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What influences diet quality in older people? A qualitative study

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Authorship: I.B. planned and executed data collection, contributed to the data analysis/interpretation and wrote the first draft of the paper. W.L. helped to conceptualize the work, to supervise its execution and contributed to data collection and analysis/interpretation. M.B. contributed to later-stage supervision and data analysis/interpretation. J.B. contributed to oversight of the project and interpretation of the data. C.C., E.D. and A.A.S. were responsible for the design and supervision of the Hertfordshire Cohort Study and provided contributions to oversight of the project. S.R. conceived the study, supervised its execution and contributed to the interpretation of the data. All authors helped to revise and draft the manuscript and approved the final version.

Ethical Standards Disclosure: This study was conducted according to the guidelines laid down in the Declaration of Helsinki and all procedures involving human subjects were approved by the NRES Committee East of England, Hatfield (REC reference: 10/H0311/59). The HCS had ethical approval from the Bedfordshire & Hertfordshire Local Research Ethics Committee and the West Hertfordshire Local Research Ethics Committee. Written informed consent was obtained from all participants.

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What influences diet quality in older people? A qualitative study

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Abstract

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23 **Objective:** To explore influences on diet in a group of community-dwelling older adults in the UK.

24 **Design:** Data were collected through focus group discussions with older people; discussions were
25 audio-recorded, transcribed verbatim and transcripts analysed thematically.

26 **Setting:** Hertfordshire, UK.

27 **Subjects:** Participants were sampled purposively from the Hertfordshire Cohort Study, focusing on
28 those whose diets had been assessed at two time points – 1998-2001 and 2011.

29 **Results:** Ninety-two participants took part (47% women; 74-83 years) and eleven focus groups
30 were held. A number of age-related factors were identified that were linked to food choices,
31 including lifelong food experiences, retirement, bereavement and medical conditions, as well as
32 environmental factors (such as transport). There appeared to be variability in how individuals
33 responded to these influences, indicating that other underlying factors may mediate the effects of
34 age-related factors on diet. Discussion about “keeping going”, being motivated to “not give up”, not
35 wanting to be perceived as “old”, as well as examples of resilience and coping strategies, suggest
36 the importance of mediating psychological factors. In addition, discussion about social activities
37 and isolation, community spirit and loneliness, indicated the importance of social engagement as an
38 influence on diet.

39 **Conclusions:** Interventions to promote healthier diets in older age should take account of
40 underlying psychological and social factors that influence diet, which may mediate the effects of
41 age-related factors.

42

43 **Keywords:** ageing, focus groups, food choice, psychological factors, social relationships.

44

Introduction

Although poor diet quality is common in older people⁽¹⁻⁴⁾, the determinants of dietary choices and quality in later life are poorly understood. Much of the evidence to date is cross-sectional and largely fragmented, particularly regarding how factors interact to impact on diet. The lack of longitudinal evidence is particularly problematic since the ageing process itself is often accompanied by physiological, psychological, and social changes that can affect food consumption. Importantly, the variability in diet across the older population suggests some older adults are able to adapt to these changes and maintain diet quality, while others do not⁽⁵⁾.

There is increasing evidence that social factors such as marital status, living arrangements and frequency of social contact are important influences on older people's diets⁽⁶⁻⁸⁾. For example, both living alone and having less frequent contact with friends have been found to exacerbate the negative effect of widowhood on diet^(6,9); other studies have highlighted roles of social isolation, lack of social support and lack of participation in leisure activities^(8,10-12).

Less is known about the influence of psychological factors on diet in older age. In younger women, a perceived lack of control over life is linked to diets of poorer quality⁽¹³⁾, and appears to mediate effects of social disadvantage on diet. In comparison, there is a gap in our understanding of the role of these factors in older age and how they impact on the effects of illness, disability and disadvantage on diet. Findings from Canada⁽⁵⁾ have highlighted the roles of resilience (a process comprising positive adaptation despite significant adversity⁽¹⁴⁾) and self-efficacy (an individual's belief in their own ability to achieve a desired outcome), which is consistent with a recent study from Japan⁽¹⁵⁾ that found that psychosocial factors, including increased self-efficacy and increased social influence, attenuated the association between lower socioeconomic status and poorer diets in older people.

Gaining insight into what supports older adults to eat well will be important in the development of interventions to promote diet quality and enhance healthy ageing. The present study uses qualitative methodology to explore subjective experiences and attitudes, to provide deeper insights. It uses quantitative longitudinal data on diet quality as a starting point, to enable comparison of individuals whose diet quality has declined and those whose diets remained stable over time. The primary aim was to explore influences on diet among community-dwelling older people in the UK; the secondary aims were to gain insight into gender differences and factors linked to differences in diet stability in older age.

