Older individual’s perceptions of appetite, its loss, influencing factors and adaptions to poor appetite. A qualitative study.

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Abstract

Appetite loss in later life is common and associated with malnutrition; however, there is limited knowledge on older individuals’ perspectives of appetite. This study aimed to explore what ‘appetite’ means to older adults, how they experience its change and perceived influences on this experience. Semi-structured interviews were conducted with thirteen participants, aged ≥65 years, in their own home, following a recent arm fracture. Transcripts were analysed using reflexive thematic analysis with inductive coding resulting in three themes. 1. ‘Appetite as an emotional experience’ encompassed positive or negative thoughts and feelings driving or undermining desire to eat. Mood, the appeal of food, cooking and effects of interaction and experiences with other people were factors in this narrative. 2. ‘Appetite reflects a physical need’ comprised physical bodily sensations or requirements as a driver for appetite with poor appetite resulting from early or over fullness. Declines with age, illness and less activity, were factors in this narrative. 3. ‘Adaption to poor appetite aligns with perception of appetite and wider physical health’ accounts for how experiential strategies, or practical strategies were used to mitigate poor appetite depending on the narrative of appetite loss, alongside perceptions of physical health and unplanned weight loss. Most individuals used one narrative in their discussions and reflections but for some, perceptions of appetite and its change were more complex. Understanding relationships between these perceptions of appetite and influential factors could facilitate development of multi-component, person-centred, strategies that are optimally meaningful and relevant to address appetite loss in later life.

Key Words

Appetite, Older people, Nutrition, Qualitative

# Introduction

Appetite loss in later life, often known as anorexia of ageing, is common with estimates of around 20% of community dwelling older people [1]. In some cases, it can be attributed to health conditions frequently seen in older age, such as cancer. However, loss of appetite inherent to the ageing process exists and is known to involve multiple mechanisms. These include alterations to neuro-endocrine signalling in appetite regulation, changes to gut function and sensory perception such as taste, as well as wider environmental and social changes that are a common in later life, for example movement into long-term care settings and bereavement [2]. It is associated with a number of major health burdens, including incident malnutrition, sarcopenia and frailty, as well as increased mortality [3, 4]. Therefore, strategies to identify and manage the anorexia of ageing, which may prevent individuals from developing these sequelae, are important. Despite this, there is currently little evidence for effective management for anorexia of ageing [5], which reflects limited understanding about older adults’ experience of appetite and its loss. Without this knowledge, designing supportive interventions for appetite loss that are optimally meaningful, relevant, engaging and effective for older individuals may be unachievable [6].

Previous qualitative studies have brought insights to appetite loss in later life, where individuals describe the effect of environmental (such as mealtime setting and food presentation) and social (such as companionship and mealtime routine) factors [7-14]. Alongside these factors, influences relating to individual psychological wellbeing, mood states and feelings of dependence, as well as physical activity have also been expressed [7-10, 14]. However, the focus of this previous work has been on malnourished older individuals and eating behaviour [7-14]. Therefore, the emphasis has been on physical effects, amount of food consumed and eating habits related to environmental or social influences, rather than the experience of appetite itself as the focus of enquiry. Currently, we know little about how older adults experience appetite change prior to becoming malnourished, despite its importance for designing novel supportive interventions earlier on in the trajectory towards potential ill health.

There is a need to understand how older individuals perceive appetite, experience its loss or persistence in later life and describe the factors that are influential in this experience. This includes establishing whether factors that contribute to poor appetite in studies of malnourished older individuals are also relevant for earlier stages of appetite loss. It is also unclear whether specific factors appear more influential for some individuals than others. This will enable better insight into the design of effective interventions to support appetite loss that are applicable and engaging for older adults [6]. Therefore, the aim of this study was to explore what ‘appetite’ means to older adults, how they experience change or loss of appetite and their perceived influences on this experience.

# Methods

A qualitative study was undertaken using reflexive thematic analysis [15-17]. This method was selected as it is independent from any particular theory or metaphysical perspective and so is considered flexible and accessible [16]. However, a critical realist perspective shaped the formulation and methodological approach of this study. Participants were actively probed to promote dialogue around their reasoning for certain thoughts or actions and the contexts of these, to attempt to understand experiences and events. Language was considered as capturing the participants’ lived experiences of reality, whilst acknowledging this reality was produced and existed within broader social and environmental contexts.

Appetite was conceptualised by the authors as the sensations of hunger, satiation and satiety, sitting in a complex array of influential factors. This concept of appetite and the study research questions were not linked to a specific theory when designing and implementing the study. However, after conducting inductive analysis, the authors felt that the biopsychosocial theory of health and disease could aid explanation of influences on appetite in later life.

## Participants and recruitment

Participants were aged >65 years, attending outpatient clinics for a recent arm fracture, drawn from a study testing the feasibility of screening for frailty and sarcopenia in this setting [18]. This group was selected as arm fracture occurs in individuals with a wide range of physical ability and social circumstance. Purposive sampling was utilised, based on the criteria of gender and living in their own home alone or with others, as these were considered likely to affect experiences and so important to take into account. Level of appetite was not selected for in the purposive sampling, as it was thought this might reduce range of descriptions. All participants gave written informed consent and ethical approval for the study was granted by the UK North East-Newcastle and North Tyneside 1 NRES Committee (REC No: 18/NE/0377).

