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"I don't eat when I'm sick": Older people's food and mealtime experiences in hospital

Hope, Kelti; Ferguson, Maree; Reidlinger, Dianne P.; Agarwal, Ekta

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1 **Title:** “I don’t eat when I’m sick”: Older people’s perspectives of food and mealtime experiences
2 contributing to inadequate food intake in hospital

3

4 **Authors names and affiliations:**

5 Kelti Hope¹, Maree Ferguson^{2,3}, Dianne P. Reidlinger⁴, Ekta Agarwal^{1,2,4}

6 ¹School of Exercise and Nutrition Sciences, Queensland University of Technology, Brisbane,
7 Australia.

8 ²Department of Nutrition and Dietetics, Princess Alexandra Hospital, Brisbane, Australia

9 ³School of Human Movement Studies, The University of Queensland, Brisbane, Australia

10 ⁴Faculty of Health Sciences and Medicine, Bond University, Gold Coast, Australia

11 **Email address of each author:**

- 12 • Kelti Hope: ke.hope@connect.qut.edu.au
- 13 • Maree Ferguson: maree@dietitianconnection.com
- 14 • Dianne P. Reidlinger: dreidlin@bond.edu.au
- 15 • Ekta Agarwal: eagarwal@bond.edu.au

16

17 **Corresponding Author:**

18 Dr Ekta Agarwal

19 Faculty of Health Sciences and Medicine

20 Level 2, Building 18, Bond Institute of Health and Sport

21 Bond University

22 Qld 4229, Australia

23 Tel: +61755953573; Email: eagarwal@bond.edu.au

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27 **Abstract**

28 **Background:** Inadequate dietary intake is a common problem amongst older acute care patients
29 and has been identified as an independent risk factor for in-hospital mortality. This study aimed to
30 explore the food and mealtime experiences contributing to inadequate dietary intake in older people
31 during hospitalisation.

32 **Methods:** This was a qualitative phenomenological study, data for which were collected using
33 semi-structured interviews over a three week period. During this time, 26 older people, aged 65
34 years or more, admitted in medical and surgical wards in a tertiary acute care hospital were
35 approached to participate if their observed intake was $\leq 50\%$ of the meal offered at lunch.
36 Participants provided their perspective of food and mealtimes in hospital that influenced dietary
37 intake. Responses were recorded using hand-written notes, agreed with the interviewee, and
38 analysed thematically using the framework method.

39 **Results:** Twenty-five older people were interviewed across six wards. Two main themes,
40 ‘validating circumstances’ and ‘hospital systems’, were identified. Each theme had several sub-
41 themes. The sub-themes within validating circumstances included ‘expectations in hospital’,
42 ‘prioritising medical treatment’, ‘being inactive’, and ‘feeling down’. Those within ‘hospital
43 systems’ were ‘accommodating inconvenience’, ‘inflexible systems’, and ‘motivating
44 encouragement’.

45 **Conclusion:** Inadequate dietary intake by older hospital patients is complex and influenced by a
46 range of barriers. Multilevel and multidisciplinary interventions based on a shared understanding of
47 food and nutrition as an important component of hospital care is essential to improve dietary intake
48 and reduce the risk of adverse clinical outcomes. Improving awareness of the importance of food
49 for recovery amongst hospitalised older people and healthcare staff is a priority.

50

51 **Keywords:** malnutrition; food intake; older; hospitals; qualitative research.

52 **1. Introduction**

53 In 2010 an estimated 524 million people, or eight percent of the world's population, were aged 65
54 years or older [1]. By 2050 this number is projected to triple to 1.5 billion equating to 16% of the
55 world's population [1]. Increased longevity has been synonymous with an increase in prevalence of
56 chronic diseases and multi-morbidities, and has resulted in a rapidly increasing demand for health
57 care services [2]. Reports indicate older adults currently occupy at least 40% of hospital beds [3-5]
58 making them significant users of healthcare services.

