RESEARCH PAPER

Beliefs about inevitable decline among home-living older adults at risk of malnutrition: a qualitative study

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Abstract

Background: Approximately 14% of free-living adults aged ≥65 years are at risk of malnutrition. Malnutrition screen and treat interventions in primary care are few, show mixed results, and the advice given is not always accepted and followed. We need to better understand the experiences and contexts of older adults when aiming to develop interventions that are engaging, optimally persuasive and relevant.

Methods: Using the Person-based Approach, we carried out 23 semi-structured interviews with purposively selected adults ≥65 years with chronic health or social conditions associated with malnutrition risk. Thematic analysis informed the development of key principles to guide planned intervention development.

Results: We found that individuals' beliefs about an inevitable decline in appetite and eating in older age compound the many and varied physical and physiological barriers that they experience. Also, we found that expectations of decline in appetite and physical ability may encourage resignation, reduce self-efficacy to overcome barriers, and reduce motivation to address weight loss and/or recognise it as an issue that needs to be addressed. Fear of loss of independence may also reduce the likelihood of asking general practitioners for advice.

Conclusions: The key findings identified include a sense of resignation, multiple different barriers to eating and a need for independence, each underpinned by the expectation of a decline in older adulthood. Interventions need to address misperceptions about the inevitability of decline, highlight how and why diet recommendations are somewhat different from recommendations for the general population, and suggest easy ways to increase food intake that address common barriers.

Introduction

Malnutrition in older adulthood is a global issue, although contextual differences between countries will impact on how malnutrition can best be addressed in each country. In the UK, 1.3 million (11%) of adults aged ≥65 years are considered to be malnourished, rising to

18% for those receiving home or day care [1–3]. Global Leadership Initiative on Malnutrition (GLIM) diagnostic criteria for malnutrition include: non-volitional weight loss, low body mass or muscle strength; plus reduced food intake or assimilation, disease burden or inflammation [4]. Malnutrition risk, measured by, for example, the Malnutrition Universal Screening Tool (MUST) [5] or

Mini-Nutritional Assessment (MNA) [6], is associated with frailty, sarcopenia, falls [7–9], general practitioner (GP) consultations, hospitalisation [10] and reduced quality of life [11]. Malnutrition among older adults in the UK was associated with excess costs of £10 billion in 2011–2012, mostly for institutional care or hospitalisation, and so early identification of risk, and treatment for free-living adults might produce significant savings [3]. Screening and treating malnutrition risk in primary care may also improve health and quality of life for patients [12,13], although it is unclear how best to do this, or how to engage older adults who may not consider themselves to be 'at risk'.

Additionally, consensus is lacking about which malnutrition risk factors can be usefully targeted. More than 120 potential causes of malnutrition have been identified, which individually may be unrelated to malnutrition risk [14], but which interact to increase risk, although the mechanisms are little understood [15]. Nevertheless, deteriorating health, widowhood and retirement can influence changes in food choices and ways of acquiring and preparing food [16–19]. Changes in such habits can lead to a deterioration in diet quality and quantity accompanied by reduced personal control, exclusion at social events, and changed roles and responsibilities [16–19]. A range of physical and psychosocial factors can undermine motivation to improve eating habits [20] by promoting unhelpful beliefs and fears. A mixed-methods review identified that patients had reservations about screening and discussing diet [21], and that difficulty chewing, swallowing, shopping or preparing food are barriers to nutritional self-care [21]. Psychosocial barriers included not considering nutrition important, not recognising personal risk, avoiding 'unhealthy' energy-dense food and loneliness [21], being told to gain weight and not believing that recommendations will work [22].

In previous intervention studies, barriers were addressed through eating pattern advice, such as recommending small portions, energy-rich food, daily snacks and care pathways (e.g. dental referral for chewing problems) [21], although participants did not always follow the advice given. Psychosocial barriers or beliefs about personal risk were rarely addressed [21]; for example, patients can be surprised, offended or unconcerned when told they are 'at risk' [23]. Previous studies were constrained by small sample size, variable quality and conflicting findings. Few took place in the UK, reducing confidence about applicability to UK settings.