## Data collection

Data was collected through in-depth semi-structured interviews in the participant’s own home; these lasted between 30 and 90 minutes. For five individuals their spouse, family member or friend were present during the interview. For all of these interviews the accompanying people did not actively partake in the discussion, and often were not present in the room the whole time. However, in some instances the interviewees referred to them to clarify points that the interviewees had themselves raised, for example amount of weight loss when present. Responses by the family members or friends were not directly used in the analysis, rather, any re-iterations or clarifications by the participant themselves, in their own words, were used. The interviews followed an outline schedule designed by three authors (N.C., K.I. and L.M.), comprised of open questions covering appetite, such as ‘Could you tell me about your appetite?’ and any changes to appetite they had experienced (Supplementary Table 1). If required, the language of the questions and prompts were adjusted during the interview to terms the participants used, for example ‘fancying food’ instead of ‘hunger’. The first author (N.C.) conducted all interviews, transcription and analysis. N.C. is a female medical doctor specialising in medicine for older people and introduced herself as a university researcher interested in experiences of appetite.

## Data Analysis

Interviews were audio-recorded and transcribed verbatim; NViVo 12 software was used to assist in data storage and coding management. All interview transcripts were anonymised, with participants identifiable only by study number. Data analysis commenced following the first interview, and an iterative approach to data collection and analysis meant that topics and questions were expanded upon in later interviews to enable further interpretation of the data. For example, the authors noticed female participants were referring to mood states in relation to appetite, so in an attempt to understand if this was a gendered phenomenon, subsequent male participants were prompted at the end of interviews about mood. This iterative approach to analysis and interviewing continued until the interpreted account was comprehensive. Data analysis followed the reflexive thematic analysis method [15-17], including data familiarisation and coding with an open inductive approach. Codes were amalgamated and split iteratively with interpretation and creation of candidate themes. Codes and then candidate themes were reviewed in regular meetings with two other authors experienced in qualitative research (K.I and L.M) where they were discussed and adjusted using thematic maps to create final themes grounded in the data, with quotes to support claims.

### Data quality

The interviewer N.C. was not known to any of the participants to limit potential personal influence on recruitment. To identify the potential effect of assumptions, a reflexivity diary was logged throughout data collection and analysis. In this diary initial thought was given to habits and socio-cultural values held by the interviewer and analyst (N.C) when planning and conducting interviews (including clinical background and consideration that good appetite is important for health), then how these shaped analysis and construction of the account of the data. During analysis, N.C had prolonged active engagement with the data; the outputs of ongoing analysis, along with the reflexivity diary were discussed in regular meetings with two other authors (K.I and L.M), enabling debrief, alteration of data collection (such as directly prompting men about mood), refinement of themes and further probing on potential assumptions. For example, a candidate theme relating to importance of appetite was amalgamated, as this largely reflected a value of the analyst (N.C) and was not considered an overarching theme by the other researchers.

# Results

## Participant characteristics

The study included 13 participants with an age range of 69 to 83 years; eight were female. Five individuals were living alone, this included four widows and one single man; all the others were living with their spouse or family. All of the participants lived within the same region on the south coast of England and were white British; most had undertaken paid employment during their adult life but all were now retired. The purposive sample was drawn from a larger study on frailty and sarcopenia screening, these and other characteristics of the participants are summarised in Table 1.

The study included individuals who had expressed they had good or poor current appetite. Individuals with good current appetite reflected on experience when it was poor, and those with a poor appetite similarly reflected on times it had been better. Therefore, data from all of the individuals was used to understand experiences. Common views and experiences were reported across the age range, and between both genders, living alone and with others.

The data was analysed resulting in three main themes ‘appetite is an emotional experience’, ‘appetite reflects a physical need’ and ‘adaption to poor appetite aligns with perceptions of appetite and wider physical health’. The first two themes explore two narratives of appetite, its change or loss and perceived influences on this, interpreted from the data. Within these narratives the participants largely discussed appetite as a phenomenon overall, with hunger or fullness being aspects of the experience. However, in the narrative of ‘appetite is an emotional experience’ the terms ‘appetite’ and ‘hunger’ were used interchangeably by some, making the distinction less clear. Individuals tended towards coherently using one or other of the two narratives when talking about their appetite and appetite loss. However, some individuals drew on both narratives throughout their discussion and reflections, while others used each of them to describe different aspects of appetite (e.g. drawing on one narrative to explain what they considered appetite to be, then changing to the other narrative to describe their experience of appetite loss). The third theme gives an account of adaptive behaviours to poor appetite and their relationship with the narratives of appetite loss and wider perceptions of physical health.

## *Theme 1: Appetite is an emotional experience*

This narrative included descriptions of thoughts and feelings to portray appetite. The terms ‘hunger’ and ‘appetite’ interchangeably encompassed escalating positive thoughts and feelings towards food, such as anticipation and excitement, which drove a pleasurable desire to eat. For some, if let to go too far, the thoughts and feelings became a force that instigated eating ‘the wrong things’ and so required an element of control.

*“Oh, my appetite is, oh I fancy that. That’s appetite to me... Fancying for me, and appetite is way before I get hungry. Yeah, way before, I think to myself do you know what, ‘cause we say oh what we fancy for tea tonight.”* (Woman aged 72, living with family).