59 Several multicentre studies have reported that malnutrition is prevalent in 23-60% of older patients
60 admitted in acute care hospitals, with an estimated 40% at nutritional risk [6-10]. Malnutrition is
61 associated with poor clinical outcomes including prolonged length of stay (LOS), frequent
62 readmissions and increased risk of mortality [6, 11, 12]. Although the aetiology of malnutrition in
63 older acute care patients is complex and multifactorial [13, 14], inadequate dietary intake during
64 hospitalisation and post-discharge can exacerbate malnutrition [6, 15, 16]. Despite published
65 literature indicating that patients are generally satisfied with the overall quality of food provided in
66 hospitals [17-19], inadequate food intake is frequently reported in the older hospital population [6,
67 11, 20-22]. Poor dietary intake during hospitalisation has been independently associated with
68 increased morbidity [15, 16], prolonged LOS [6, 15], and increased risk of in-hospital mortality [11,
69 16].

70 A large number of studies have evaluated barriers to food intake during hospitalisation through
71 objective measures such as patient questionnaires [18, 23, 24] and review of patient characteristics
72 from medical charts [22, 25]. Some studies have explored views of healthcare staff on the reasons
73 for poor food intake in older hospital patients [26, 27]. Whilst these approaches are useful for
74 obtaining insight into reasons for poor intake from healthcare staff and patients' perspectives,
75 qualitative methodologies are likely to provide a deeper insight into the patient experience to help
76 identify the reasons why older people may have a poor food intake in hospital [28]. Few qualitative
77 studies have explored the patient perspective regarding food and mealtimes in hospital [17, 29, 30].

78 These studies focussed on patients' experiences with food access [17], nutritional issues [29], food
79 sensory quality [30] and mealtime experiences [31] during hospitalisation. However, to the best of
80 our knowledge, perspectives regarding reasons for poor food intake have not previously been
81 sought from older people who eat poorly during hospitalisation. Therefore, the aim of the current
82 study was to explore the food and mealtime experiences and perceptions of hospitalised older
83 people with poor food intake during their admission.

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104 **2. Methods**

105 **2.1 Study design:** A qualitative phenomenological study design was used in order to gain insight
106 into the lived mealtime experiences and perspectives of older hospital patients. Semi-structured
107 interviews using open-ended questions were undertaken with hospitalised older people, to
108 understand their mealtime experiences and to explore the reasons for poor dietary intake during
109 their hospital admission. Interviews were chosen as the most appropriate method to answer the
110 research question, which was concerned with the experience and perceptions of food and mealtimes
111 by individuals in hospital, and as the most practical method for data collection at the hospital
112 bedside. Rigour in the design and reporting of the study is based on the RATS framework
113 (Relevance of study question, Appropriateness of qualitative method, Transparency of procedures,
114 Soundness of interpretive approach) [32].

115 **2.2 Setting:** This study was conducted in a 750-bed metropolitan tertiary teaching acute care
116 hospital located in Brisbane, Australia.

117 **2.3 Hospital food service:** The hospital predominantly uses a cook-chill plated delivery system
118 with some items prepared fresh (such as poached eggs, sandwiches and salads). Breakfast, lunch
119 and dinner are served by foodservice staff commencing at 7am, 11:45am, and 5pm respectively.
120 Patients on diet codes requiring specified mid-meals are delivered by nutrition assistants in the
121 morning and afternoon and by foodservice staff for supper. Each morning patients order their dinner
122 for that evening, along with breakfast and lunch for the following day. Depending on the ward,
123 patients can either order their meals by making selections on a paper menu order form, or verbally
124 with a nutrition assistant using an electronic menu ordering program. Patients admitted after the
125 morning menu rounds receive default meals suitable to their diet code (e.g. default lunch and dinner
126 meals for full diet are sandwiches and dessert, and hot meal and dessert respectively). Patients
127 consume their meals in their rooms.

128 **2.4 Participants:** Participants were purposively sampled from 12 medical and surgical wards in the
129 departments of orthopaedics, oncology, gastrointestinal, internal medicine, respiratory diseases, and

130 urology. At the time of data collection, the hospital was in the process of piloting assisted and
131 protected mealtimes in some wards. The wards selected for recruitment were not part of the pilot
132 project and therefore considered suitable for the aim of the present research.