Qualitative methods inform intervention design through the in-depth exploration of individuals' experiences, habits, needs, values and beliefs [24]. Previous qualitative studies highlight the engagement of older adults in nutritional self-care. For example, men with health conditions or recent bereavement were motivated to develop cooking skills or ate simple meals [25,26]. However, those living alone remained 'at risk' despite self-care knowledge, willingness and ability [27], perhaps through apathy or unmet support needs [28]. Luncheon club participants ate more with friends than with strangers or at home, highlighting the importance of social eating [29]. These studies capture possible explanations for a lack of adoption of eating advice to address malnutrition risk, such as apathy toward cooking and eating alone, although they do not explain how this apathy is developed or maintained through specific beliefs around eating in older adulthood. To design sufficiently engaging and optimally effective behavioural interventions aiming to address malnutrition risk, we need to better understand the role of such psychosocial factors with respect to the eating behaviour of older adults, how they vary between individuals and how best to address psychosocial barriers. More qualitative work is therefore needed to explore the beliefs and experiences of older adults with respect to eating and low appetite, aiming to help understand how support for overcoming barriers can be provided in a way that is relevant for older adults and that also addresses their diverse specific needs and circumstances.

In summary, free-living older adults need support to address malnutrition risk. Barriers to engagement include: reservations about screening and discussing diet, physical barriers to nutritional self-care, and psychosocial barriers including considering nutrition unimportant, not recognising risk, avoiding energy-dense food, loneliness, aversion to being told to gain weight and not believing recommendations will work. Psychosocial barriers are not commonly addressed in previous intervention studies and there is limited evidence explaining how problematic beliefs about malnutrition risk and eating develop and are maintained. Clarifying these issues will inform engaging and persuasive interventions to supplement evidence-based screening and care pathways.

In the present study, we used the Person-based Approach (PBA) to clarify issues around eating and appetite in a varied sample of older adults with a range of health or social conditions associated with malnutrition risk. The PBA systematically applies qualitative research, integrating user perspectives when developing behaviour change interventions in healthcare [24,30], ensuring they are appropriate, engaging, likely to be useful and used. The study findings will inform the development of an intervention to identify and treat malnutrition or malnutrition risk; specifically, a self-management package that is delivered in primary care and supported by healthcare professionals. We propose that the intervention is guided by four principles, from current evidence: (i) raise awareness of older adults' nutrition needs; (ii) motivate

engagement in diet and lifestyle change; (iii) promote self-efficacy for lifestyle change; and (iv) support and promote autonomy, empowering healthy choices. We will refine the guiding principles, based on the findings of our study.

Research aim

We aimed to explore how older adults, with health or social conditions associated with risk of malnutrition, experience psychosocial factors relevant to appetite and eating behaviour. The purpose of the study was to inform an intervention comprising a screen and treat policy, incorporating a self-management package, delivered in primary care.

Materials and methods

This qualitative study is part of a larger project using the Person-based Approach, which involves using qualitative interviews to capture participants' experiences and beliefs [24], as well as variation in individuals' personal contexts [31]. This approach is ideal for exploratory work to inform the development of healthcare interventions. The team that collected and analysed the data are experienced in applying qualitative methods to inform intervention development. We carried out face-to-face semi-structured interviews in participants' homes. Interviews took 20–90 min, with most taking 1 h or more. We obtained approval from the National Health Service (Ref: 207060) ethics committee before data collection. Experienced qualitative researchers (DG, JSB, LP and PH) carried out the interviews after receiving training to ensure ethical and safe good practice. The study is reported following COREQ criteria [32].