*“I think the danger of waiting until you really are hungry is when you eat the wrong things. Because you want to put that in there quickly other than wait for it to cook.”* (Woman aged 71, living alone).

Feelings of fullness were considered the product of overindulgence in enjoyed food and related to greed, so were often linked with regret.

*“Somebody just being greedy and eating too much and then I’m full up, I can’t finish eating it [laughs], I don’t know… I’ve eaten too much and I wished I hadn’t, and we all do that don’t we?”* (Woman aged 71, living alone).

Appetite loss was described as the struggle to initiate eating due to negative thoughts and feelings about food, including its sight, smell or taste. For some, these negative feelings fostered a general disinterest in food and cooking, whereas other individuals still took the trouble to prepare a meal out of routine or habit.

*“Sometimes when my meal has been cooked I look at it and I can’t even think about eating it... I sort of go that’s it I can’t eat this”.* (Woman aged 72, living with family).

### Mood impacts appetite and has a relationship with food

Mood and wellbeing were important in the emotional experience of appetite. Mostly, females expressed opinions about a range of mood states, while men tended to link with a clinical diagnosis of depression or stress. Largely, negative emotions were inhibitory to appetite, related to loss of the desire to eat or enjoyment of food consumed and included descriptions of stress, feeling low, anger and anxiety. Some participants described a complex two-way relationship between mood and eating, where mood state affected the experience of appetite and food choice, and then the consumption of certain foods changed mood state. The most common instance of this was the consumption of liked food lifting the individual’s mood in a positive way, but sometimes the reverse would happen with a lowering of mood.

*“I mean that spell we were just talking about [“feeling very low”] I didn’t really want food. I made myself eat something but I wasn’t enjoying it. I was just thinking, I’ve got to, I’ve got to have something.”* (Woman aged 83, living alone)

 *“I think it’s our mood swings that we eat with, or it’s the eating that causes the mood swings”* (Woman aged 71, living alone)

### The appeal of food is key to appetite

The appeal of food, encompassed sensory appeal, such as presentation of the food, smell and taste, as well as thinking about food individuals liked all impacted upon appetite, aiding the build-up of a desire to eat. If food did not meet expectations, was disliked, or illness and treatment altered taste in a negative way, desire to eat was reduced due to negative thoughts and feelings.

*“I saw his food and thought yeah I’m gonna have some and I did and I thoroughly enjoyed it, you know.”* (Woman aged 83, living with family)

*“Um, anti-climax I suppose. Oh its dinner time [rubs hands together] … and it arrives and you look at it, [raises up hands and blows out cheeks], I was expecting something nice and it’s not.”* (Woman aged 71, living alone)

Certain appealing foods were often framed as ‘naughty’ when construed through typical public health messaging and so were eaten at the expense of ‘health’. Consequently, individuals also downplayed negative thoughts about being overweight from unhealthy food choices, which they considered out of their control or too challenging to overcome, as these unhealthy but appealing foods were key to appetite.

*“If I had a choice of food right now it would be a great big jammy donut or a lovely scone full of cream. You see I don’t go for the things I should be going for!”* (Woman aged 83, living with family)

### Other people and social interactions can help and hinder appetite

The role of pleasant social interactions with people, in the context of eating in a sociable way was an important part of the build-up of a desire to eat. When participant’s appetite was poor, people close to them (most often a spouse), would react by stating they had noticed a change or try to encourage eating. Sometimes these interactions fostered feelings of stress and guilt for the participant, as they felt unable to live up to a social pressure and expectation (often well-meaning) to eat a meal, with further escalation of negative feelings.

*“I feel awful, ‘bout that, I don’t, I feel a bit you know they stood out there all that time cooking and that you know.”* (Woman aged 72, living with family)

The loss of important people, whether through bereavement or geography was clearly described by some, frequently via impacts on mood driving negative thoughts and feelings. However, amongst some individuals there was a sense of carrying on, being motivated when coping with loss, which most commonly coincided with reports of a good current level of appetite. This motivation to cope in those with a good current level of appetite was also present in broader discussions around coping with difficult or changing circumstances in life overall. Importantly, some individuals also did not see bereavement as negatively influential on appetite. This was in the context of the person who had died living with a more restrictive diet, or requiring care. The participants described the practical aspects of being able to plan meals to suit themselves and a release from worry.

 *“‘Cos if she was here she’d be saying you sit in this chair or you’re coming down for a meal, you know. But I think that sort of kind of, kind of impacted a little bit but she’s done the right thing [moving away]…”* (Woman aged 72, living with family)

*“You’ve got to carry on, there’s no, you don’t want to be feeling sorry for yourself, you’ve gotta carry on and do things.”* (Woman aged 83, living alone)

*“Now it’s just me and so I can sort of please myself, if it’s a roast or of it’s a salad or if it’s just a soup or something like that I haven’t got to worry about the other person, yeah so that’s all right yeah*.” (Woman aged 71, living alone)

### Enjoyment of cooking can build up a desire to eat

The activity of cooking was often referred to and for some gave a sense of accomplishment. This, alongside enjoyable social interaction, which sometimes occurred during the activity, produced pleasure and reward increasing desire to eat the food prepared. For these individuals, losing the ability to cook added to negative thoughts and feelings about food and lack of desire to eat. However, for others, the activity of cooking was more an undertaking of routine rather than a pleasurable activity involving appetite. For them, changes in cooking or meal preparation did not appear to influence their negative thoughts and feelings about food and they continued in the activity.