Methods

77

78 Participants

79 Hertfordshire Qualitative Study (HQS) participants were selected from an established
80 cohort, the Hertfordshire Cohort Study (HCS) ⁽¹⁶⁾, and included participants whose diets had been
81 assessed at two time points. Between 1998 and 2003 (1st time point), the diets of 1677 men and
82 1540 women, taking part in the HCS, were assessed by an administered food frequency
83 questionnaire ⁽¹⁷⁾. In 2004–2005, 642 participants, resident in East Hertfordshire, took part in a sub-
84 study that collected musculoskeletal data. In 2011, 592 of these participants were further
85 approached, of whom 443 (75%) agreed to be followed up ⁽¹⁸⁾; at this point (2nd time point), diet
86 was re-assessed. A prudent diet score, derived from a principal component analysis of the dietary
87 data, was calculated for each participant based on their consumption of 24 indicator foods ⁽¹⁹⁾, and
88 was used as an indicator of diet quality. Prudent diet scores calculated using these indicator foods
89 have been shown to be highly correlated with scores calculated from a complete dietary assessment
90 (0.912 in men, 0.904 in women), and they show comparable associations with blood biomarkers ⁽¹⁸⁾.
91 A high score indicated frequent consumption of fruit, vegetables, wholegrain cereals and oily fish.
92 Changes in diet scores over the 10-year period were calculated. While in men average diet quality
93 remained stable with increasing age, in women there was an overall decline: mean (SD) change in
94 diet score per year 0.008 (0.099) in men and -0.025 (0.108) in women ⁽¹²⁾.

95 Of the 443 HCS participants with follow-up dietary data, 408 (still alive and taking part in
96 the study) were approached and invited to attend a focus group to discuss influences on diet and
97 barriers to eating healthily. These participants were divided into two groups according to change in
98 diet over the past decade – defined using change in prudent diet scores. ‘Diet-declined’ and ‘diet-
99 stable’ participants took part in different focus groups. Of the 408 participants approached, 92
100 (23%) participants (43 women and 49 men; mean age=78 years) were successfully recruited into the
101 study; the remaining 316 people did not take part for various reasons (unavailability in the study
102 time frame, non-response to invitation letter or unwillingness). In comparison with the 316 HCS
103 participants who did not take part, there were no differences in terms of age, education or social
104 class, however the 92 participants had slightly healthier diets: mean (SD) diet score 0.476 (1.429),
105 compared to 0.117 (1.205) in those who did not take part (P = 0.017).

106 We selected focus groups as the method for data collection as they draw on the
107 communication and interaction between research participants in order to generate data, and are a
108 useful method to investigate complex behaviours, such as dietary behaviours as is the case for the
109 present study. Sufficient focus groups were conducted both to reach the point of saturation, the

110 point at which no new information or themes were observed in the data ⁽²⁰⁾, as well as to ensure
111 approximately similar numbers of participants from the groups that we aimed to compare (men vs
112 women; diet-declined vs diet-stable).

113 All participants were provided with an information sheet explaining the study and the nature
114 of the discussion. Written informed consent was obtained from everyone before discussions began.

115 **Procedure**

116 Participants were contacted by post with an invitation letter, a participant information sheet
117 detailing all important aspects of the study and a reply slip to indicate whether they would be
118 willing to take part). If there was no response from a potential participant after two weeks, a
119 reminder letter was sent. Thereafter, no further contact was made about this study. Willing
120 participants were contacted by I.B. by telephone to arrange a convenient time for them to attend a
121 focus group. Focus groups were held in a centrally-located community venue in the town of
122 Hertford, UK in mid-March, end May/beginning June and end September 2014. Upon arrival, W.L.
123 and I.B. introduced themselves to participants, attendees were reimbursed for any travel costs
124 incurred and refreshments were provided. Participants did not receive any further incentives for
125 their participation. W.L. and I.B. worked as a pair, taking turns to moderate and observe the
126 discussions. W.L. is an associate professor of health psychology with experience and expertise in
127 qualitative methods, including running focus groups, and I.B. is a research nutritionist with training
128 in qualitative research and some experience conducting focus groups. Both researchers were present
129 at every focus group, except for the last one where only I.B. was present due to practical
130 constraints. Focus group discussions lasted anywhere between 75 and 99 minutes, with an average
131 of approximately 1.5 hours. Focus groups were guided by a semi-structured discussion guide
132 developed by the research team, based on a literature review and discussions with nutritionists,
133 epidemiologists and social scientists in the field (see Supplement 1 in the supplementary material
134 available online at <https://www.cambridge.org/core/journals/public-health-nutrition> for the full
135 discussion guide). Discussions were audio-recorded and transcribed verbatim.