Participants

Participants were free-living adults aged ≥65 years, with one or more health or social conditions associated with malnutrition risk. Such individuals might in practice be offered malnutrition screening tests in healthcare settings:

- Chronic health conditions [e.g. chronic obstructive pulmonary disease, cerebrovascular disease; cardiac failure; chronic kidney disease (stage IIIb/IV/V); liver disorders; Parkinson's disease; current depression], OR
- Hospital stay in the previous 6 months, OR
- Living alone

Participants were identified via general practice database searches in Wessex, England, or by snowballing after sharing study details through word-of-mouth. Those interested in participating completed a reply slip after receiving a participant information sheet and consent form. Researchers telephoned to confirm that candidates were happy to participate and arranged interviews. Consent forms were signed at the start of interviews. A carer or spouse was present in five interviews. Recruitment stopped once a range of views were given and data saturation was reached. Interviews took place between November 2016 and July 2017.

Twenty-three participants took part: 16 from a pool of 60 identified via database searches, and seven by word-of-mouth. The general practice sample was purposive, including men and women of different ages. Participant characteristics are summarised in Table 1. All lived in their own homes, with two of these being in warden-assisted flats. The snowball sample consisted only of women. Most participants were aged 75–84 years, most lived alone, three had recent hospital stays and three were bereaved. Families helped one-third of participants with their shopping or cooking. Most participants rated their health in the past week as good to excellent but qualified this as 'for my age' or 'considering' their health conditions.

Topic guide

The topic guide was based on evidence and evidence gaps, including findings from a mixed-methods review [21] and previous qualitative research, as discussed in the Introduction. There were seven key questions, each with 'probing' questions that interviewers could use to prompt further detail about topics of interest, if needed. Participants were asked to describe their appetite and eating patterns and related topics, including any concerns or needs around shopping, food preparation or eating, and experiences of oral nutritional supplements (ONS) (see Supporting information, Appendix S1). The topic guide evolved between interviews, ensuring questions were relevant and understood by participants. For example, a question about participants' freezer contents was added to elicit food choices and psychosocial factors, such as how choices reflect nutritional self-care and beliefs about energy-dense food.

Data analysis

Interviews were transcribed verbatim by a professional transcriber. Inductive thematic analysis was conducted in accordance with Braun and Clarke [33]. Transcripts were coded line-by-line by two researchers independently (LP + PH, LP + LM). All coders discussed which codes best captured participants' experiences. LP compiled the researchers' decisions in a coding manual of mutually exclusive codes. Codes were applied to further transcripts (LP, LM and PH) and iteratively adjusted by consensus.

Table 1 Characteristics of the interview participants

	General practice n (%)	Snowballing n (%)
Age range (years)		
65–74	3 (13)	1 (4)
75–84	7 (30)	5 (22)
85–94	5 (22)	1 (4)
Missing data	1 (4)	0
Gender: female/male	9/7 (39/30)	7/0 (30/0)
Health conditions (self-report)		
Arthritis, bursitis, joint pain	5	4
Asthma	2	0
Bone disorders	1	0
Cancer (not currently in treatment)	2	0
Chronic kidney disease	2	0
COPD	2	0
Chronic gastrointestinal disorders (Crohn's disease, Diverticulitis)	2	0
Depression	1	4
Epilepsy	2	0
Eye conditions (cataracts, macular degeneration, eye membranes)	1	1
Heart valves (leaky or replaced)	2	1
Hip and knee replacements	1	2
High blood pressure	4	2
Infections needing hospital stay in last year (sepsis, pneumonia)	4	0
Leg ulcers	0	1
Stoma	1	0
Stroke	1	0
Missing data (number of participants)	1	1
Self-rated health in last week		
1–3 = Poor to very poor	1 (4)	1 (4)
4 = Average	5 (22)	2 (9)
5–7 = Good to excellent	10 (43)	4 (17)
Sheltered accommodation	2 (9)	0
Living alone	7 (30)	7 (30)
Recent hospital (last 6 months)	2 (9)	2 (9)
Bereavement in last year	2 (9)	1 (4)
Help to shop or cook	6 (36)	2 (9)

Self-rated health was participants' response to the question, 'How would you rate your overall health during the past week? On a score of 1–7, where 1 is very poor and 7 is very good'. COPD, chronic obstructive pulmonary disease.