*“I’ve always cooked. Yes, always cooked, yes. The children cook and the grandchildren have always cooked with me as well, so that’s great. Good fun, yes.” (Woman aged 76, living alone)*

*“Well it’s just, yeah I think before I broke me arm I used to do say 80% of the cooking, so I would prepare, I would get it ready ask the wife what she wanted, yeah give me something to do. But now I just [blows out cheeks].”* (Man aged 71, living with spouse)

*“You feel you should eat don’t you? And I get it ready and I look at it and think, aaah I don’t really want it so I won’t have that…. I don’t want it, don’t like it, don’t want it. [Interviewer: What makes you feel like you should prepare it?]* *Well because I know it’s, I suppose it’s just habit isn’t it?”* (Woman aged 83, living with family)

## *Theme 2: Appetite reflects a physical need*

This narrative contained physical descriptions of bodily need to portray appetite and participants described planned ways of meeting this need, with an importance placed upon maintaining physical health.

*“Appetite, it means wanting to eat… it’s you know, a bodily function.”* (Woman aged 76, living alone)

Hunger was a bodily sensation, such as feeling empty or a rumbling stomach, described without thought or emotion linked to it. However, it was most often not felt through proper planning of meals. Feelings of fullness were also a bodily sensation but considered unpleasant and were also largely avoided through proper meal planning.

“*Just sort of your tummy feels a bit empty doesn’t it? Yes*” (Man aged 75, living with spouse)

Appetite loss was described as a continued ability to initiate eating, with no negative thoughts about food itself, but a reduced capacity from early or over fullness. Often individuals did not finish their meal, and some reasoned their fullness was from their “stomach shrinking”.

*“I got full much quicker than normal I think that is probably the best way to describe it. I just felt that I didn’t want to eat as much as I normally would eat. So I was still eating at the same times, but you know, not as much.”* (Woman aged 77, living alone)

### Appetite declines with age, illness and less activity

Within the reflections of bodily need, effects of a physical state of ageing were considered detrimental with an expectation of appetite decline. Participants described an ageing body that just required less, conclusions drawn by participants from their own experience or witnessing others.

*“I find since you’re older you don’t need as much to eat, you don’t need it.”* (Woman aged 71, living with spouse)

Being physically active was important, where general declining levels of physical activity and using less energy were reasons for poor appetite. In addition, improvements in activity level were seen as an avenue to “build it [appetite] up”. Physical illness, symptoms and treatment were also important, relating to activity and physical ability, including in food preparation.

*“I used to do classes and I used to do aqua and I used to do lengths…then I would eat more for lunch or because I was more hungry then. Because I was using, I was exercising wasn’t I?”* (Woman aged 83, living alone)

*“When I broke my arm, because it’s my right hand it was a real nuisance. I was frustrated, angry, and I thought it’s the last thing I needed was that and [husband] helped me a lot. And of course if you’re not doing much for yourself, you’re not hungry”* (Woman aged 71, living with spouse)

## *Theme 3: Adaption to poor appetite aligns with perceptions of appetite and wider physical health.*

Individuals described adaptions to their eating behaviour in response to poor appetite, either as current actions or from memory. Three main adaptive behaviours were described- seeking out appealing food, eating and subsequently preparing smaller meals or concealing the truth. The first two of these adaptive behaviours were closely linked to the two narratives of appetite, while the third, concealing the truth, also related to how appetite loss was prioritised by the individual and people close to them, which linked to perceptions of physical health.

### Perceptions of appetite influence adaptive behaviour to poor appetite

When discussing appetite loss using the emotional experience narrative as a struggle to initiate eating due to negative thoughts and feelings about food, individuals would then most often describe seeking out food they continued to find appealing. These foods were often considered as “treats” to “tempt” themselves and reignite their appetite.

*“I might just go and have some cheese and biscuits instead of a cooked meal. But that’s all I feel like eating.”* (Woman aged 72, living with family)

When individuals used the narrative of appetite reflecting a bodily need, they described feelings of over or early fullness as uncomfortable, so they ate less and subsequently prepared smaller portions. In addition, priority in maintaining physical health drove decisions on food choice, often with reference to public health messaging or individual advice for chronic health conditions. This meant snacking or “treats” were held in a negative light and individuals with early or over fullness made no change to the type of foods they continued to eat.

*“I was probably sort of dishing up what I normally eat and then thinking oh I don’t want that and giving it to the foxes you know and then the next day perhaps putting a little bit less on the plate.”* (Woman aged 77, living alone)

For most individuals their use of narrative for appetite loss and then adaption was consistent. However, within the study one case utilised the narratives differently, describing her appetite loss as negative feelings towards food and eating, but then appetite overall as reflecting a physical need with snacking as “*not good for you*”. Consequently, she attempted to eat the same food but with reduced portion size to manage her appetite loss but still struggled to eat because the food was not appealing. This woman used the physical narrative of appetite in terms of perceptions and adaptations, but had an extra layer related to appeal of food, showing that for people like her, reducing portion size might not be enough to combat poor appetite.

