

Patient food preferences can help plan hospital menus for older patients

ABSTRACT

Aims: Malnutrition causes a huge burden on health and social services; wastage of hospital food is high and intake poor, particularly in older patients. This study looks at the lunch choices of older patients and considers how hospital meals could be altered to improve consumption.

Study design: Over a four week period, the food choices of patients on elderly care wards were studied. The amount of food consumed and choice was evaluated in the context of food availability.

Place and Duration of Study: The project was undertaken in Elderly Care Medicine wards in a District General Hospital in the South East of England. Participants were older patients with a variety of medical conditions who had the capacity to consent to a discussion about their food choices, consumption of food and preference for different food items.

Method: Of the 402 patients studied, 23% were given food they did not like and that they would not usually chose.

Results: Popular menu choices included “unusual soups” and “baked or roasted meat”. Unpopular menu choices included sandwiches and desserts with no fruit. The items that were most consumed were desserts containing fruit and vegetarian main courses. Vegetarian pastry dishes and sandwiches were poorly consumed.

Conclusion: Many older patients who are able to choose from a hospital menu failed to see foods that they would normally consume. Certain foods are preferentially chosen and when delivered were consumed well. Older patients in this geographical area chose traditional foods and foods that are more difficult or more costly to prepare at home e.g. roast joints of meat and fruit containing desserts.

Key Words:

“Food choice”, malnutrition, older/elder patients, food consumption, hospital.

1. INTRODUCTION

“Thousands of patients are annually starved in the midst of plenty from want of attention to the ways which make it possible for them to take food.” Florence Nightingale (1)

Malnutrition in hospital is a longstanding problem particularly for older inpatients as they are more likely to be malnourished on admission and have inadequate intake in hospital (2) and Florence Nightingale’s observation, is still applicable today. Approximately two-thirds of older admissions became malnourished despite a number of national initiatives (3). Protected meal times (4-6), mealtime assistance (7-9) and red tray triggers (10) are only useful if a patient has an appetite and wants to eat.

55 In addition this would have required ethical approval for access to the medical notes and this
56 was not the purpose of the study.

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58 Inadequate dietary intake and large amounts of food wastage are common in hospital (11)
59 but particularly with older patients. In one hospital, energy intake was 73% of the minimum
60 recommended and 42% of the food served to older patients was thrown away (11). We
61 have also found plate wastage to be 36% in our hospital.

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63 A number of factors are likely to inhibit dietary intake in older patients:

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- 65 • Disability (e.g. poor vision, co-ordination, ill-fitting dentures, musculoskeletal pathol-
66 ogy, cognitive impairment, fatigue)
- 67 • Poor appetite (illness, presentation (including volume) of food served, ward environ-
68 ment) (12)
- 69 • Choice of foods (dislike of certain foods, not being given choice, choosing nutrition-
70 ally-poor food, cost) (13, 14)
- 71 • Mealtimes being interrupted by ward activities, not being allowed time to finish eating.
72 (15)
- 73 • Staff issues (lack of time, poor appreciation of patient needs, lack of training) (16)
- 74 • Hospital (lack of food and drink strategy) (17)
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76 This study focuses on the menu choices including whether patients received meals that they
77 would have normally chosen. Assessment of appetite immediately before eating, and sug-
78 gestions from the patients as to how hospital meals could be improved were also explored.

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80 **2. METHODOLOGY**

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82 Lunchtime on five elderly care wards (total 122 beds with 96% occupancy) was studied over
83 four weeks at the Royal Berkshire NHS Foundation Trust, Reading (RBFT). Each day, 20
84 patients fulfilling the study criteria were randomly recruited. The group comprised of 122 pa-
85 tients (81 female, 41 male, with a mean age of 85 and range 68-102 years. Patients were
86 excluded if they were on a special diet which substantially limited the possible options on the
87 menu, if menu choices were not made by the patient, or if the patient lacked the capacity
88 under The Mental Capacity Act to consent to being asked questions by the researcher. Pa-
89 tients were divided into two groups- those who participating five or more times and those
90 who took part less than five times to test for heterogeneity. Lunch was chosen as it is the
91 main meal for the majority of older patients and contributes 30% of total energy and 53% of
92 daily protein consumed. The hospital meals were balanced, nutrient dense with moderate
93 fats and sugars with 3 different meal choices provided. This has been explained in the next
94 paragraph.