136 **Data Analysis**

137 Transcripts were analysed thematically ⁽²¹⁾; the process began with identifying initial codes
138 from transcripts to be refined into themes. A coding framework was developed to represent
139 emergent themes, which were identified using inductive coding, a process of coding the data
140 without trying to fit it into a pre-existing coding frame, i.e. data-driven ⁽²¹⁾. All transcripts were
141 double-coded and analysed using a constant comparative approach ⁽²²⁾, whereby each theme was
142 compared to the others and assessed for similarities and differences, driven by the study's central

143 purpose, i.e. to explore influences on diet in older age, as well as any gender differences and
144 differences between 'diet-declined' and 'diet-stable' groups. Both moderator and observer were
145 involved in the data analysis to ensure that it was representative of the groups' views and they met
146 regularly to discuss any disagreements, make suggestions for amendments, and agree the coding
147 framework. The themes were developed and depicted in a thematic map to illustrate how they link
148 to form the interpretation presented here. Analyses took place at the group level as individuals were
149 not identifiable from the audio-recording.

150

151

Results

152 Focus group characteristics

153 Eleven focus group (FG) discussions were held (see Table 1): six with participants whose
154 diet quality had declined (n=41), five with participants whose diets had remained stable over time
155 (n=51). All but one group were held separately for men and women in order to examine differences
156 by gender. Of the 92 participants, 47% were female, the age range was 74-83 years (mean=78
157 years). **There was a similar spread of manual social class and non-manual social class participants,**
158 **both within each category of focus group, as well as within each individual group.** Numbers of
159 participants in each focus group ranged from five to twelve, and all were white British, born in
160 Hertfordshire 1931-9.

161 Thematic Analysis

162 Analysis of the data, whereby themes were identified in an inductive (data-driven) process
163 and then thematically coded and analysed using a constant comparative approach, revealed that a
164 number of distinct themes appeared to be important influences on diet. **A thematic map was created**
165 **to depict these themes and this was developed into a hypothetical model to depict the relationships**
166 **between the themes (Figure 1).** This shows how we propose the themes might interrelate to impact
167 on diet. Four initial themes are proposed as contextual factors:

- 168 1. Historical influences on and current beliefs about food
- 169 2. Retirement and bereavement
- 170 3. Age-related conditions/symptoms
- 171 4. Food environment

172 Discussions with participants revealed two additional themes that appeared both to have a
173 direct influence on diet and also to mediate the influence of the four contextual factors on diet; these
174 themes are thus hypothesised to be underlying factors in this interpretation of the data:

175 5. Psychological/personal factors

176 6. Social engagement

177 The relationship between the contextual factors and the two underlying factors is seen as a
178 dynamic, and bi-directional. The result of the interaction between the contextual and underlying
179 factors determines how individuals make food choices and construct their diets, captured in the final
180 theme:

181 7. Food-related habits (e.g. types and quantities of foods eaten, methods used to prepare
182 food/meals...).

183 These themes are set out below and illustrated with example quotes.

184

185 In addition to our primary aim, to explore influences on diet among community-dwelling
186 older people, the study was designed to address two secondary aims, to explore differences between
187 ‘diet-declined’ (DD) and ‘diet-stable’ (DS) groups, and between men (M) and women (W).
188 However, our analysis did not reveal any obvious differences between the diet groups and revealed
189 few gender differences. Therefore the Results section focuses on the themes (listed above) that
190 address the primary aim; where appropriate, comments on gender differences are also given.

191

192 1. Historical influences on and current beliefs about food

193 All groups in this study described the importance of their upbringing and past experiences
194 on the foods they currently eat:

195 *“My mother was a great cook and she taught me how to skin rabbits (laughter) and pluck*
196 *chickens ... she taught me all sorts of things and I continue that today ... we eat basic and*
197 *that’s what I’ve been brought up on” [FG1W DD]*

198 But discussions conveyed that a general shift towards healthier eating habits was guided by
199 current messages and beliefs about what constituted ‘healthy’, including less fat, sugar, salt:

200 *“I know that we all eat a lot more fish than we used to, and probably more chicken, but a*
201 *great deal less red meat ... I think because in the media there’s been quite a lot about it not*
202 *being good for you” [FG9W DS]*

203

204 **2. Retirement and bereavement**

205 Most spoke of the impact retirement had had on their lifestyles and in particular on their
206 food habits. One outcome was having more time to prepare food and another was how the new
207 daily structure led to changes in eating patterns:

208 *“I’ve cut out the two cooked meals a day ‘cos when I was in the office I had a restaurant*
209 *and ... had a proper meal, but when I got home in the evening my wife hadn’t had anything*
210 *so I’d keep her company with a cooked meal. Now ... we just have a cooked lunch and then*
211 *have a lighter meal” [FG10M DS]*

212 Following bereavement there were often significant changes to cooking or eating behaviour.
213 **The impact on diet following the loss of a partner appeared to affect men and women differently.**
214 For women, the loss of their partner elicited a range of differing responses in relation to eating, both
215 positive and negative. **Women who had lost their partner felt less motivated to cook for themselves,**
216 **as is described further on.** Some tried different foods or went to different places to eat:

217 *“I have a sister-in-law ... and our husbands died within six months of each other and I*
218 *decided to take her out and we went to [restaurant] and ooh she’d never been anywhere like*
219 *that, it was wonderful so we’ve been there several times” [FG4W DD]*

220 Some had difficulty in accessing the shops, since it was their husband who had done most of
221 the driving:

222 *“My husband died and so I haven’t got the car now ... I didn’t drive a lot ... I am lucky*
223 *because if I go shopping, I’ve got my cousin’s husband, always picks me up you know and*
224 *takes me home” [FG4W DD]*

225 For men, the primary outcome from the loss or illness of their partner appeared to relate to
226 their ability or motivation to learn or continue to cook. **Men largely spoke about having to adapt**
227 **after losing the person who did most of the cooking. Some learnt to cook and found enjoyment in**
228 **this; others found alternative solutions such as opting for ready-meal deliveries.**

229 *“Well ten years ago I suddenly found myself on my own as my wife suddenly died ... so I*
230 *suddenly found I had to learn how to cook, and anyway I found that I liked to steam all my*
231 *vegetables mainly because you could do it all in one pot and you only had one to wash up”*
232 *[FG3M DD]*

233 *“My main meals are prepared meals you know microwave meals ... I have them delivered*
234 *from a frozen food company ... I feel rather lazy (laughter) ... I’ve been doing that for must*
235 *be three or four years now ... I didn’t take much notice of what she was doing*
236 *unfortunately” [FG2M DD]*

237

238 **3. Age-related conditions**

239 Having a smaller appetite as a result of the natural ageing process was discussed in all
240 groups and many considered portion sizes to be too large when eating out. All groups discussed
241 making changes to their diets, such as choosing or avoiding certain foods, due to medical conditions
242 or medication they were taking. Furthermore, most groups spoke about how physical incapacity or
243 decline had affected food-related activities:

244 *“My knees are so bad now I just don’t walk far ... I used to drive but I had to give it up, but*
245 *I wish I could drive now, it would be easy as I could go down and get my own shopping. I*
246 *miss doing the shopping” [FG4W DD]*

247

248 **4. Food environment**

249 Price or getting value-for-money was widely discussed, as well as availability and quality of
250 foods. Many spoke about issues with accessing shops or food-related activities:

251 *“We used to walk down for tea to Hertford and catch the bus back ‘cos it’s uphill, but you*
252 *can’t rely on the buses now so we’ve stopped doing that” [FG7W DS]*

253 Women who lived alone had difficulty finding smaller portions, with supermarkets not
254 catering for the single person and a lack of availability of small shops, such as local butchers:

255 *“If you’re on your own, supermarkets don’t really cater for single portions” [FG7W DS]*

256

257 It is hypothesised that there are two underlying factors (presented below), namely
258 psychological/personal factors and social engagement, that impact on how older people respond to
259 and cope with the influences identified above.

260

261 **5. Psychological/personal characteristics**

262 **Our analyses identified a series of contextual and underlying themes that describe influences**
263 **on diet in older age. One of the underlying themes identified in this study was the role of**

264 psychological and personal factors. A frequently-cited driver apparent in these discussions was the
265 need to “keep going”, by being positive and maintaining an interest in life, for fear of being a
266 burden on others or losing their health/independence, like others (peers) have. Participants spoke of
267 wanting to be part of the wider community and to be able to do the things that they had always
268 done, including cooking and eating well. This, along with other explicit references to being
269 motivated to “not give up” and to not be perceived and treated as old, as well as implicit examples
270 of resilience and coping strategies, highlights the importance of resilience and self-efficacy in
271 overcoming dietary setbacks, and suggests an important mediating role of psychological and
272 personal factors on diet. A consistent message from the discussions was the importance of staying
273 positive and being motivated to keep healthy and independent to avoid having to rely on others:

274 *W1: “You just do it.*

275 *W4: You must be positive ...*

276 *W2: Motivation ...*

277 *W3: I think it’s fear of having to rely on other people.*

278 *W4: Just like you’re going home tonight [you want] a meal, so you’re going to cook it*
279 *aren’t you?” [FG7W DS]*

280 There was an emphasis on not being regarded as old, or accepting that old age meant
281 behaving in a certain way, and on wanting to remain part of the wider community:

282 *“Making sure you can keep doing all the things you did all your life ... and that’s only by*
283 *keeping on doing exactly what you’ve always done, not suggesting that you’re too old*
284 *anymore ... that’s my policy” [FG8M DS]*

285 *“My daughter always says ‘Why do you like to go out shopping on a Saturday mum?’ It’s*
286 *because I like to be with people of all ages ... you go out in the week ... it’s like an old*
287 *people’s club” [FG9W DS]*

288 For most groups, cooking and food were viewed as a priority:

289 *Moderator: “And what kind of priority is there for food in everybody’s lives?*

290 *M: Oh number one ... I’m still on me own but I’m still ... making meat puds and all that”*
291 *[FG2M DD]*