*“Just eating I suppose, just eating. Making sure that you eat something …I can’t say I get full, no. I can’t say I get full. But as I say I never feel hungry. So, I, I would be happy if I could be like a horse and graze all day long. You know picking at stuff, but you can’t do that really, it’s not good for you I don’t think….I can’t stand the smell of food cooking. It puts me right off, especially meat…You know I only put a tiny portion on my plate and sometimes I put that in my mouth and I, I get rid of it because I can’t eat it…. I’ll cook [spouse] a roast dinner and I’ll try it, I’ll have some on my plate and I’ll try it, but I usually throw up afterwards …Well I think I might have changed, you know it might have changed, I’m hoping it might change but I don’t expect it will now.”* (Woman aged 69, living with spouse)

### Views on weight can drive concern about appetite loss and adaption to poor appetite

All of the participants regardless of their use of appetite narrative saw being overweight in a negative light. Often, a background of being overweight meant unintentional weight loss due to poor appetite was regarded positively. Consequently, individuals focussed on practical, often humorous aspects, making light of the situation or showed lack of concern about poor appetite, as it produced a desirable health outcome- to be able to achieve a previous weight or a weight felt appropriate.

 *“My appetite wasn’t great before, you know err, I did try to start losing some weight but it started coming off, so I didn’t bother anymore [laughs], right do it on your own [laughs].”* (Woman aged 69, living with spouse)

For some individuals, who considered their poor appetite due to a negative emotional experience unimportant, difficult interactions with concerned family or friends led them to downplay or conceal their poor appetite. This was starkest for one woman, who described her poor appetite due to negative thoughts and feelings about food as a low priority; she also viewed her weight loss positively. This view was at odds to concerned family and friends, which led her to conceal uneaten food in an attempt to hide the truth, as she considered that this would lessen the negative interactions and effects on others that her poor appetite had created.

 *“I think I’ll get rid of that quick before [daughter] comes in so she won’t know I’ve not had it. I’ve got to be honest that’s what I would do at home and here I would just throw it away because [friend with dementia] ain’t got a clue what I’m eating and what I’m not eating. And I lie and say I’ve had it...* *Because I know she’d be cross, well she’d be upset that I wasn’t eating three meals a day and then she’d start to worry and I can’t cope with her worrying.”* (Woman aged 83, living with family)

# Discussion

This study explored rich accounts of what ‘appetite’ means, the experience of loss of appetite and influences on this experience in a purposive sample of older individuals living in the UK. There were three main themes in the data, the first two being narratives regarding appetite, its loss and influences on this. “Appetite is an emotional experience” encompassed the thoughts and feelings building a desire to eat, with loss of appetite as negative thoughts and feelings about food and a struggle to initiate eating. Mood states and the appeal of food, as well as the effects of social interaction, experiences and presence of other people influenced this perception of appetite. “Appetite reflects a physical need,” described bodily sensations of hunger and satiety with loss of appetite attributed to a feeling of over or early fullness. A physical state of ageing, and using energy and being active were important influences on this narrative. Individuals tended towards coherently using one or other of the two narratives when talking about their appetite and appetite loss. However, some individuals drew on both narratives throughout, while others used one narrative to describe appetite and then the other for appetite loss. Within the emotional experience narrative, some individuals also utilised the terms ‘appetite’ and ‘hunger’ interchangeably. Whilst outside of the scope of this analysis, further examination of how older individuals use and perceive different language around appetite is important. From our findings, older adults appear to perceive appetite in different ways, so perceptions around the language used in relation to it may also differ. Understanding this may assist future intervention development by guiding use of terminology that is relevant to older individuals.

Whilst many of the influences on appetite mapped to one or other of the narratives, the presence of physical symptoms, illness and treatment was a negative force for both emotional experience and physical need. Perhaps reflecting the important physical as well as psychological impacts that states of illness have. The different influences described in this study align with the biopsychosocial model for health and disease [19]. This theory pertains that health and illness are products of biological mechanisms, psychological states, and wider sociocultural contexts. Therefore, it aids in explaining how influences on appetite have truly wide ranging contexts and that appetite and its change as a phenomenon is complex. When relating the influences on appetite described in our study to current literature, a recent systematic review identified a lack of evidence around the relationship between level of physical activity and appetite in older individuals due to a paucity of robust research studies, so the further investigation is required [20]. Psychological influences on appetite in older people, including the role of health beliefs and awareness that appetite change is not necessarily normal or healthy, is under-explored. Mood, as the clinical construct of depression (either clinical diagnosis or score) and anxiety are observed to associate with appetite in community dwelling older adults [21-26], but mood as a wider construct and also wellbeing require appraisal. Otherwise, much focus has been on identifying social factors associated with appetite, such as reduced social contact, poor communication with family [21], bereavement and eating alone [22]. Interestingly, when looking at social factors in our study, including people and life experiences and transitions, descriptions were more often about their effects on eating habits and food choice, rather than appetite. This finding is in line with previous qualitative research concerning factors affecting diet quality in older adults [27]. However, from our analysis, it appears that perceived motivation and ability to cope with any change in these external factors may be influential on appetite. Engel et al has identified that hardiness (encompassing the constructs of commitment, control and challenge) correlates with appetite in community dwelling older people [23]. This may align with our findings; however, motivational states and perceived ability to cope are under-researched in the context of appetite despite their potential importance in maintaining resilience to social and environmental change and thus possibly sustaining appetite. Therefore, a potential move towards maintaining resilience as a focus of enquiry, rather than the actual social or environmental changes, may prove more fruitful in understanding how appetite may be sustained in later life and thus potential supportive strategies for poor appetite.

