefit patients with impaired dexterity (Connolly and Wilson 1990).

Depression and dementia should be identified and managed. The diagnosis and management of delirium will be especially important in hospital patients. There is some preliminary evidence that coloured crockery can increase the dietary intake of older patients with dementia in hospital (Rossiter *et al* 2014). Encouragement, serving finger foods and physical assistance may also help. Older people who live alone can be encouraged to use lunch clubs and to eat meals with friends or family if possible.

There are many recognised health benefits to increasing physical activity levels at all ages, including improved wellbeing, which may help to improve appetite (Netz *et al* 2005). Behaviour change techniques to improve motivation to eat, such as setting goals, providing feedback and monitoring and planning social

Box 3 Simplified Nutritional Appetite Questionnaire (SNAQ)

1. My appetite is:

- a. Very poor
- b. Poor
- c. Average
- d. Good
- e. Very good

2. When I eat:

- a. I feel full after only a few mouthfuls
- b. I feel full after eating a third of a meal
- c. I feel full after eating half a meal
- d. I feel full after eating most of a meal
- e. I hardly ever feel full

3. Food tastes:

- a. Very bad
- b. Bad
- c. Average
- d. Good
- e. Very good

4. Normally I eat:

- a. Less than one meal a day
- b. One meal a day
- c. Two meals a day
- d. Three meals a day
- e. Four or more meals a day

Administration instructions: Ask the person to complete the questionnaire by circling the correct answers and then tally the results based on the following numerical scale: a=1, b=2, c=3, d=4, e=5. The sum of the scores for the individual items constitutes the SNAQ score.

SNAQ score <14 indicates significant risk of at least 5% weight loss within six months in community-dwelling people aged >60 years.

(Wilson *et al* 2005)

support, could also be used (National Institute for Health and Care Excellence 2014). Serving smaller portions may tempt appetite but risks causing reduced intake. This can be prevented by ensuring the smaller portion is enriched with, for example, cream, butter or cheese (Nieuwenhuizen *et al* 2010). As many medications can reduce appetite (Box 2), reviewing medication is useful because it may be possible to substitute one medication for another or stop it altogether.

Having addressed possible causes of poor appetite we can now consider ways in which appetite can be improved whatever the cause. The environment in which food is served plays an important role in appetite and therefore improving it should help to improve appetite. No studies have measured the effect on appetite of improving the mealtime environment, but a systematic review of mealtime interventions in care homes found that improving the dining environment tended to improve residents' weight/weight status and food/calorie intake. Improvements included using tablecloths, attractive crockery, protected mealtimes, improved choice of and access to food and mealtime assistance (Nieuwenhuizen *et al* 2010).

Some, or all, of these strategies could be used in UK care homes and hospitals. Community-dwelling older people should be encouraged to take time to create a

pleasant eating environment. There is evidence that food form has an effect on appetite: 'beverage' meals leave older people less satiated than 'solid' meals (Leidy *et al* 2010), and using enriched soups or drinks may be useful in increasing the energy intake of someone with reduced appetite. It is important to ask patients, and their families, what foods they like to eat and what their usual meal patterns are.

Trying to serve the most liked foods in a similar pattern to the patient's usual one could help to stimulate appetite (Wikby and Fågerskiöld 2004). There is interest in using drugs or alcohol to stimulate appetite. No drugs are licensed in the UK to improve appetite in older people and there is no evidence to support their use, nor that of alcohol (Berenstein and Ortiz 2005, Gee 2006).

In some instances it will not be possible to improve appetite and food intake, for example, when a person is acutely ill (Nieuwenhuizen *et al* 2010). In this case oral nutritional supplements will need to be used while the patient is being treated and until appetite returns.

Now do time out 7.

Conclusion

There are several reasons why an older person may have an impaired appetite, which can be related to physical and psychological changes that accompany

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7 Care plan

Time out

Write a care plan that can be used to identify and treat patients with poor appetite in your clinical setting. Consider which other members of staff could help with the plan and also the role of family members in caring for the individual.

ageing. Poor appetite is important because it increases risk of nutritional deficiencies and weight loss, with the latter being particularly difficult to reverse. Nutritional deficiencies and weight loss are associated with worse health outcomes for patients and also an increased risk of mortality.

Nurses are well placed to identify those patients with poor appetite, identify and treat any underlying cause and use various strategies to help improve appetite and adequacy of the diet. These include enhancing the flavour of food with herbs, spices and sauces, improving mealtime ambience, serving smaller portions of enriched foods, finding ways to help people have company at mealtimes, serving 'beverage' meals and serving foods people are known to like at the times

8 Practice area

Time out

Consider the environment in which you care for patients. Are there any improvements that could be made to benefit the appetite of all patients? How could you work with colleagues to implement those changes? What barriers to change do you envisage?

they usually eat. Encouraging an increase in levels of physical activity when appropriate might also help. Finally, oral nutritional supplements may need to be used to support patients who are acutely ill and have very poor appetite.

Now do time out 8 and 9.

9 Reflective account

Time out

Now that you have completed the article you might like to write a reflective account. Guidelines to help you are on page 36.

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