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96 Lunches at the RBFT are ordered the day before on a menu card and arrive ready-
97 assembled on trays having been cooked on site. Choices include a vegetarian soup or a
98 juice, three main courses, two vegetable and two starchy carbohydrates with three options
99 for dessert. Menus are rotated every two weeks; "large" and "small" portion sizes are of-
100 fered, with "small" being approximately 65% of a "large" portion. In addition to planned
101 meals a number of nutrient dense snacks were available to patients on the ward. Question-
102 naires asked if patients had received food that they would normally eat, an estimation of their
103 appetite before food using a Likert scale, how much they had eaten and other comments.
104 Patients were interviewed after lunch by an independent interviewer and questionnaires
105 matched to the relevant menu cards.

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107 As the menu rotates every 14 days it was important to factor in the number of times an indi-
108 vidual food item was available. During this period menu choices were analysed;

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- “choice ratio” (CR) is the number of times that a food is on the menu divided by the number of times it is chosen during the study period. If a patient chooses fish four times of a possible eight opportunities the CR is 8/4 i.e. 2.0
- total eaten (TE) (a small portion was considered to be 1.0 units and a large portion was 1.5 units). This was then multiplied by the estimated proportion of the food eaten (e.g. if a patient consumed half a large portion this was 0.75 units and a whole small portion was 1.0 units).
- total amount consumed per choice (TAC) is calculated by dividing the food eaten (TE) by the choice ratio (CR) to enable comparison between different groups, i.e. soups with desserts)

3. RESULTS AND DISCUSSION

No significant differences were found between data from patients who were interviewed more or less than five times. The first meal that a patient received after admission was omitted from analysis as this would have been chosen by ward staff in anticipation of the bed being occupied. The numbers of repetitions in a two week cycle are illustrated on Table 1.

Table 1- The number of times an item appears on a menu in the 4 weeks of study

Food Items	N =
Meat (also minced) roasted or baked	6
Fish	8
Meat in pastry	10
Poultry in sauce	8
Liver	4
Red meat and sauce	14
Meat sandwich	20
Fish sandwich	16
Cheese or egg sandwich	20
Mashed potatoes	28
Roasted or fried potatoes	18
Boiled rice	10
Peas and beans	12
Carrots	4
Swede and cabbage family	20

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Food Choice;

Of the 402 interviews, there were 93 incidences (23%) of patients being given food that they did not want or like. If patients did not eat the food due to it being disliked an alternative main course was offered from the trolley. This was particularly common in the 18 patients who were eating very little or nothing i.e. < 0.5 units, where 44% of the 25 lunches had included items the patients would not normally eat and had not liked.

Hunger and ease of eating

146 Only 48% were hungry before the meal was presented. In 23 of the interviews (5.7%), pa-
 147 tients admitted to being “uncomfortable” eating, with the most common reported issues being
 148 impaired hand co-ordination and poorly fitting dentures.

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150 **Popularity of foods**

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152 The popularity of different foods was analysed by comparing “choice ratio” (CR) see Table 2.

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157 **Table 2 Popularity of various foods**

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	<i>Group</i>	<i>Choosing frequency</i>	<i>Choosing ratio (CR)</i>
Juice/soup	Ethnic or unusual soup	126	12.6
	Traditional soup	192	10.7
	Juice	132	4.7
Main course	Meat (also minced) roasted or baked	74	12.33
	Fish	78	9.75
	Meat in pastry	78	7.8
Potatoes	Mashed potatoes	322	11.5
	Roasted or fried potatoes	124	6.9
	Boiled rice	25	2.5
Vegetables	Peas and beans	132	11
	Carrots	39	9.8
	Mixed vegetables	64	8
Dessert	Apple and pear	92	6.6
	Garden fruits*	51	6.4
	Desserts containing sultanas	34	5.7

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The most popular menu choices were “unusual soups” (including asparagus, minestrone, broccoli and stilton) (CR 12.6), any soup (CR 11.36), baked or roasted meat (such as roast dinners and shepherd’s pie) (CR 12.33), mashed potatoes (CR 11.5), and fish (CR 9.75).