133 Inclusion criteria were: (1) age ≥ 65 years; (2) observed food intake of fifty per cent or less of food
134 provided at a lunch meal; (3) LOS ≥ 2 days at the time of mealtime observation; and (4) provision of
135 informed verbal consent. Participants with an LOS of ≥ 2 days were selected to ensure that they
136 were receiving meals that they had self-selected. Demographic data including age, weight, and days
137 since admission, were collected from participants' medical chart. Potential participants were
138 identified by one researcher (KH, a final year nutrition and dietetics student). The researcher
139 observed potential participants' lunchtime meal trays after the trays were collected by foodservice
140 staff and assessed intake compared to what was ordered as indicated in the meal slip accompanying
141 each food tray. Potential participants were then approached to participate in the interview if they
142 met the inclusion criteria. People were excluded from the study if they (1) were diagnosed with a
143 terminal or critical illness or disordered eating; (2) had cognitive impairment as recorded in the
144 medical chart; (3) were admitted in an intensive care/high dependency unit, rehabilitation, long-stay
145 or sub-acute wards; (4) were receiving clear/full fluid diets, only enteral/parental nutrition, texture
146 modified diets and/or thickened fluids; or (5) were nil-by-mouth.

147 None of the researchers were directly involved with providing nutritional care to the hospital
148 patients. One of the researchers (MF) was employed at the hospital at the time of data collection, in
149 a non-clinical role. The researcher conducting the interviews did not offer any nutritional advice but
150 instead referred participants to the ward dietitian (not involved in the study) for nutritional support
151 if required.

152 **2.5 Data collection:** An initial interview guide was developed based on relevant literature [17, 18
153 22, 23, 29, 30]; and drawing on the clinical knowledge and experiences of three researchers (KH:
154 student dietitian; EA, MF: Accredited Practising Dietitians). Several drafts were produced and
155 discussed until the researchers were satisfied with the content and phrasing of the questions and

156 prompts posed. The initial interview guide was used in three pilot interviews with patients who did
157 not meet the criteria for inclusion in the study, resulting in minor changes to the wording of
158 questions in order to elicit the most relevant responses from participants. After the first two
159 interviews were conducted, it was noted that both participants had referred to the lack of concern
160 about food intake by nursing staff, so an additional question was added to the final interview
161 schedule (Appendix D).

162 Each interview lasted approximately 30 minutes and was completed at the participant's bedside.
163 The researcher (KH) introduced herself as a research student, explained the study and obtained
164 verbal consent from the participants. Questions were then posed using open ended language and, in
165 line with the semi-structured nature of the interviews, varied in the actual phrasing and order of
166 questions posed with each participant. Responses were recorded using hand written notes, rather
167 than with an audio recording device, in an effort to overcome the practicalities of the ward
168 environment which had a lot of background noise and was not conducive to clear audio recording.
169 Participants provided consent for their answers to be recorded in condensed form. The response for
170 each question was written down by the interviewer as the participant spoke, and clarified before
171 moving on to the next question. Attempts were made to record the specific expressions, words and
172 phrases used by the participant in their response to questions. The written notes for each question
173 were repeated back to the participant to ensure joint agreement on the specific statements attributed
174 to them. Interviews were conducted over a three-week period after which data collection ceased,
175 due to time and resource constraints of the research team.

176 **2.6 Data analyses:** At the conclusion of each day of data collection, interview responses from the
177 hand-written notes were typed and de-identified (using pseudonyms where necessary), and
178 converted to electronic format to facilitate immersion in the data and initial coding. The hand
179 written notes were analysed thematically using the framework method (1). An initial coding
180 framework matrix was developed by one researcher (KH), who then coded participants' responses
181 line by line using the coding framework, with additional codes added to the framework where the

182 data did not otherwise fit within the framework. Codes for several days' interviews were reviewed
183 and discussed periodically by other members of the research team (EA, MF). Patterns identified
184 through the coding process were collated in a spreadsheet using a matrix of codes and participants
185 to enable a comparison between interviews and also within interviews. Interim sub themes and
186 themes were developed by one researcher (KH) that represented the experiences and perceptions of
187 participants in relation to the research question; these were reviewed, and discussed between three
188 researchers. Finally, an electronic and paper based audit of the coding in the matrix spreadsheet was
189 undertaken by a fourth researcher (DR: Accredited Practising Dietitian), and the themes and sub-
190 themes were revised. Attempts were made to ensure that divergent views and experiences were
191 represented within the themes. Further discussions between all four researchers resulted in
192 refinement of themes until a consensus was reached. Representative quotes were selected and
193 agreed for each theme and sub-theme; quotes were selected to capture the key perspectives of
194 participants within the theme and to capture divergent views between participants within the same
195 theme.