Related codes were grouped into themes (Table 2); for example, the codes 'Desire to eat', 'Competing priorities' and 'Bereavement' were grouped as 'Perceptions about appetite and eating experiences'. Data were collated in a spreadsheet and analysed systematically retrieving excerpts for each code and looking for shared and disparate experiences within codes (LP).

The analysis was scrutinised and elaborated (LP and LM). This included (i) considering the range of experiences of appetite and eating in their everyday lives that participants described; (ii) describing how barriers and facilitators around eating were experienced; (iii) identifying support needs; and (iv) examining values and beliefs expressed about eating activities. We then considered what would be the key implications of the findings for intervention design.

Results

Themes

Seven themes were identified (Table 2). There was striking variation in participants' experiences, but participants also experienced common challenges and beliefs. Participants talked extensively about psychosocial aspects of their eating experiences and behaviours, in relation to their physical challenges, perceptions, beliefs, social context, self-regulation, psychological responses to unintended weight loss and perceptions about nutritional supplements. The results presented focus primarily on these psychosocial aspects, supporting our aim to identify and make sense of barriers, facilitators, values and beliefs around eating in older adulthood.

Physical and physiological aspects
Many participants offered physical or physiological explanations for not eating as much as they used to, including illness, immobility, pain, medication, reduced activity, or difficulty chewing, swallowing or digesting certain foods. They described how any of these physical difficulties could present physical and psychological challenges to shopping or preparing food or making what they considered to be 'good' food choices. For example, pain was described as making it difficult to stand in the kitchen to prepare food, as well as reducing motivation to eat. Some participants described their appetite as 'good', 'normally good', 'fine', 'healthy' or 'ok', whereas many described it as 'not that good' or reported noticing their appetite deteriorate. Loss of appetite and losing enjoyment for eating were attributed to changing taste perceptions, nausea, medication, feeling full or anticipating indigestion.

> 'A lot of things that were normal for me now I find too sweet, cakes and chocolates and biscuits and things like that ... Taste does seem to have changed since I had pneumonia ... But that could be drugs that they put into me ...' (P223, male, 86 years)

Perceptions about appetite and eating experiences
Some participants described their perceptions about challenges they experienced around appetite and eating. Most

Table 2 Themes and codes

Physical and physiological aspects	Perceptions about appetite and eating experiences	Beliefs around eating	Support needs
Physical challenges	Desire to eat	'Normal' ageing	Needing tangible support
Overcoming immobility	Trying to eat	Good and bad food	Having support
Chewing, swallowing	Fatigue	Quantity of food	Wanting support with changing eating habits
and digesting	Competing priorities	Link between eating and health	Unhelpful support
Medication effects	Bereavement	Conflicting messages	Influence of source of advice on change
	Cooking experiences	Social comparison	Eating with others
	Weight concerns		

Regulation and self-regulation		Psychological responses to unintended weight loss	Perceptions of oral nutritional supplements
Patterns of eating		Sense of loss	ONS as a strategy
Others influencing choices		Seeing the need for change	Emotional response
Using external cues		Ups and downs	
Strategies for eating without desire		Resignation	
Planning		What can be done?	
Easy food			

ONS, oral nutritional supplements.

described reduced desire for food making them less inclined to eat substantial meals but, for some, 'desire' for certain foods was distinguished from 'feeling hungry', which was perceived as a need for food. Some participants perceived appetite or weight loss positively for health reasons or because they valued thinness, whereas others reported efforts to regain weight following challenging experiences, such as illness or hospitalisation, and some of these were successful. Preparing food, cooking and eating were described as a chore by several participants, who stated that they sometimes or often could not be bothered to cook or eat. Although others did not specify that they 'could not be bothered', they reported prioritising other activities above eating, missing meals to look after grandchildren or continuing with activities such as gardening, and stated that hunger soon passed. A few participants described losing a spouse as the point at which they struggled to eat, and reported not being bothered to cook, not fancying food or feeling too lonely to eat.