292 For all groups, taste and enjoying food were significant influences on food choices and it
293 was evident that for some this may be more important than potential health benefits:

294 *“I eat what I wanna eat. I know I have a fat belly as you can see. I eat butter, milk, cream,*
295 *everything, you name it I’ll have it. ‘Cos you know life’s too short, you have what you want”*
296 *[FG8M DS]*

297 Both genders spoke of being too lazy, not bothering to cook or not enjoying cooking, but
298 this appeared to be more dominant for women. **This seemed to be linked with the issue of eating**
299 **alone and no longer having the role of providing meals for someone else (described below in the**
300 **section about social engagement), and was another aspect of the interaction between gender and**
301 **how bereavement/loneliness influenced food-related behaviours:**

302 *“I admit I’m lazy, I don’t bother to cook dinners very often ... I very rarely eat meat and I*
303 *don’t eat chicken so I find it really difficult to eat proper, so possibly I have too much things*
304 *on toast ... I never used to be like this I used to eat... possibly since I’ve been on my own I*
305 *think ... I used to cook dinners every day, we used to be quite big meat eaters but I can’t eat*
306 *much meat now ...*

307 *Moderator: Do you enjoy cooking?*

308 *No, not now” [FG6W DD]*

309

310 **6. Social engagement**

311 **In addition, there was much discussion about social activities and isolation; of community**
312 **spirit and loneliness – indicating the importance of maintaining and developing ways to ensure**
313 **social engagement, the other underlying theme identified in this study. For those who have a good**
314 **level of social engagement, it may be easier to cope with the process of ageing and other contextual**
315 **influences we identified. There was recurrent discussion about taking part in various social**
316 **activities and clubs.** The motivation to keep going and not be perceived as old led these participants
317 to seek opportunities for social engagement. Eating out or with friends/family was widely spoken of
318 as a key social activity:

319 *“We have a monthly pub lunch ... and you see people there that you probably haven’t seen*
320 *for donkey’s years ... the food is dreadful (laughter) - it really is! I said to a bloke the other*
321 *day ‘I could never stop coming’ because I only see him ... when I go there ... I moan about*
322 *it something rotten but you go again and that is very good for socialising” [FG2M DD]*

323 Friends also played an important role in facilitating engagement with a range of social
324 activities, not necessarily food-related.

325 There was discussion of the influence of family members on eating habits; family members,
326 such as children or grandchildren, had an important influence on participants' eating habits:

327 *"I do me own cooking ... 'cos I'm on me own now but my daughter occasionally brings*
328 *things in for me to eat"* [FG5M DD]

329 Women were more likely to speak about the loneliness of eating alone or not having a
330 supportive community around them, particularly following bereavement. They emphasised the
331 importance of family, friends and community in supporting them through difficult times and
332 ensuring they did not become isolated. For women, eating alone was seen as a difficult or lonely
333 activity; they spoke of the importance of having a partner or others to cook for:

334 *"I find um eating on your own, you take ages cooking a meal and you sit at the table ... and*
335 *within a few minutes you've eaten it and there's no one to talk to"* [FG1W DD]

336 The role of friends or family in motivating and supporting women to take part in social
337 activities, especially following the loss or illness of a partner was particularly important:

338 *"Luckily I've got good family and friends, so they would rally around and say 'Oh come on*
339 *go and do this'. But it is a completely different life because I find ... friends ... if they're all*
340 *couples when you're on your own in the group ... you feel more alone, you think 'Well I'd*
341 *rather be at home'* [FG7W DS]

342 Discussion about the importance of having supportive neighbours or community
343 environment was also more prominent for women:

344 *"The cul-de-sac I live in, not one person has come up to me and said 'I'm ever so sorry your*
345 *husband died'. I could do with somebody caring, not for me but about me, 'cos at the*
346 *moment it's eleven months today my husband died and I am lonely ... it's horrible, nobody*
347 *comes up to you and says 'Want a cup of tea?' or anything"* [FG1W DD]

348 The above described analysis suggests that the interaction between contextual and
349 underlying themes impact differently on people's food-related habits, which could underlie
350 differences in dietary quality observed across the population.

351

352 **7. Food-related habits**

353 All participants had a great deal to say about how they prepared food and what they liked to
354 eat. For instance preparing one-pot dinners, cooking extra and freezing were strategies to dealing

355 with eating alone. All groups discussed the division of food-related tasks within the household; two
356 main patterns emerged: the wife doing most or all of the shopping or cooking, and the husband and
357 wife sharing the tasks. For women, it was clear that their husbands' likes and dislikes played a
358 major role in influencing the types of foods they cooked and hence the current family food habits.
359 At the same time, many men appeared to prefer home-cooked meals, cooked by their wives, to
360 meals eaten out.

