Nutritional Care After Critical Illness

Nutritional care for patients after critical illness: a qualitative study of patients' experiences

Abstract

Background: This is qualitative study that aimed to explore the factors influencing nutritional recovery in patients after critical illness and develop a model of care to improve current management of nutrition for this patient group.

Methods: Patients were recruited into the study on discharge from a general intensive care unit (ICU) of a large teaching hospital in central Scotland. Semi-structured interviews were carried out after discharge from ICU, weekly for the duration of their ward stay and at three months post ICU discharge. Observations of ward practice were undertaken thrice weekly for the duration of the ward stay.

Results: Seventeen patients were recruited into the study and using a grounded theory approach 'Interrelated system breakdowns during the nutritional recovery process' emerged as the overarching core category that influenced patients' experiences of eating after critical illness. This encompassed the categories, 'experiencing a dysfunctional body', 'experiencing socio-cultural changes in relation to eating' and 'encountering nutritional care delivery failures'.

Conclusions: The findings from this study provide a unique contribution to knowledge by offering important insights into patients' experiences of eating after critical illness. The study identified numerous nutritional problems and raised questions about the efficacy of current nutritional management in this patient group. Adopting a more individualised approach to nutritional care could ameliorate the nutritional issues experienced by post ICU patients. This will be evaluated in future work.

Introduction

Good nutrition is fundamental to patients' well-being (Brogden 2004) with the provision of effective nutritional care involving "*a co-ordinated approach to the delivery of food and fluid by different health professionals, and views the patient as an individual with needs and preferences. It is the process that determines a person's preferences and cultural needs, defines his or her physical requirements, and then provides the person with what is needed. It follows a person's progress through an illness, by responding to changing nutritional requirements. It involves the monitoring and reassessment of nutritional status at regular intervals, referral for specialist care when appropriate, and good communication with services in the community. Good nutritional care will involve training for staff, carers and patients, and access to information*" (NHS QIS 2003).

For the post ICU patient good nutritional care is fundamental to the recovery process. This patient group is at increased risk of malnutrition with 43% of patients already noted to be malnourished on admission to a general ICU (Giner et al 1996). Critical illness induces an inflammatory response resulting in metabolic alterations, elevating resting energy expenditure and nitrogen excretion, hence increasing energy and protein requirements respectively (Dupertuis et al 2003). Patients can lose 10% to 30% of their body mass during critical illness (Griffiths & Jones 1999). Compounding this weight loss is suboptimal nutritional intake in ICU with patients only receiving 60-80% of their prescribed energy and protein requirements (Cahill et al 2010). This results from delays in initiating nutritional support (Wandrag et al 2011) and interruptions to feeding regimens due to vomiting, large gastric aspirates, enteral feeding tube displacement and fasting for investigations procedures (Reid 2006). Additionally oral intake has also been found to be inadequate after extubation from mechanical ventilation. A study by Peterson et al (2010) assessed the nutritional intake of 50 patients during the first week post extubation. The mean energy and protein intake was less than 50% of estimated nutritional requirements on all 7 days of the study. The authors highlighted that further research was necessary to identify appropriate nutritional interventions for this patient group (Peterson et al 2010).

Post ICU patients are known to suffer from a complex range of physical, emotional, psychological, and social problems, (Desai 2011, Needham 2012) which may impact on their nutritional recovery and ongoing nutritional care needs. The NICE (2009) guideline Rehabilitation after critical illness failed to identify any studies that specifically addressed nutritional rehabilitation in patients after critical illness. Reflecting this, the nutritional care of critically ill patients receives relatively little attention in the NICE guideline. Thus the present study was undertaken to provide insight into patients' experiences of eating after critical illness to develop a theoretical understanding of the processes influencing nutritional recovery in order to facilitate the provision of effective nutritional care for post ICU patients. The aims of the research were to explore the factors influencing nutritional recovery in patients after critical illness and develop a model of care to improve current management of nutrition for this patient group.

Method

As the purpose of the present study was to explore the factors that influence nutritional intake in patients after critical illness and create a new theory from the concepts arising from the study, a grounded theory approach was considered the most suitable. Symbolic interactionism was the theoretical perspective adopted for the study, a position often adopted for studies using grounded

theory (Bulmer 1969). Adoption of this philosophy facilitated understanding the meaning of patients' experiences on the ward in relation to eating and the impact of interactions with others.

The setting for the main study was a large teaching hospital in central Scotland. The 18 bedded ICU, where patients were recruited from, is classed as a general ICU which means that the population comprised of a mix of medical and surgical patients. Patients were eligible for recruitment to the study if they had received more than 48 hours of mechanical ventilation and were ready for discharge to a ward. Exclusion criteria included patients who were going to be discharged to pre-existing ward based rehabilitation programmes e.g. stroke or liver transplant.