196 **2.7 Ethics approval:** The study was approved by the Metro South Human Research Ethics
197 Committee and the Queensland University of Technology Human Research Ethics Committee.
198 Verbal informed consent was obtained from each participant before commencing the interview.

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208 **3. Results**

209 Twenty-five of the 26 patients approached to participate in the study provided consent. Table 1
 210 outlines demographic characteristics of participants. There were two main themes developed during
 211 the analysis, ‘Validating circumstances’ and ‘Hospital systems’. Each had several sub-themes,
 212 relating to the perspectives and experiences of older people which may contribute to their poor food
 213 intake in hospital.

214 **3.1 Validating circumstances**

215 This theme captured participants’ rationalising of their poor food intake during their admission. The
 216 prevalent perception was that poor food intake might be normal and not as high a priority as the
 217 medical treatment. Four sub themes were relevant: ‘expectations in hospital’, ‘prioritising medical
 218 treatment’, ‘being inactive’ and ‘feeling low’.

219 **3.1.1 Expectations in hospital:** Participants believed that their poor appetite and intake whilst in
 220 hospital was “to be expected” given the circumstances. Many felt that their appetite would “get
 221 back to normal” when they went home. They described various reasons for not eating well,
 222 including “being sick” and their admission to hospital in the first place.

223 *“I don’t eat when I’m sick. I don’t think many people do when they’re not feeling well.”*

224 (Female, 83 years)

225 Similarly, medications and treatment were blamed for reducing appetite and subsequent intake.
 226 Participants described experiencing nausea, gastrointestinal pain, reflux, stomatitis, diarrhoea and
 227 constipation, (viewed as nutrition impact symptoms (NIS) by the researchers) while in hospital.

228 *“I’ve got a lot of nausea. The smell of food makes me feel nauseous. I constantly feel
 229 nausea. I feel like I want to vomit all the time, but don’t.”* (Female, 79 years)

230 However, despite meeting the inclusion criteria of poor intake, appetite was seen as relative for
 231 some including one participant who described hers as “good” after fasting for procedures.

232 **3.1.2 Prioritising medical treatment:** Participants believed food was not a priority during
 233 hospitalisation instead prioritised medical treatments which they believed were more important than
 234 food.

235 *“I don't know about the food, but I know the treatment they're giving me is helping me. I*
 236 *have an infection and they're giving me medicine to make it better. I don't think food has*
 237 *anything to do with it.”* (Male, 75 years).

238 However, this was not universal and others also strongly expressed their view that it was important
 239 to eat all food provided and saw food as part of the treatment in hospital.

240 *“Yes, food is important to help you get better in hospital. It feeds you, makes you stronger.”*
 241 (Female, 69 years).

242 **3.1.3 Being inactive:** The hospital environment was seen by participants as one where their activity
 243 was limited and didn't reflect normal day-to-day activities. Many described activity only as it
 244 related to hospital treatment, such as physiotherapy sessions.

245 *‘More exercise would help to improve my appetite. Once I'm unattached to so many tubes.’*
 246 (Female, 80 years)

247 *“If you did walk around the wards, it would be better as far as the bowels are concerned ...*
 248 *constipation is a bit of a problem.”* (Female, 85 years)

249 Many participants saw lack of activity as validating their poor intake and contributing to other
 250 issues impacting their appetite such as constipation. Conversely, some denied any connection with
 251 appetite.

252 *“I do go for a walk with Richard [physio], he's a lovely fellow to go walking with. I go*
 253 *once a day. I'm not feeling an improved appetite from this.”* (Female, 80 years)

254 **3.1.4 Feeling down:** Participants described feeling “depressed” as a result of their condition and
 255 being in hospital, and described the impact this had on their food intake.