361 **Discussion**

362 **This study suggests that social and psychological factors may mediate the influence of**
363 **background characteristics on the diets of older people, which to our knowledge has not been**
364 **demonstrated before. The study also generated testable hypotheses as to how this complexity of**
365 **factors might interrelate to impact on diet.**

366 Our primary aim was to explore what influences older people's diets. Perhaps as expected
367 various contextual factors relating to the process of ageing had a significant impact on diet. This
368 encompassed experiences over a long lifetime, represented as past and present food influences and
369 beliefs; the impact of retirement, bereavement, medical conditions and symptoms; and the
370 interaction of environmental and ageing factors (such as cost or access to shops, including having a
371 means of transport to get around). All of these potentially constrain food choices, but there appeared
372 to be variability in how individuals responded to these influences, indicating that other underlying
373 factors may condition their effects on diet. We conducted separate focus group discussions with
374 men and women whose diets had declined in recent years and those whose diets had remained
375 relatively stable, making it possible to explore differences between them. All but one group was
376 single-sex, allowing an exploration of gender effects. However, surprisingly, our analysis revealed
377 no obvious differences in influences on diet between diet-stable and unstable groups. Furthermore,
378 despite evidence of poorer diet quality among older men compared with women⁽¹²⁾, we found few
379 differences by gender.

380 **We developed a hypothetical model to illustrate the relationships between the themes**
381 **identified through analysis of the data, where we suggest how these factors might interact to**
382 **influence diet.** To our knowledge only one other model⁽²³⁾ has sought to comprehensively
383 synthesise the complex interaction between the broad range of influences on dietary choices in later
384 life. Although the models differ in various ways, the influences on dietary choices identified in the
385 present study are essentially similar to those observed by Winter Falk et al. in a US context. The
386 present model explicitly depicts contextual factors related to ageing, such as retirement,
387 bereavement, and medical conditions. Our model also highlights the importance of resilience as a

388 psychological/personal factor and suggests an important role of social engagement in mediating the
389 effects of other influences on diet.

390 Participants talked about eating foods for enjoyment, as opposed to eating to maintain
391 health. It appeared that some believed that changing unhealthy eating habits would not necessarily
392 improve their health, whereas others were convinced that a healthy diet would keep them healthy
393 and independent. These differing outcome expectancies – believing that one’s behaviour will lead to
394 a desired outcome – are likely to influence food behaviour in older age ⁽²⁴⁾.

395 According to social cognitive theory ⁽²⁵⁾, psychological factors such as self-efficacy and
396 outcome expectancies can mediate the influence of environmental or situational factors on an
397 individual’s behaviour; if an individual believes they can undertake an action and that this will lead
398 to a positive outcome, they are more likely to overcome barriers to healthy behaviours and to make
399 changes to these ⁽²⁶⁾.

400 In line with previous research ^(27, 28) this study highlighted the importance of life transition
401 points, such as retirement, loss of a partner, and onset of illness, in leading to changes in dietary
402 habits. Previous research ⁽²⁹⁾ suggests that older men may be ill-prepared to undertake food-related
403 activities when losing their spouse, as women traditionally carried out food-provisioning tasks;
404 while others suggest ⁽³⁰⁾ that particularly for men, poor cooking skills may have a negative influence
405 on diet. Women who had lost their partner felt less motivated to cook for themselves, which is
406 consistent with previous qualitative research in older community-dwelling adults (mostly female)
407 that found that food apathy (lack of interest or enthusiasm regarding eating) influenced diet ⁽⁵⁾. A
408 recent qualitative study of widowed older women living alone ⁽²⁸⁾ suggests that women adopt new
409 eating patterns in widowhood in a process that is influenced by various factors including their social
410 network.

411 Previous research has found that older men and women who live alone have worse diet
412 quality than those living with a partner ^(11, 31). A study of adults aged over 50 years in the EPIC
413 cohort (UK) ⁽⁶⁾ found that people who were single or widowed had decreased variety of fruit and
414 vegetable intake in comparison to those who were married, in men more than in women. The study
415 found that both living alone and having less frequent contact with friends exacerbated the effect of
416 widowhood on decreasing vegetable variety, suggesting that friends may compensate for the lack of
417 social ties to a partner ^(6, 9).

418 Research has shown that increased frequency of social contact is associated with healthier
419 dietary habits in older people ⁽⁶⁾. We have recently shown in the Hertfordshire cohort ⁽¹²⁾ that greater

420 participation in leisure activities, especially cognitive activities, was associated with smaller
421 declines in diet quality over a 10-year follow-up period. Others ⁽³²⁾ found that social relationships,
422 rather than socioeconomic status, enhance resilience in older people, when these precede, and
423 continue throughout, the period of adversity. Involvement in leisure activities has been found to
424 become increasingly important with age and could contribute to resilience in older people ⁽³³⁾.