'We just keep going, by the time I get to two o'clock, the idea of food has worn off, and I won't think of it, although by the time we, if we come back here, by four o'clock or half past four, then seeing the little nibbles I start to pick, then it might reawaken the appetite, but I can easily slide through it …' (P53, female, 65 years)

'And since I lost him I suppose it [my appetite] just went down. I can't, I think to myself, oh I can't be bothered, not for one' (P111, female, 79 years)

Beliefs around eating

Participants frequently expressed an understanding that eating is important to stay fit and healthy. However, participants described often skipping meals, eating two or fewer meals a day or eating small amounts, which was then perceived as confirmation of the belief that they needed less food. Many stated that appetite and quantity of food consumed are expected to decline with age, and this perceived inevitable decline was attributed to reduced activity and mobility after retirement.

'I will usually always have breakfast, but sometimes at lunch I don't feel hungry, then in the evening I don't feel hungry and a couple of times I've sort of just had cereal before I've gone to bed because I think I'm going to wake up hungry' (P393, female, 83 years)

Several participants favoured balanced diets, but some emphasised their adherence to 'healthy' diets by describing fruit, vegetables, skimmed milk and cereals they ate, or stating that they avoided ready meals. A few adhered to restrictive diets, believing them to be healthy and protective against weight gain and some avoided dairy products, for health reasons. Two participants expressed awareness of eating high-energy foods to regain weight or prevent excessive weight loss, although another disagreed with their GP's recommendation to eat high-energy foods. Some participants were reluctant to admit to making food preparation or eating easier by having ready meals or snacking, if they believed that these strategies were unhealthy. Where

these strategies were used, participants emphasized their selection of 'healthy' versions.

> 'It seems terrible to say this but it's easier not to eat than it is to prepare, that's why it's easy to snack. When you get a bit older um its ... I'll just have this (Yeah) I'll have some toast, I won't have a meal or we'll have a ready meal' (P33, male, 75 years)

Support needs

Participants living alone or with challenges around shopping, preparing food and eating often had tangible support from family or support organisations and were grateful for this. However, some expressed regret that relying on others sometimes meant getting help at the wrong time, or that their preferences were not always considered. Social eating occasions with friends or family at home, in pubs or restaurants were experienced in various ways. Some participants reported eating more or richer food than usual with others, including with strangers in a café. However, those with little appetite or difficulty eating certain foods described social eating as uncomfortable, either physically or if they felt embarrassed or pressured to eat certain foods. A few participants reported forcing themselves to eat what they felt they should and sometimes giving in to coercion from family members. Resentment or sadness then seemed evident, and participants expressed more contentment when families encouraged choice.

> P: 'She said, 'Now you eat, Mum, what you wants. Don't force anything down you, just eat what you wants', and that's what I've been doing'
>
> I: 'Yeah. And how is that going?'
>
> P: 'Alright, yeah. Yeah, it's going alright' (P111, female, 79 years)

Some participants expressed a desire for help to change their habits, if unsure how much to eat or how to gain weight. A few had received advice from doctors but did not always follow it if they found it difficult or did not understand or accept the rationale for recommendations. One participant stated that the personable approach of a new doctor made them confident to ask for advice, but others were deterred from seeking help based on prior, unsuccessful experiences.

> I: 'And how did you feel about that advice, to put cream in instead of milk?'
>
> P: 'Well I wouldn't say I agreed with her really ... because I think all you're going to do is put a big

tummy and not going to build the muscle back up at all ...' (P393, female, 83 years)

Regulation and self-regulation

Participants described varied eating self-regulation, with some following set patterns most mornings, lunchtimes and evenings, whereas others reported eating when hungry or often skipping meals. Some outlined experiences from childhood or habits developed when working that they believed had influenced their current eating patterns, including two who described experiencing anorexia when younger. Some participants reported keeping the eating patterns that they had at work, which could mean continuing to have a large meal at lunchtime or in the evening, or prioritising other activities and grabbing a bite when they had an opportunity. Others described enjoying changing to eating more casually or more regularly after retirement, unrestrained by work routines. Participants with less regular eating patterns generally described their spouses' influence as beneficial; for example, if the spouse cooked or preferred to eat regularly. However, there were examples of potentially negative influences, such as participants following their spouse's prescribed diet for convenience, although their health problems differed.