Unpopular choices included vegetarian main courses (CR 1.67), sandwiches (CR 0.45), boiled rice (CR 2.5) in contrast to meat main course (CR 8.14) and desserts not containing fruit (e.g. semolina, sponge puddings, rice puddings) (CR 3.35).

Total amount consumed per choice (TAC) for different menu choices was calculated by dividing the total food eaten (TE, see above) by the choice ratio (CR, see above) and converted into a percentage.

Foods which were eaten well included desserts containing fruits (TAC 84.27%), in particular desserts containing apricots and peaches (TAC 95.84%), vegetarian main courses (TAC 92.71%), and roast parsnips (TAC 86.71%).

199 Foods not eaten well included sandwiches (TAC 48.13%), in particular, meat sandwiches
200 (TAC 32.69%), grilled tomatoes (TAC 59.62%), and vegetarian dishes containing pastry
201 (such as vegetarian quiches and pasties) (TAC 53.57%).
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203 **Qualitative analysis**

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205 There were criticisms of the food and a variety of suggestions. Some of the recommenda-
206 tions were unusual with one participant requesting that the roast parsnips be served with
207 cream!
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209 Some patient's commented that the food was "difficult to eat" with some items being too
210 "tough" roast beef (n=5) and mixed vegetables (n=4). Some items were served in too large
211 pieces e.g. tinned pears and brussel sprouts. Some food was "dry" (n = 10), had "too little
212 taste" (n = 13), or "not sweet enough" (n = 6). Although the meat options were popular
213 choices, three patients asked for more vegetarian options, four asked for more variety in the
214 vegetables and four requested more fruit-containing items. Two patients considered being in
215 hospital was a good opportunity to eat vegetables, in particular those too big to cook for one
216 (e.g. cauliflower).
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218 A few individuals were disappointed with the presentation of their lunch and some spotted
219 perceived inconsistencies between what was on the menu and what was served (e.g. fish
220 and chips, where there apparently was only one chip on the plate, and pear crumble which
221 did not appear to contain any pear). The opening of sandwich packets was difficult for some
222 interviewees. Suggestions included food being served with condiments (salt, pepper and
223 sugar) and every meal being served with a bread roll.
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225 **Food requesting**

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227 Patients were served foods they didn't like and would not have usually ordered or eaten
228 (23%), especially in those eating very little. A solution to this problem may be to have "buf-
229 fet" style meals as seen in Denmark (18) served from a trolley where the patient chooses
230 his/her meal on a specific day and even indicates portion size with help from trained staff
231 members. This is very popular with patients (19) although the time taken to choose, the risk
232 of food getting cold, and difficulty in estimating portions of each dish required are drawbacks.
233 A compromise could be to have a constant selection of side dishes, snacks and desserts on
234 a trolley and for patients to order their choice of main dish from a rotating menu to be plated
235 up centrally and served on a tray. Obviously such a major change in the system would have
236 cost implications and further study of food wastage and economic analysis (20), would be
237 required before instigating such a system on a large scale. A "nutrition assistant" identified
238 on each ward to focus on improving dietary intake and to educate and manage other staff
239 members has resulted in improvements to the patients' experience of hospital meals (20,
240 21).
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242 The additional cost of improving the menu by substituting higher energy options is not negli-
243 gible. However, despite length of stay being unaffected such approaches do significantly
244 improve the mean energy intake of older patients (22) which is directly related to consump-
245 tion.
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247 **Hunger and ease of eating**

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249 Half of the patients questioned felt hungry before a meal, therefore presentation, quality, and
250 acceptability of the food are important to ensure that intake is optimised. It is impossible to
251 determine if the "not hungry" patients were as a result of a large breakfast and snacks or
252 their lack of appetite might be balanced with a good appetite in the evening. This could be

253 resolved by studying patients' reported "hunger" and intake throughout the day, although
254 appetite is often poor in hospital and plate wastage occurs throughout the day.

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256 Physical problems with eating (such as ill-fitting dentures) is probably under-reported at 5%.
257 An observational study of elderly patients in Sweden found 82% had difficulties with physical
258 aspects of eating (23). A Belgian nursing home study found residents without either a com-
259 plete set of dentures or teeth experienced less pleasure when eating and were at greater
260 risk of becoming malnourished compared to residents with a near or complete set of den-
261 tures or teeth (24). Many hospital patients are edentulous, fail to wear dentures and if den-
262 tures are available they often fit badly.