256 *“I'm quite depressed at the moment. When you get like that you don't feel like eating*
 257 *much.”* (Male, 69 years)

258 Whilst many did not elaborate, others talked about missing “home cooking” and not seeing friends
259 and family as contributing to their low mood.

260 *‘I’m so used to my home cooking, not used to all this packaged and processed food they*
261 *serve here. Prefer the fresh food.’ (Female, 80 years)*

262

263 **3.2 Hospital systems**

264 This theme captured the view that practices in hospital resulted in participants’ poor food intake.
265 Three sub-themes were relevant: ‘accommodating inconvenience’, ‘inflexible systems’ and
266 ‘motivating encouragement’.

267 **3.2.1. Accommodating inconvenience:** Participants described how they felt obliged to
268 accommodate inconveniences due to being in hospital. This included the hospital environment in
269 general being “not conducive to eating”, and affecting appetite and intake. They talked of
270 “mealtime interruptions, from both doctors and nurses” which they took as part of the environment,
271 and did not feel able to challenge.

272 *“Sometimes of an evening they [the meals] sort of come just as the nurses want to do*
273 *something. Some of the nurses are good and will wait until you’ve finished. But some of the*
274 *nurses ... once they put a respirator mask on me while my soup was sitting there. I couldn’t*
275 *eat it. It was cold by the time I got to it.” (Female, 78 years)*

276 Many described not wanting to eat quickly because of their illness symptoms such as not “wanting
277 to vomit so I go slowly”. However, the schedule of mealtimes meant they felt rushed; felt the need
278 to help the staff that collected the trays or worried that they would still have the previous meal’s
279 tray when the next meal was delivered.

280 *“I felt a little rushed today to get the dessert finished before the guy came to collect the tray.*
281 *If the tray is left it causes all sorts of problems....” (Female, 67 years)*

282 Participants also reported practicalities of the environment that they felt obliged to compensate for,
 283 including their concern they would be unable to access the toilet in time and the anxiety that ensued,
 284 resulting in reduced food intake.

285 *“Eating makes me get diarrhoea. I get worried. There are four beds and only one toilet. I*
 286 *worry I can't use the toilet if someone is using it. Also, I can't walk quickly ... might not get*
 287 *to the toilet in time.” (Female, 65 years)*

288 **3.2.2 Inflexible systems:** Some participants perceived that the inflexibility of the food service and
 289 wider systems within the wards had impacted on their ability to eat. These included advance
 290 ordering of meals only to find it was not what they wanted when it arrived; feeling pressured to
 291 order food they did not want; large meal size; meal timings and menu options not to their
 292 preference.

293 *‘They ask me what I want, this or that. I feel I have to say yes to some things to satisfy them.*
 294 *But the only thing I want to eat is the jelly. Sometimes I might try one sandwich ... only if I*
 295 *feel like it. But the rest will go. The rest of the tray will get taken away.’ (Female, 65 years)*

296 *“Some of the food is nice, but it’s far too much ... Just looking at this [menu order form]*
 297 *puts me off the food. Reduces my appetite.” (Female, 83 years).*

298 *‘If I did have a hot meal here, by the time I got halfway through, it would be cold.’ (Female,*
 299 *83 years).*

300 *‘What I wouldn’t mind would be a bit of bread. Some bread and butter is something I would*
 301 *be enjoying.’ (Female, 80 years)*

302 **3.2.3 Motivating encouragement:** Participants described being encouraged to eat by family
 303 members and visitors who provided assistance and verbal encouragement, which motivated them to
 304 improve their food intake.

305 *“I only ate most of the dinner last night because my daughter was here and she told me to*
 306 *eat it- ‘it will build up your strength’- or something. She cut up the meat for me in small*

307 *pieces, it was good. She said 'I want to see that plate nice and clean'. It helped having my*
308 *daughter there encouraging me to eat.'* (Female, 85 years).

309 Some also noted that visitors frequently bought in food including fruit and hamburgers that were
310 described as more appetising, and noted this as a motivator to eat more than they otherwise might
311 have. However, the attitude of nursing staff was also seen as impacting on their motivation to eat.
312 Several participants expressed that the nurses did not seem concerned if all the food was not
313 consumed, and did not monitor how much food they had eaten, thus reducing the perceived
314 importance of food intake.