The experience of appetite loss in the two narratives foster different adaptive behaviour to poor appetite, whether seeking out appealing food to attempt to re-ignite a desire to eat or reducing the size of meal consumed and subsequently prepared to mitigate early or over fullness . Alongside this was the impact of wider physical health perceptions in driving food choice or positive feelings about unplanned weight loss. Positivity about unplanned weight loss linked to an apparent unimportance of appetite loss for some individuals, which seems to impact on engagement with adaptive behaviour and in the extreme may promote concealing the truth from others who show concern. The lack of worry about poor appetite and unintentional weight loss in this group is contrary to a recent qualitative study in community dwelling older adults in the same region of the UK, where individuals had negative thoughts and a sense of resignation and inevitability about poor appetite and weight change [28]. However, in the study by Payne et al, participants were at nutritional risk, so perhaps had more advanced nutritional decline than our participants. Thus, it may be that older individuals initially have little concern over earlier stages of appetite loss, which then develops into resignation as their nutritional health deteriorates. This suggestion is supported by findings from Holst et al in hospitalised older people in Denmark [10], where individuals initially paid little attention to weight and appetite, which progressed to consideration that something was seriously physically wrong. Additionally, amongst interviews of community dwelling older individuals in New Zealand, Chatindiara et al [14] identified thoughts of eating less being the ‘logical thing to do’ due to reduced physical function with ageing, again suggesting a narrative of resignation rather than concern. This shows the need of robust health messaging to highlight that loss of appetite is not a normal part of ageing and so older people and those involved with their health and care should act upon it, as continued decline in health is potentially reversible.

Our analysis of descriptions by the older individuals in this study has generated theoretical relationships between perceptions of appetite by older individuals, influential factors, and adaptions to a poor appetite centred on the two narratives (Figure 1). This explores how certain influential factors relate to the different narratives of appetite loss, with some factors also having reciprocal effects on each other, or mediated by perceived ability to cope. In turn, the different experiences of appetite loss in each narrative foster distinct adaptive behaviours for poor appetite alongside the impact of wider perceptions of physical health. These hypothetical relationships require testing in further studies, such as a deeper exploration focussed on adaptive behaviours to poor appetite in later life, to promote understanding and potentially generate a substantive theory for this. However, our findings also may help explain the paucity of evidence on effective interventions for appetite loss in older individuals [5, 20] as they indicate that with distinct narratives of appetite loss, and individuality in the way some people use the narratives, single interventions for a population are unlikely to be successful for everyone. Rather, person-centred, multi-component approaches with an understanding of the individual’s view on appetite are likely to be more relevant and effective. Additionally, the biopsychosocial model for health and disease [19], despite recognised limitations [29, 30], may be prove useful, as it aids acknowledgement of a need to address the wide range of influential and interrelated factors on appetite in later life. A further important issue realised from our study is that current quantitative assessment methods for appetite do not currently distinguish ‘in what way’ the individual has lost their appetite. Determining a way to distinguish this through quantitative means is important if, as our study indicates, different narratives of appetite loss have distinct relationships to influential factors and adaptive behaviours for poor appetite.

Certain accounts within the data are also noteworthy when considering further research and potential intervention development, such as the woman with poor appetite who continued to cook, then hid her lack of consumption from concerned family and friends. This shows that for some with poor appetite, engagement with cooking may not be an effective avenue to improve it, or be proof of consumption. For one woman, her narrative of appetite loss did not align with that of what appetite should be and she continued to try meals that had previously made her physically sick. This highlights how individualised and often nuanced experiences of appetite and its change are, with differing adaptions to poor appetite which may appear illogical to others. Other accounts included those of individuals who used the emotional experience narrative for appetite and had an adverse reaction to encouragement and concern of family and friends when their appetite was poor. It was also apparent in this study that for some, bereavement did not negatively affect appetite. This was on the background of having been a carer, which had been restricting their eating pattern, a finding also described in interviews with other older primary caregivers [14]. These views are important, as it counters often-held assumptions that decline in appetite after widowhood relates to this event, and that encouragement to eat by family or friends is a positive for all individuals with poor appetite. Therefore there is need to challenge these assumptions and ensure they are addressed appropriately in intervention development.

## Strengths and limitations

This study followed robust qualitative methods with attention to ensuring data quality, including attention to reflexivity. This has provided an account of two narratives of appetite amongst a group of older adults and theoretical interactions with influences and adaptions to poor appetite in later life. However, the sample was recruited from one outpatient clinic in a city, so may not represent the views of older people in general.

Some of the interviews were also conducted with family members present, which may have affected their responses giving variability with those interviewed alone. Moreover, participating in a study around healthy ageing may have altered participant’s interview responses due to social desirability bias. It is important to note that the participants had all sustained an arm fracture prior to interview, however the interviews covered timespans and experiences prior to this. In addition, three of the participants had sufficient weight loss for inclusion in a medium risk category for malnutrition. These individuals did not express differing views to those with lower malnutrition risk but their inclusion means the constructed narrative of appetite perceptions from the study cannot not be considered purely in terms of very early stages of appetite loss. Therefore, further enquiry with community-dwelling older people, including those from different socio-cultural backgrounds, care settings and with different health needs is required.