The study was approved by the Scotland A Research Ethics Committee. The study was explained verbally to the patients and they also received written information sheets. Informed consent was obtained to participate in the study and patients were guaranteed confidentiality and anonymity.

Consistent with grounded theory methodology theoretical sampling was used to enable data to be collected, analysed and emerging categories re-examined (Charmaz 2000). Theoretical saturation, defined as "*no additional data are being found whereby the sociologist can develop properties of the category*" (Glaser & Strauss 1967 p61), was achieved after recruiting 17 patients into the study. The study sample included patients of different genders, age ranges and diagnoses and was representative of a general ICU patient population.

Data collection took place between January 2011 and September 2011 by the first author, who is a dietitian. The researcher works clinically within the ICU and was not familiar with ward-based nutritional care. Qualitative methods, observations and semi-structured interviews were chosen for this study in order to elicit patients' experiences of eating during the first three months after ICU discharge. Observations were carried out on the ward thrice weekly for the duration of the patient's stay in hospital. The researcher observed ward practice for approximately an hour each visit. The focus of observation included activities such as food service delivery, monitoring of food intake, nursing handover, ward rounds and the delivery of supplements. As data collection and analysis was a cyclical process the focus of the observations altered to allow verification of evolving analytic themes. Observations were recorded in a weekly case report form. The field note page was divided into two columns with the left hand column detailing the content of the observation and the researcher's insights and reflections relating to specific parts of the observation documented in the right hand column. The researcher wrote short hand notes during observations and then wrote a more detailed account after leaving the ward.

Patient interviews were carried out after transfer from ICU and then on a weekly basis for the duration of their ward stay. In order to facilitate the interview process the researcher asked direct questions based on the sensitising concepts from background work. Different questions were asked at the identified time points: on discharge from ICU and then weekly for the duration of their ward stay. The questions on discharge from ICU included 'What was your eating like before you were in intensive care?', 'What's eating like for you at the minute?', 'How have you been feeling about what has happened to you?', 'Do you think it influences how much you eat?' Weekly questions included 'How has your eating been this week?', 'What's the main issue been for you this week?', 'Is there anything that has made eating more difficult for you this week?' The semi-structured interviews were kept to approximately 15-20 minutes in length, to prevent them from becoming onerous for patients.

A final interview was conducted at three months post ICU discharge at the patient's home or in the Clinical Research Facility based in the hospital and lasted from 30-70 minutes. The interviews were digitally recorded, transcribed verbatim and reviewed for accuracy.

Data were analysed and coded following the grounded theory method described by Charmaz (2006). Interview data were analysed line-by-line and incident-to-incident coding for the observational data. The next step in the analysis was focussed coding which started to form explanations for larger sections of data through the creation of categories. Through the process of constant comparative analysis and ongoing questioning of data a core category emerged that explained the relationship between the other categories.

Results

Seventeen patients were recruited into the study, 11 males and 6 females. The patients ranged in age between 20 to 94 years with a median age of 55 years. The median length of ventilation days was 19. Five patients were transferred from ICU to a surgical ward, the remaining 12 to a medical ward in the hospital. A more detailed overview of the study participants is provided in Table 1.

A total of 156 hours of observations and 37 interviews were conducted at ward level. A further 14 follow up interviews were carried out at three months post ICU discharge. Of the remaining three, one declined further participation in the study, one had been readmitted to hospital with a severe stroke and the other had left the country to return to family overseas.

'Interrelated system breakdowns during the nutritional recovery process' emerged as the overarching category that influenced patients' experiences of eating after critical illness. This encompassed the categories, 'experiencing a dysfunctional body' 'experiencing socio-cultural changes in relation to eating' and 'encountering nutritional care delivery failures' (Table 2). The categories, their relationship to each other and the core category are described in the subsequent three sections.

Category 1: Experiencing a dysfunctional body

Post ICU patients experienced profound and dramatic changes to their body and the findings are explored in light of the way these bodily alterations impact on food intake.

Facing physiological changes

Patients described changes to the way in which they experienced the physiological aspects of eating after ICU. Appetite, taste and satiety were reported to have been particularly affected; this was especially noted during the first few days after transfer to the ward. Loss of appetite was the most commonly reported physiological change after ICU. This persisted for variable lengths of time and for some patients it was still reported as being a problem at three months post ICU discharge. Another physiological change that impacted on eating was early satiety. Patients were conscious of feeling full after eating small amounts of food. One patient described this as: "*I order it, it looks nice on paper, I order it, it comes up, I sit and think that looks nice. One spoonful and I've had enough*" (Patient 15).

Patients reported taste changes, particularly noted during the first few days of transfer to the ward. Some patients described food as being bland, some reported that food tasted salty and others experienced a 'metallicky' taste when eating. These taste changes were most apparent when relatives brought in a previously enjoyed food and this was found to be unpalatable. These taste changes were noted to cause food aversions and changes in food preferences. Some patients avoided coffee as it tasted bitter, others avoided soups and pasta dishes as they found them too salty and many reported non-specific taste changes which resulted in foods tasting different from the way they were previously experienced.