425 Increased social contact might influence diet through various mechanisms, such as increased
426 social support, which can provide encouragement and companionship; social control; increased
427 social influence/social comparison; an increased sense of purpose; meaning in life; and sense of
428 belonging ⁽³⁴⁾. It has been suggested that these pathways could promote positive psychological
429 states that could motivate healthy behaviours, including diet ⁽³⁴⁾.

430

431 **Strengths and Limitations**

432 Analysis of focus group data are generally conducted at the group level, increasing the
433 likelihood of some views being weighted inaccurately. **Although two researchers were present at**
434 **most focus groups, one of the groups was only attended by one of them. We acknowledge that this**
435 **study presents only one possible interpretation of the data and that other interpretations could be**
436 **possible.** However, the study benefits from having input from an experienced multidisciplinary
437 research team. Through a rigorous approach to the analyses, including double-coding, a high level
438 of quality control was achieved, in order to minimise misinterpretation. **A limitation of this study is**
439 **that the age range of the study population (74-83 years) was determined by the prior quantitative**
440 **study, and does not represent the full age range of older adults (i.e. ≥ 65 years). Only white, British**
441 **older adults took part, and participants had slightly healthier diets than members of the cohort who**
442 **did not take part, such that the findings may not be generalizable to all senior populations.**

443 However, the HCS has been shown to be broadly representative of the wider population of older
444 adults in England ⁽¹⁶⁾, there is no reason to believe a vastly different interpretation would be
445 presented if others from this population were sampled. It is a strength of the study that a good
446 sample size was achieved, that included older adults from a range of different social backgrounds,
447 **which suggests that the findings could be of relevance to the wider population of older adults in the**
448 **UK.**

449

450

450 **Conclusion**

451 This study has highlighted the potential importance of underlying social and psychological
452 factors in understanding why, in the face of dietary challenges that commonly accompany ageing,

453 some older people are able to adapt and maintain a healthy diet, while others are not. Hence, **future**
454 interventions to promote quality of diet and better health in older age may need to consider social
455 engagement and psychological factors (resilience, self-efficacy, outcome expectancies) in their
456 design, as levers for change. **The development of a hypothetical model of influences on diet in older**
457 **age presents the opportunity to test quantitatively the hypothetical relationships between these**
458 **factors and how they could interrelate to impact on diet in later life.**

- 460 1. Elia M, Russell CA, Stratton RJ. (2010) Malnutrition in the UK: policies to address the problem. *Proc*
 461 *Nutr Soc* **69**, 470-6.
- 462 2. Maynard M, Gunnell D, Ness AR, *et al.* (2006) What influences diet in early old age? Prospective and
 463 cross-sectional analyses of the Boyd Orr cohort. *Eur J Public Health* **16**, 316-24.
- 464 3. Elsner RJF. (2002) Changes in eating behavior during the aging process. *Eating Behaviors* **3**, 15-43.
- 465 4. Johnson AE, Donkin AJM, Morgan K, *et al.* (1998) Fruit and vegetable consumption in later life. *Age*
 466 *and Ageing* **27**, 723-8.
- 467 5. Vesnaver E, Keller HH, Payette H, *et al.* (2012) Dietary resilience as described by older community-
 468 dwelling adults from the NuAge study "If there is a will – there is a way!". *Appetite* **58**, 730-8.
- 469 6. Conklin AI, Forouhi NG, Surtees P, *et al.* (2014) Social relationships and healthful dietary behaviour:
 470 evidence from over-50s in the EPIC cohort, UK. *Social science & medicine (1982)* **100**, 167-75.
- 471 7. Sahyoun NR, Zhang XL. (2005) Dietary quality and social contact among a nationally representative
 472 sample of the older adult population in the United States. *The journal of nutrition, health & aging* **9**, 177-83.
- 473 8. Vesnaver E, Keller HH. (2011) Social influences and eating behavior in later life: a review. *J Nutr*
 474 *Gerontol Geriatr* **30**, 2-23.
- 475 9. Friedman EM. (2014) Good friends, good food ... what more could we want? Assessing the links
 476 between social relationships and dietary behaviors. A commentary on Conklin *et al.* *Social science & medicine*
 477 *(1982)* **100**, 176-7.
- 478 10. Romero-Ortuno R, Casey AM, Cunningham CU, *et al.* (2011) Psychosocial and functional correlates of
 479 nutrition among community-dwelling older adults in Ireland. *Journal of Nutrition Health & Aging* **15**, 527-31.
- 480 11. Dean M, Raats MM, Grunert KG, *et al.* (2009) Factors influencing eating a varied diet in old age. *Public*
 481 *health nutrition* **12**, 2421-7.
- 482 12. Bloom I, Edwards M, Jameson KA, *et al.* (2016) Influences on diet quality in older age: the importance
 483 of social factors. *Age and Ageing*
- 484 13. Lawrence W, Skinner C, Haslam C, *et al.* (2009) Why women of lower educational attainment struggle
 485 to make healthier food choices: the importance of psychological and social factors. *Psychology & health* **24**,
 486 1003-20.
- 487 14. Luthar SS, Cicchetti D, Becker B. (2000) The Construct of Resilience: A Critical Evaluation and
 488 Guidelines for Future Work. *Child development* **71**, 543-62.
- 489 15. Sugisawa H, Nomura T, Tomonaga M. (2015) Psychosocial mediators between socioeconomic status
 490 and dietary habits among Japanese older adults. *The journal of nutrition, health & aging* **19**, 130-6.
- 491 16. Syddall HE, Aihie Sayer A, Dennison EM, *et al.* (2005) Cohort profile: the Hertfordshire cohort study.
 492 *Int J Epidemiol* **34**, 1234-42.
- 493 17. Robinson S, Syddall H, Jameson K, *et al.* (2009) Current patterns of diet in community-dwelling older
 494 men and women: results from the Hertfordshire Cohort Study. *Age and Ageing* **38**, 594–9.
- 495 18. van der Pas S, Castell MV, Cooper C, *et al.* (2013) European project on osteoarthritis: design of a six-
 496 cohort study on the personal and societal burden of osteoarthritis in an older European population. *BMC*
 497 *Musculoskelet Disord* **14**, 138.
- 498 19. Robinson SM, Jameson KA, Bloom I, *et al.* (2016) Development of a short questionnaire to assess diet
 499 quality among older community-dwelling adults. *The journal of nutrition, health & aging* 1-7.
- 500 20. Krueger R, Casey M. *Focus Groups: A Practical Guide for Applied Research*. 3rd edition ed. Thousand
 501 Oaks, CA: Sage Publications, Inc.; 2000.
- 502 21. Braun V, Clarke V. (2006) Using thematic analysis in psychology. *Qualitative Research in Psychology*
 503 **3**, 77-101.
- 504 22. Boyatzis R. *Transforming Qualitative Information: thematic analysis and code development*. London:
 505 Sage; 1998 1998.
- 506 23. Winter Falk L, Bisogni CA, Sobal J. (1996) Food Choice Processes of Older Adults: A Qualitative
 507 Investigation. *Journal of Nutrition Education* **28**, 257-65.
- 508 24. Grembowski D, Patrick D, Diehr P, *et al.* (1993) Self-efficacy and health behavior among older adults.
 509 *Journal of health and social behavior* **34**, 89-104.