315 *"The nurses don't even see the plate. The tray gets taken away and the nurses don't know*
316 *what you've eaten. They don't care if I don't eat the food."* (Female, 92 years).

317 Although encouragement was considered important by many, some participants also expressed that
318 it was unlikely to change their intake regardless - either because they were "used to not eating much
319 food at home anyway" or did not like the taste of the food provided. Participants believed they were
320 eating "plenty of food" and "enough to meet their nutritional requirements" which did not motivate
321 them to eat more. A number of participants only ordered the amount of food they felt they were able
322 to consume, mainly to avoid wasting food.

323 *"I also have this terrible problem with waste. I hate waste. Part of that plays on my brain a*
324 *bit when I do leave the food. I think how terrible, with all the people starving around the*
325 *world. But even that doesn't encourage me to eat all the food."* (Female, 65 years).

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333 **4. Discussion**

334 This study found that older people saw the reasons for their poor intake in hospital as due to their
335 current circumstances, and described experiences which highlighted a mismatch between the
336 hospital patients' needs and inflexible hospital systems. Being unwell, and the hospital admission
337 itself, were seen as legitimate reasons for not eating well and also impacted on activity levels and
338 feeling down. Older people described an obligation to accommodate the inconvenience associated
339 with the systems and inflexibility of the hospital environment, which affected their eating. They
340 described the positive effect of encouragement by family and visitors which improved their food
341 intake.

342

343 The current study highlighted that older people's food intake was influenced by their own
344 understanding that poor appetite was an expected outcome of being in hospital. Older people were
345 also of the opinion that dietary interventions were less valuable than medical treatment, and
346 therefore did not perceive eating poorly as a problem. It has been proposed that hospitalised older
347 people characteristically have overly positive self-perception and affect optimisation, and limited
348 knowledge or insight regarding nutritional requirements [34, 35]. Given the body of evidence
349 linking nutritional adequacy with improved patient outcomes [36, 37], it is imperative for all
350 healthcare professionals to improve older peoples' knowledge and awareness regarding the
351 importance of nutrition during hospitalisation. Bell et al. (2014) found that a multidisciplinary and
352 multimodal model of nutrition care resulted in significant improvements in nutrition-related
353 outcomes in older people with hip fractures [38]. The model of nutrition care included strategies
354 such as physicians promoting nutrition as medicine, enhanced food service system and promoting
355 nutrition-related knowledge and awareness amongst staff and patients themselves [38]. This finding
356 indicates that similar interventions should be trialled in other older inpatient populations.

357

358 Existing literature recognises that loneliness and isolation contribute towards depression in some
359 acute patients, especially those in the side rooms of wards [31]. Depression has been associated
360 with causing loss of appetite, reduced food intake, and unintentional weight loss in older persons
361 [14]. Participants in this study acknowledged that encouragement from visitors at mealtimes
362 resulted in improved consumption of food. Visits from family members and friends should be
363 encouraged during mealtimes to provide older people the opportunity to socialise and receive
364 companionship, have a home-like environment, and potentially also receive assistance and
365 encouragement with food.

366

367 An interesting finding from this study was that older people reportedly reduced their food intake to
368 limit their visits to the toilet. There is evidence to suggest that hospital patients often reduce their
369 fluid intake to avoid using the bedpan due to the associated loss of privacy and dignity [39]. It is
370 possible that this perceived loss of privacy and dignity also impacts patients' desire to consume
371 adequate quantities of food. To the best of our knowledge, this is the first study to identify older
372 peoples' anxiety regarding toilet visits influencing the quantity of food they consume during
373 hospitalisation. Further investigation into this issue as a potential barrier to food intake is warranted.