# Conclusions

This study has identified that there are broadly two different narratives on appetite and its change in in later life, as an emotional experience or a physical need. Individuals tended to use one or other narrative to describe appetite while some used both or elements of each. These narratives had a number of distinct influential factors, although physical illness and treatment affected both narratives of appetite. Analysis of the accounts in the study has produced theoretical relationships portraying how influences on older individuals’ appetite relate to two narratives of appetite and its change, then how the experience of appetite loss in these narratives foster different adaptions to poor appetite alongside perceptions of physical health. This could inform future investigation into adaptive behaviour for appetite loss in later life and ultimately person-centred interventions, which are optimally meaningful, relevant, engaging and effective.

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## Author Contributions

Conceptualization and Methodology- All authors; Data Collection N.J.C; Formal Analysis- N.J.C, L.M; K.I; Writing- original draft preparation- N.J.C; Writing- review, editing & approval of final manuscript- All Authors.

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Table 1. Characteristics of the participants

|  |  |
| --- | --- |
| Characteristic | Number of participants |
| GenderMaleFemale | 58 |
| Age range (years)65-7071-7576-8081-85 | 1732 |
| Marital statusMarriedWidowSingle | 751 |
| Living circumstanceLiving with family (children +/- spouse)Living with spouseLiving alone | 265 |
| Appetite (SNAQ\*score [31])Adequate AppetitePoor Appetite | 94 |
| Body Mass Index<18.518.5-24.925-29.9>30 | 0346 |
| Frailty (Fried criteria [32])RobustPre-frailFrail | 472 |
| Sarcopenia (SARC-F$ score [33])No- sarcopeniaSarcopenia  | 94 |

\* Simplified Nutritional Appetite Questionnaire, a score of <14 indicates poor appetite

$ Strength, Assistance Walking, Rise from a Chair, Climb Stairs, and Falls Questionnaire

# Figure Caption

Figure 1: Hypothesised narratives of appetite, its loss and then adaptions to poor appetite in later life, with relationships to influential factors. The influential factors of mood and other people also relate to one another. Perceived ability or motivation to cope with life experiences and events may also affect the influence of people on appetite for some individuals.

## References

1. Malafarina V, Uriz-Otano F, Gil-Guerrero L, Iniesta R: **The anorexia of ageing: physiopathology, prevalence, associated comorbidity and mortality. A systematic review**. *Maturitas* 2013, **74**(4):293-302.

2. Cox NJ, Morrison L, Ibrahim K, Robinson SM, Sayer AA, Roberts HC: **New horizons in appetite and the anorexia of ageing**. *Age Ageing* 2020(afaa014).

3. Martone AM, Onder G, Vetrano DL, Ortolani E, Tosato M, Marzetti E, Landi F: **Anorexia of aging: a modifiable risk factor for frailty**. *Nutrients* 2013, **5**(10):4126-4133.

4. Cox NJ, Lim SE, Howson F, Moyses H, Ibrahim K, Sayer AA, Roberts HC, Robinson SM: **Poor Appetite Is Associated with Six Month Mortality in Hospitalised Older Men and Women**. *The journal of nutrition, health & aging* 2020.

5. Cox NJ, Ibrahim K, Sayer AA, Robinson SM, Roberts HC: **Assessment and Treatment of the Anorexia of Aging: A Systematic Review**. *Nutrients* 2019, **11**(1).

6. Yardley L, Morrison L, Bradbury K, Muller I: **The Person-Based Approach to Intervention Development: Application to Digital Health-Related Behavior Change Interventions**. *J Med Internet Res* 2015, **17**(1):e30.

7. Wikby K, Fagerskiold A: **The willingness to eat. An investigation of appetite among elderly people**. *Scandinavian Journal of Caring Sciences* 2004, **18**(2):120-127.

8. Nordlander M, Isaksson U, Hörnsten Å: **Perceptions of What Is Important for Appetite—An Interview Study With Older People Having Food Distribution**. *SAGE Open Nursing* 2019, **5**:2377960818817126.

9. Edfors E, Westergren A: **Home-Living Elderly People's Views on Food and Meals**. *J Aging Res* 2012, **2012**:761291.

10. Holst M, Rasmussen HH, Laursen BS: **Can the patient perspective contribute to quality of nutritional care?** *Scandinavian Journal of Caring Sciences* 2011, **25**(1):176-184.

11. Hope K, Ferguson M, Reidlinger DP, Agarwal E: **"I don't eat when I'm sick": Older people's food and mealtime experiences in hospital**. *Maturitas* 2017, **97**:6-13.

12. Hartwell HJ, Shepherd PA, Edwards JSA: **Effects of a hospital ward eating environment on patients' mealtime experience: A pilot study**. *Nutrition & Dietetics* 2013, **70**(4):332-338.

13. Mahler M, Sarvimäki A: **Appetite and falls: Old age and lived experiences**. *International Journal of Qualitative Studies on Health and Well-being* 2012, **7**(1):11540.