- 510 25. Bandura A. Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ:
511 Prentice-Hall; 1986.
- 512 26. Purdie N, McCrindle A. (2002) SELF-REGULATION, SELF-EFFICACY AND HEALTH BEHAVIOR CHANGE
513 IN OLDER ADULTS. *Educational Gerontology* **28**, 379-400.
- 514 27. Blane D, Abraham L, Gunnell D, *et al.* (2003) Background influences on dietary choice in early old age.
515 *J R Soc Promot Health* **123**, 204-9.
- 516 28. Vesnaver E, Keller HH, Sutherland O, *et al.* (2015) Food behavior change in late-life widowhood: A
517 two-stage process. *Appetite* **95**, 399-407.
- 518 29. McDonald J, Quandt SA, Arcury TA, *et al.* (2000) On Their Own: Nutritional Self-Management
519 Strategies of Rural Widowers. *The Gerontologist* **40**, 480-91.
- 520 30. Hughes G, Bennett KM, Hetherington MM. (2004) Old and alone: barriers to healthy eating in older
521 men living on their own. *Appetite* **43**, 269-76.
- 522 31. Irz X, Fratiglioni L, Kuosmanen N, *et al.* (2014) Sociodemographic determinants of diet quality of the
523 EU elderly: a comparative analysis in four countries. *Public health nutrition* **17**, 1177-89.
- 524 32. Blane D, Wiggins RD, Montgomery SM, *et al.* Resilience at older ages: the importance of social
525 relations and implications for policy. 2011.
- 526 33. Nimrod G, Shrira A. (2014) The Paradox of Leisure in Later Life. *The Journals of Gerontology Series B:
527 Psychological Sciences and Social Sciences*
- 528 34. Thoits PA. (2011) Mechanisms linking social ties and support to physical and mental health. *Journal
529 of health and social behavior* **52**, 145-61.

530

531

532 **Table 1: Characteristics of study participants by type of group interviewed.**

	Women, Diet Declined	Men, Diet Declined	Women, Diet Stable	Men, Diet Stable	Men and Women, Diet Stable
Number of focus groups conducted	3	3	2	2	1
Total number of participants	20	21	21	23	7
Mean Age	78	78	78	78	80
Age Left					
Education					
N (%)					
≤ 14	6 (30%)	3 (14%)	1 (5%)	3 (13%)	1 (14%)
≥ 15	14 (70%)	18 (86%)	20 (95%)	20 (87%)	6 (86%)
Social Class (N)					
Non- manual	10	8 (2 missing)	9	11 (1 missing)	5
Manual	10	11	12	11	2

533