374

375 Another striking finding from this study was that meal trays were reportedly cleared before
376 participants had finished consuming all the food they wanted to eat. Observational studies show that
377 on average, older patients can take approximately 20 minutes to consume a meal, with some
378 patients taking 55-75 minutes [40, 41]. It is likely that older hospital patients are hesitant to request
379 nursing staff for assistance and thereby take longer to self-feed. Further, medication rounds,
380 showering time, reviews by doctors and allied health staff members, diagnostic tests and
381 procedures, have also been recognised as interrupting patients at meal times [6, 42-46]. Protected
382 mealtimes allow for patients and staff members on the wards to concentrate only on activities

383 related to food consumption, and although challenging to implement in a busy hospital ward
384 environment [47, 48] evaluations of this strategy appear to be promising [49, 50].

385

386 Poor appetite was a commonly reported reason for not consuming all the offered food and supports
387 existing literature where a loss of appetite or “not hungry” was also reported as the main reason for
388 reduced intake by hospital patients [11, 16, 18, 22]. A number of interventions may be appropriate
389 for addressing poor appetite in older hospital patients. Food fortification has shown to increase
390 energy and protein intake by up to 25% with a reduced portion size of meal [51] and may be
391 suitable for older people whose appetite is affected by large portion sizes. A pilot study examining
392 the effectiveness of medical nutrition therapy in acute care patients eating poorly during
393 hospitalisation found that simple strategies such as allowing patients the opportunity to self-select
394 meals off the menu resulted in significantly improved intake, thereby not requiring further
395 nutritional interventions [52]. Selective mid-meal trolleys containing a variety of high energy and/or
396 high protein snacks and commercial drinks have demonstrated increased nutritional intake,
397 improved dietary satisfaction and greater self-reported quality of life [53, 54]. Considering that
398 approximately half the hospital patients are not offered snacks in-between meals [6], the
399 opportunity to self-select nutritious snacks spontaneously at the point of consumption may result in
400 significant improvement in nutritional intake in older hospital patients.

401

402 We believe this to be the first qualitative study where older people with poor food intake had the
403 opportunity to provide their perspectives of barriers to adequate food intake during hospitalisation.

404 One limitation of this study is the exclusion of patients with cognitive impairment and those on
405 texture modified diets, who are well documented to have some of the poorest food intake levels of
406 acute care hospital patients [6, 55, 56]. These patients may have had additional perspectives of
407 mealtime experiences in hospital, in addition to those identified by this study. Finally, all four
408 researchers were from the discipline of dietetics (including one student dietitian and three

409 Accredited Practising Dietitians), which is likely to have impacted on study design, data collection
410 and data analysis decisions. Additional rigour could have been achieved by the inclusion of a
411 researcher from a different professional background, for example nursing. Despite this, the results
412 are still applicable to the practice of dietitians and other health professionals, and the themes
413 developed have highlighted several barriers to food and nutrition in hospital which may be useful
414 for improving food intake for older people in hospital.

415

416

417 **5. Conclusion**

418 The current study demonstrates the complexity of inadequate intake for older patients in the acute
419 care setting. Both, patient- and organisation-related barriers contributed to reduced food intake.
420 Therefore, the design and implementation of multilevel interventions that improve food intake is
421 crucial. Barriers to food intake and older patients' perceptions should be routinely evaluated as
422 malnutrition and poor food intake are common in this population [6] and not without adverse
423 consequences [11, 16]. Food awareness needs to be improved as a matter of priority in all
424 stakeholders, including older patients themselves and healthcare providers [57]. Implementation
425 studies that influence the current nutrition culture are required to showcase not only the process of
426 implementation but also the benefits older hospital patients stand to gain from them.

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435 **Table 1 - Characteristics of participants (N=25)**

| Patient characteristics | Results |
|--|----------------|
| Females/Males | 21 /4 |
| Age in years (range) | 65-98 |
| Days since admission (range) | 2-20 |
| Diet Type | |
| High Protein- High Energy/Standard | 16 /9 |
| Ward type | |
| Internal Medicine | 6 |
| Orthopaedic | 6 |
| Gastrointestinal (medical and surgery) | 8 |
| Respiratory | 3 |
| Oncology/Haematology | 2 |
| Urology/Vascular | 2 |

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450 **Appendix I. Semi-structured interview questions**