> 'Well I mean we've sort of got ourselves in a discipline of not eating between meals, umm and so we don't eat between meals. If we feel hungry, we wait until the next meal' (P143, male, 74 years)

Participants outlined strategies for eating without desire, including eating at set times, creating a conducive atmosphere, or grazing throughout the day on 'easy' food including soup, rice pudding or treats. External cues were described as having positive or negative effects: seeing, smelling or tasting food could increase desire, remind one to eat, or be off-putting. Some participants favoured planning, including pre-ordering meat, planning the week's meals, stocking easy-to-cook food and freezing food portions, whereas others stated that they did not plan because, living alone, they could suit themselves. A few participants talked about low mood affecting whether they would carry out plans. Both planners and non-planners sometimes missed meals, although some non-planners described difficulty deciding what to eat if appealing options were unavailable.

> 'I'll just suddenly find, well I wouldn't mind such and such a thing, and then I'll go round the cupboard and just see if something appeals to me ... and I don't really, you know I don't really fancy something, or I haven't planned for anything' (P333, female, 88 years)

Psychological responses to unintended weight loss

Participants often expressed negative feelings about appetite or weight loss or loss of enjoyment around eating, and many considered these changes to be inevitable as they got older. Some expressed a desire to change their eating habits, however difficult it was to eat more, more frequently or regularly, although others accepted a decreasing desire to eat and described avoiding social activities that involved eating. A few participants stated they tried to eat well but had not gained weight and did not know what else to try, and this was tinged with sadness and resignation. A few also expressed dissatisfaction and resignation about other aspects of their lives, such as loneliness, living somewhere they disliked, or mood fluctuations, which they suggested could influence the desire to eat. One participant made a link between eating well and positive mood.

'There are ups and downs, and if it's one of your down moments, then you do something, like stop eating, when really and truly you should be eating more to get you up out of that down beat' (P593, female, 92 years)

Perceptions of oral nutritional supplements

A few participants had experienced ONS, prescribed for themselves or their spouse, or had tried over-the-counter supplements. Some participants liked some ONS flavours, or mentioned strategies to make ONS more palatable but, overall, ONS were disliked and avoided as a result of their texture, a sensation of being too full or difficulty in digesting the milk used to mix them, which was perceived as appetite-reducing. Participants also alluded to ONS reminding them of their spouse's terminal decline.

'I don't know what you can do to get your appetite back unless you're saying we try and make myself drink a protein drink each day – we did have that – I still got some in the cupboard' (P001, female, 83 years)

Discussion

Participants offered multiple reasons, and shared their perceptions and beliefs, when explaining why they did not eat as much as they used to, and many described reduced enjoyment or desire around eating. They outlined how shopping, cooking and eating habits changed in the face of physical challenges; for example, relying on others for shopping, making simple food, or eating less when experiencing pain. Participants believed that certain foods were needed for health and fitness, although most expected appetite to decline with age. Support needs were generally met in this sample, although the quality of support, particularly encouragement and personal choice, was most valued. Participants' eating patterns were varied, with some keeping regular mealtimes, whereas others ate when they felt like it. Participants expressed sadness about unintended weight loss and reduced enjoyment of eating.

Sense of resignation

Our findings confirm that older adults have little awareness of malnutrition risk factors and tend to attribute reduced appetite and food intake to normal ageing rather than risk-taking behaviour. Expanding on the study by Reimer *et al* [23], we found that some people deny their risk, whereas others are acutely aware that weight loss can have serious health consequences. Recently bereaved participants expressed fear about their reduced appetite and weight loss after caring for someone who became frail and died, perhaps worrying that they are also in decline [34]. Behaviour change interventions need to increase understanding of risk, although strategies to address risk and provide reassurance that one can stay well are also needed.