14. Chatindiara I, Sheridan N, Kruger M, Wham C: **Eating less the logical thing to do? Vulnerability to malnutrition with advancing age: A qualitative study**. *Appetite* 2020, **146**:104502.

15. Braun V, Clarke V: **Using thematic analysis in psychology**. *Qualitative Research in Psychology* 2006, **3**(2):77-101.

16. Terry G, Hayfield, N., Clarke, V. & Braun, V.: **Thematic analysis.** In: *The SAGE Handbook of Qualitative Research in Psychology.* Edited by Rogers CWW, Second edn. 55 City Road, London: SAGE Publications Ltd; 2017.

17. Braun V, Clarke V, Hayfield N, Terry G: **Thematic Analysis**. In: *Handbook of Research Methods in Health Social Sciences.* Edited by Liamputtong P. Singapore: Springer Singapore; 2019: 843-860.

18. Ibrahim K, Mullee M, Yao GL, Zhu S, Baxter M, Tilly S, Russell C, Roberts HC: **Southampton Arm Fracture Frailty and Sarcopenia Study (SAFFSS): a study protocol for the feasibility of assessing frailty and sarcopenia among older patients with an upper limb fracture**. *BMJ Open* 2019, **9**(8):e031275.

19. Engel GL: **THE BIOPSYCHOSOCIAL MODEL AND THE EDUCATION OF HEALTH PROFESSIONALS\*†**. *Annals of the New York Academy of Sciences* 1978, **310**(1):169-181.

20. Clegg ME, Godfrey A: **The relationship between physical activity, appetite and energy intake in older adults: A systematic review**. *Appetite* 2018, **128**:145-151.

21. Okamoto K, Harasawa Y, Shiraishi T, Sakuma K, Momose Y: **Much communication with family and appetite among elderly persons in Japan**. *Archives of Gerontology and Geriatrics* 2007, **45**(3):319-326.

22. Lee JS, Kritchevsky SB, Tylavsky F, Harris TB, Ayonayon HN, Newman AB: **Factors Associated with Impaired Appetite in Well-Functioning Community-Dwelling Older Adults**. *Journal of Nutrition For the Elderly* 2006, **26**(1-2):27-43.

23. Engel JH, Siewerdt F, Jackson R, Akobundu U, Wait C, Sahyoun N: **Hardiness, Depression, and Emotional Well-Being and Their Association with Appetite in Older Adults**. *Journal of the American Geriatrics Society* 2011, **59**(3):482-487.

24. Donini LM, Dominguez LJ, Barbagallo M, Savina C, Castellaneta E, Cucinotta D, Fiorito A, Inelmen EM, Sergi G, Enzi G *et al*: **Senile anorexia in different geriatric settings in Italy**. *Journal of Nutrition, Health & Aging* 2011, **15**(9):775-781.

25. Landi F, Liperoti R, Lattanzio F, Russo A, Tosato M, Barillaro C, Bernabei R, Onder G: **Effects of anorexia on mortality among older adults receiving home care: An observational study**. *The journal of nutrition, health & aging* 2012, **16**(1):79-83.

26. Landi F, Lattanzio F, Dell'Aquila G, Eusebi P, Gasperini B, Liperoti R, Belluigi A, Bernabei R, Cherubini A: **Prevalence and Potentially Reversible Factors Associated With Anorexia Among Older Nursing Home Residents: Results from the ULISSE Project**. *J Am Med Dir Assoc* 2013, **14**(2):119-124.

27. Bloom I, Lawrence W, Barker M, Baird J, Dennison E, Sayer AA, Cooper C, Robinson S: **What influences diet quality in older people? A qualitative study among community-dwelling older adults from the Hertfordshire Cohort Study, UK**. *Public Health Nutrition* 2017, **20**(15):2685-2693.

28. Payne L, Harris P, Ghio D, Slodkowska-Barabasz J, Sutcliffe M, Kelly J, Stroud M, Little P, Yardley L, Morrison L: **Beliefs about inevitable decline among home-living older adults at risk of malnutrition: a qualitative study**. *Journal of Human Nutrition and Dietetics*, **n/a**(n/a).

29. Pilgrim D: **The Biopsychosocial Model in Health Research: Its Strengths and Limitations for Critical Realists**. *Journal of Critical Realism* 2015, **14**(2):164-180.

30. Hatala AR: **The Status of the Biopsychosocial Model in Health Psychology: Towards an Integrated Approach and a Critique of Cultural Conceptions**. *Open Journal of Medical Psychology* 2012, **Vol.01No.04**:4.

31. Wilson MM, Thomas DR, Rubenstein LZ, Chibnall JT, Anderson S, Baxi A, Diebold MR, Morley JE: **Appetite assessment: simple appetite questionnaire predicts weight loss in community-dwelling adults and nursing home residents**. *American Journal of Clinical Nutrition* 2005, **82**(5):1074-1081.

32. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J, Seeman T, Tracy R, Kop WJ, Burke G *et al*: **Frailty in older adults: evidence for a phenotype**. *J Gerontol A Biol Sci Med Sci* 2001, **56**(3):M146-156.

33. Malmstrom TK, Morley JE: **SARC-F: a simple questionnaire to rapidly diagnose sarcopenia**. *J Am Med Dir Assoc* 2013, **14**(8):531-532.