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| Appetite | <ul style="list-style-type: none"> • Please describe your current appetite. • Has there been a change in appetite since being in hospital? Similar or different to at home/usual? Why do you think this is? |
| % Intake | <ul style="list-style-type: none"> • How much of the last meal served (lunch) did you eat? None, 25, 50, 75 or 100%. • Has this changed over the past couple of days? – increased/decreased. • How does this compare to how much you usually eat at home? – eating more, the same or less. Why do you think this is? |
| Reasons for not eating all the offered meal | <ul style="list-style-type: none"> • Why did you not eat all your meal today? • Explain the reasons why you didn't eat all the food provided to you today. • Tell me what things have stopped you from eating more of your meal today. • What happened? How did you feel? Is this usual for you? |
| Missed meal | <ul style="list-style-type: none"> • Have you ever missed a meal during your stay in hospital? If yes, why- procedure, asleep, no assistance available, meal placed out of reach? • If you missed a meal, were you offered any food later? Did you ask for food? If not, why didn't you ask for any food? |
| Menu choice available | <ul style="list-style-type: none"> • Do you like the range of food offered for meals? • What have you liked, what haven't you liked? • Do you get to choose the types of foods you like to eat? • What would've you preferred to have received? • Does the food in hospital differ to what you normally eat? If so, how? • What types of food would you like to eat in hospital if you had the choice? • What types of food do you like to eat when you are not feeling well? |
| Size of meal offered | <ul style="list-style-type: none"> • How would you describe the quantity of the meals? – Too big, too small, just right. • Would you prefer a smaller serve of your meal? If so, which items would you like less of? • Would you prefer a larger serve of your meal? If so, which items would you like more of? |
| Problems with ordering food | <ul style="list-style-type: none"> • Do you like how and when you order your meals in hospital? If not, how, and when would you prefer to order your meals in hospital? • Have you ever experienced any problems with ordering your food? – Not receiving what you've ordered. • When your meals arrive, do you ever not want what you've ordered? Or wish that you had ordered something different? • Does your appetite change between ordering a meal and receiving the meal? |
| Visitors | <ul style="list-style-type: none"> • Do you have visitors in hospital? • Do visitors bring you food in hospital? What have they brought? Why? • Do your visitors come during meal times? • Do your visitors encourage you to eat at meal times? |
| Assistance with meals | <ul style="list-style-type: none"> • Do you require assistance eating your meal? If so, what type of assistance do you require – help with reaching, cutting food? • Have you ever been asked if you would like assistance with eating your meal? • If not, do you ever ask the nurse for assistance with eating your meal? If not, |

| | |
|--------------------------------|--|
| | why not? |
| Timing of Meals | <ul style="list-style-type: none"> • Are the meal times suitable for you? Would you prefer food to be delivered earlier or later? • Do you have enough time to eat your meal? |
| Hunger during hospital stay | <ul style="list-style-type: none"> • Have you ever felt hungry during your stay in hospital? If yes, when did you feel hungry – between breakfast and lunch, between lunch and dinner, overnight, before breakfast? • When you do feel hungry, is there any food available for you to eat? If not, do you ask the nurses for food? If not, why? • Do you feel comfortable asking for food? If not, why? |
| Access to food | <ul style="list-style-type: none"> • Would you like to have access to extra food items between meals? • What extra food items would you like to have access to? When would you like to have access to these food items? |
| Meal interruptions | <ul style="list-style-type: none"> • Do you have enough time to eat all your meal? If not, why? • Have you ever been interrupted during meal times? If yes, how – noise, clearing trays, other patients, procedures? • Did the interruption affect how much of your meal you ate? If so, how? • If there were no interruptions, do you think you would eat more food? |
| Nutrition Impact Symptoms | <ul style="list-style-type: none"> • Do you experience any bloating, nausea, abdominal pain? Does this affect how much you eat? If so, how? How often does this happen? • Do you have difficulties with chewing or swallowing your food? If so, have you told the staff about your difficulties? If not, why not? If so, what have the staff done to help you? |
| Importance of Food in Hospital | <ul style="list-style-type: none"> • Do you think it is important to try and eat most of the food provided to you in hospital? • Do you try to eat even if you don't feel like it? • Do you think food plays a role in helping you get better? If so, how? • Tell me your thoughts about the role of food in hospital. |

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460 **References**

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