We found a widely expressed belief that reduced appetite and food intake are normal in ageing, as noted previously [35]. This is important because ageing-related stereotype beliefs may reduce the confidence of individuals to carry out health-promoting behaviours [36]. Novel to the present study, participants with long-term eating difficulties, pain, inactivity or reliant on others for everyday needs expressed their resignation to a reduced appetite and reduced eating alongside physical decline and deteriorating quality of life. Resignation was frequently expressed as no longer being 'bothered' to cook or eat as effortfully as they had previously. Those with recent weight loss, such as during bereavement or hospitalisation, appeared to be motivated, through fear or hope, to find solutions, although they also seemed to have a sense of resignation when experiencing the pain of loss. There appeared to be a trajectory towards resignation that started with age-related beliefs, reinforced by experiencing decline and reduced choices. Interventions need to address beliefs about inevitable decline, highlighting how eating can prevent decline and encourage self-efficacy.

Diverse experiences, significant common barriers

Our findings revealed that many lacked the confidence to change their eating habits, and overcome barriers, as identified in previous studies [37,38]. Misperceptions about ready meals, frozen vegetables and snacks being

'unhealthy' were common, perhaps reflecting long-held beliefs or guilt about choosing easy options over home cooking [39]. Interventions need to address misperceptions, normalise easy cooking options, share participants' successful strategies and provide food suggestions, aiming to support users' confidence.

Difficulty with self-regulation (i.e. eating few meals, skipping meals, eating only when hungry) was also common, particularly, but not exclusively, for those who lived alone. This is congruent with research suggesting that sensations of hunger and feeling full are related to self-regulation [40]. Demonstrating beneficial habits and using visual cues and reminders to trigger hunger and eating can support self-regulation of eating [41,42] and could also be included in interventions.

Novel to the present study, these significant common barriers were experienced despite striking variation in participants' eating experiences and behaviours. Uncertainty about how much or what to eat to stay well or prevent further weight loss appeared to hinder beneficial food choices. Extending previous research [43], reduced taste perceptions, expecting a reduced appetite, distracting activities, negative emotions and loneliness appeared to over-ride the body's need for food and the subsequent sensation of hunger. Lack of hunger was commonly seen as a sign that food was not needed. Novel in research with older adults, some participants distinguished between hunger and the desire for food items and were more likely to eat as a result of desire than hunger. Interventions could therefore encourage eating desired foods.

Some available ONS flavours were liked, contradicting previous research [44], although dislike of ONS textures and the finding that ONS would be avoided except as a last resort concurred with previous research [45]. A new finding was that participants may be averse to ONS if they associate ONS use with distress about a spouse's terminal illness. Interventions need to address how to package the message that ONS can help prevent unplanned weight loss and encourage speedier recovery from infections. Interventions can also offer suggestions to make ONS more appealing and easier to drink, including suggestions given by participants. In the future, enriched food products may provide a more acceptable alternative to ONS [45], although the way they are presented to users will also be important.

Difficulties maintaining independence

In the present study, many participants ate less than they used to, concurring with previous research [27,46–49]. Some participants appeared to have an almost obsessive adherence to eating behaviours that they felt would keep them healthy and independent; for example, emphasising the amount of fruit, skimmed milk and breakfast cereals they ate, or how little they ate. This concurs with the study by Winter *et al.* [35] who found that food choices were influenced by a desire for independence, although strict diets could compromise nutrition, undermining independence. We also concur with Maitre *et al.* [50] who found that malnutrition risk is associated with food 'pickiness', both of which increase alongside growing dependence on others for food-related activities. It is important to convey older adults' dietary needs in interventions, while also emphasising how meeting these needs can support independence. Participants also reported sometimes eating more or richer food than usual when eating with friends and family, concurring with Burke *et al.* [29], whose luncheon club attendees ate more among familiar people. Interventions would do well to offer strategies for lone eating and encourage social eating.