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264 **Menu choice and eating patterns**

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266 Foods which were chosen most frequently (CR) did not always correlate with the foods
267 which were most consumed (TAC). For example, the choice ratio for roast/baked meat main
268 course was 12.33, although the amount eaten per choice was 80.77%. The hot vegetarian
269 main course group only had a choice ratio of 2.0, but the total amount eaten per choice was
270 92.71%. Certain popular menu choices may not be liked when they arrive. The portion size
271 and other items on the plate may also affect consumption. For example, a vegetarian main
272 course may be served with vegetables; the latter may not be eaten and therefore the former
273 consumed in larger quantities. A buffet system where patients can see the food and make
274 an informed choice about combinations of food may improve this. An alternative may be to
275 have menus where the food choices are described further (as would be expected on some
276 restaurant menus) or even pictures (as used by food manufacturing companies)
277 (<https://www.apetito.co.uk/our-services/home-delivery-services/hot/menu/>). Although these
278 menus are used when communication issues are present this is not routine. A balance must
279 be struck between having "popular" dishes which are likely to be well chosen and variety.
280 Whilst it would be ideal to have a larger number of main courses to choose from this would
281 necessitate a larger budget and there is some evidence that older individuals forced to make
282 a choice for more items become less confident in their ability to choose. Patients in hospital
283 for a long time may not chose to consume the same meal on several occasions although a
284 two week cycle helps to negate this. Further studies may better identify popular choices,
285 and these could be made available on a daily basis with other "specials" on a rotating menu.
286 A small pilot study found that increased variety within one plate increases average energy
287 intake although not necessarily total protein intake (25).

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289 All hospital foods are suitable for most patients. However, even experienced athletes with
290 good nutritional knowledge often make uninformed menu choices (26) Likewise labelling of
291 healthy choices in a menu designed for hospitalised children did not result in sustained
292 healthy choices (27).

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294 **Qualitative analysis and other comments**

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296 The patients involved in this study were eager to give their comments on the food; this en-
297 thusiasm could be harnessed by individual catering companies and hospitals to improve the
298 acceptability of their food; for example, comment cards could be supplied on every tray and
299 returned to the kitchen. Frequently experienced comments could be considered and ad-
300 justments made to ingredients and preparation techniques as required. Comments were
301 varied and often conflicting with some patients finding a pudding too sweet and others stat-
302 ing that it was not sweet enough. Introducing condiment packs may help, as patients could
303 adjust their meal to taste.

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305 This study used a semi-structured interview in order to evaluate patients' lunch time experi-
306 ence; although structured questionnaires have been developed and validated to identify

307 problems that patients face when trying to access food (28). Use of this on a large scale
308 could be invaluable for hospitals aiming to improve food delivery and overall nutrition.

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310 **CONCLUSION**

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312 Florence Nightingale's recommendation for patients to be fed palatable, well-presented, nu-
313 tritious food in an environment well suited to eating without distraction is still applicable to-
314 day. Malnutrition in the older population in hospital continues to be a huge problem and ef-
315 forts are being put in place to reduce it. Further studies need to look at all aspects of the
316 catering process in hospitals and adjustments made to menus and food serving practises to
317 ensure that elderly patients receive a varied and nutritious diet that they will eat. Geographi-
318 cal area, patient demographics and season will affect choice although if well liked foods are
319 delivered consumption should be optimised. Factors such as the role of UK dieticians in
320 choosing different strategies to improve nutrition as well as quality improvement strategies
321 led by Clinical Nurse Specialists play a major role in improving nutrition care planned guid-
322 ance and meal intake (29, 30). Whilst we found that the majority of patients liked the foods
323 that they were provided with, it is still difficult to predict patient choice. However, what is
324 clear is that many patients prefer to have traditional foods that they find difficult to prepare in
325 their own home. This may be due to greater familiarity or the cost of them providing such
326 foods for themselves in terms of both finance and preparation time.

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329 **COMPETING INTERESTS**

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331 The author has nothing to declare.

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334 **References**

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UNDER PEER REVIEW