Extending previous research, accumulating impacts from health conditions and life events, underpinned by age-related beliefs, made shopping, cooking and eating harder, resulting in it being difficult to maintain independence. Participants remained independent if sharing eating-related tasks with a partner but, once alone, some struggled to sustain the range of behaviours required for self-care. Declining independence impacted further on their ability to shop, cook and eat, contradicting research reporting that men living alone with chronic health conditions, or who were bereaved, adapted to providing for themselves [25,26].

Key implications for intervention design

Prior to the present study, we proposed that intervention development would be guided by four principles, from current evidence: (i) raise awareness of older adults' nutrition needs; (ii) motivate engagement in diet/lifestyle change; (iii) promote self-efficacy for lifestyle change; and (iv) support and promote autonomy, empowering healthy choices. The findings of the present study allow refinement of these principles. We clarified that appropriate intervention targets are: (i) improving risk awareness; (ii) promoting self-efficacy to manage malnutrition risk; (iii) promoting self-efficacy to overcome barriers to eating and making long-term changes, particularly resignation to age-related decline; and (iv) promoting support from healthcare professionals that offers choice and encouragement and harnesses personal reasons for lifestyle change. Self-efficacy and motivation for lifestyle change are thus combined, being closely linked and underpinned by resignation to age-related decline. Participants' unmet needs and desire for support with respect to tackling eating difficulties encourage us to address this need despite previous research suggesting that older adults are unlikely to make changes [51].

Strengths and limitations

The strengths of the present study include the findings from interviews with a range of free-living older adults with different malnutrition risk factors, adding to previous research about psychosocial aspects of eating among this population. In particular, this includes an expectation of decline that contributes to a sense of resignation to multiple different barriers to eating, and difficulty maintaining independence. The resulting understanding of participants' experiences will inform the development of interventions to encourage eating that meets the needs of such older adults.

The included individuals were currently struggling to shop, prepare food and/or eat, or anticipated such challenges in the near future. Some appeared undernourished, although we used no objective measure of malnutrition risk. We also included individuals who were currently eating regularly, some of whom had experience of unintended weight loss from which they had recovered, giving useful insights. The present study could be improved by including more men, or those with a wider range of conditions known to increase malnutrition risk.

Conclusions

The key findings are that: (i) sense of resignation; (ii) diverse experiences and common significant barriers; and (iii) difficulties in maintaining independence underpin the experience of eating and appetite among older adults at risk of malnutrition. There appears to be a trajectory of increasing resignation in the face of common beliefs, values and barriers to eating among older adults with health and/or social conditions known to increase malnutrition risk. Diverse multiple barriers to eating were found, which may be underpinned by common beliefs and misperceptions. Beliefs, values and barriers can also conspire to undermine older adults' aim to remain independent.

Interventions need to counteract commonly held beliefs and misperceptions about the process of inevitable decline in appetite and eating needs during ageing in older adulthood, outline facilitators that have worked for others, and persuade participants that some currently unpopular behaviours (e.g. ONS) can support wellbeing and independence.

Unanswered questions and future research

Future intervention development studies would do well to incorporate the findings of the present study and implement and test ways of addressing the key barriers identified. The study team has carried out such an investigation and aims to publish the results shortly. The mooted mechanisms identified in the present study (e.g. raising risk awareness, promoting self-efficacy), also need to be tested, and the study team is carrying out a randomised controlled trial in which these will be investigated. It will be important to assess whether behavioural techniques included in interventions address patients' psychological needs and issues (resignation, independence) and influence behavioural and clinical outcomes. It would also be useful to identify which food-related strategies work best to enable continued independence for older adults.

Transparency declaration

The lead author affirms that this manuscript is an honest, accurate and transparent account of the study being reported. The reporting of this work is compliant with COREQ guidelines. The lead author affirms that no important aspects of the study have been omitted and that any discrepancies from the study as planned have been explained.

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Supporting information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Appendix S1. Eat well feel well: a study about people's appetite and eating patterns. Topic guide.