The presence of pain was reported by patients, especially those who had on-going surgical complications. Although patients did not directly associate pain with a reduced food intake, it was apparent that pain served as a powerful distraction. Patients who were in pain were observed to eat very little food at mealtimes. Patients also reported changes to their sleeping patterns, commonly waking at night and sleeping for periods during the day. Sleep disturbances were observed to have

a detrimental effect on nutritional intake. Patients often slept late in the morning as they had been awake for periods during the night and therefore missed breakfast. Increased daytime sleeping patterns also meant that patients failed to consume prescribed supplements and snacks as they were often asleep between meals.

The result of all these physiological changes for the post ICU patient was that eating ceased being a pleasure, something that was previously anticipated and enjoyed. It became a chore, something that had to be done out of necessity to fuel the body. One patient highlighted that "*I'm eating because I have to..... I'm eating because it is necessary to live, to eat. You've got to get your dietary stuff, your nutrition, all the stuff you need to get by in life but it's a struggle now.*" (Patient 16)

Facing psychological changes

Another element of the dysfunctional body was the identified psychological changes with many patients experiencing anxiety and low mood. These were profoundly affected by their ICU experience as these quotes illustrate.

"*(My mood) is up and down, it's up and down..... it's a mixture of frustration but also selfish and that's because I feel frustrated that I should be in so many ways, you know, counting my blessings.*" (Patient 4)

"*I just dinnae understand. I dinnae. I cannae come to grips with what's happened, where I have been. I don't know, I jist dinnae ken.*" (Patient 14)

It was clear that patients struggled to come to terms with all that had happened to them and cope with all the changes associated with critical illness; therefore, eating was not a high priority for them. Many patients also suffered from delirium and were unable to recall what they had eaten, indeed if they had eaten, and did not ask for assistance at mealtimes. Patients were unaware of the need to ask for additional snacks and nutritional supplement drinks if these failed to be delivered. It was also noted that these patients were often in side rooms which limited observation of potential nutritional issues by healthcare staff.

Dealing with changes to body, self and identity

All patients experienced bodily changes as a result of their ICU stay as the effects of critical illness can lead to quite dramatic changes to physical appearance due to weight loss and reduction in muscle mass. The majority of patients reported that their bodies were weak and fatigued. Patients

became increasingly aware of their body after ICU with realisation often coming after experiencing its limitations. Their body was unable to do what they wanted it to do or indeed what it used to do. Patients expressed feelings of anxiety, stress, fear, concern, and frustration in relation to their altered bodies. The quotes below illustrate these feelings.

"*..... it's the sheer frustration as well, the sheer frustration of not being able to do what you want to do and obviously the tiredness is a contributory factor to that*." (Patient 12)

"*I'm depressed in as much as I don't like not being well cause this is not a regular thing for me not to be well..... so that depresses me a bit and I get depressed because I cannae get up and go for a walk because I'm not physically up to it*." (Patient 9)

Patients also experienced loss of control over what their bodies were subjected to during their ward stay. Their bodies were routinely stabbed for blood, examined by doctors and exposed to various tests and procedures. Patients had limited control over many of these actions and one patient commented "*I feel like my body is not my own*" (Patient 14).

Category 2: Experiencing socio-cultural changes in relation to eating

The findings identified the influence of the socio-cultural aspects of eating on nutritional intake.

Experiencing social isolation

Over half of the patients in the study were discharged from ICU to a side room on a ward due to the presence of hospital acquired infections such as MRSA or Clostridium Difficile. Meals were eaten alone in their room, often in bed. Social isolation was a contributory factor to reduced nutritional intake with patients perceiving meal times as much more than just for eating, they also provided opportunities for social interaction. The quotes below illustrate this.

"*I think being alone you don't eat as well as if you've got somebody with you."* (Patient 11)

"*Eating with someone makes a difference because I like to yap, talk and talk*." (Patient 12)

Struggling to adapt to an unfamiliar culture

Many patients in the study mentioned their pre-hospital choices of 'healthy foods': "*I always made sure I had something healthy for tea*." (Patient 2), "*I suppose we try to eat fairly healthily*." (Patient

12). These views reflect socio-cultural influences in advocating a healthy diet and the majority of patients highlighted their previous orientation towards healthy choices.

Importance of food habits and routine

Patients highlighted the importance of familiar foods and routine in promoting nutritional intake. It was apparent that meals made from ingredients of choice, prepared the way they wanted it and provided when they were ready to eat were conducive to enjoying eating and augmenting food intake. Meals at home were contrasted with those provided in hospital:

"*I suppose you get used to a certain type of food that you have at home and how it was done. I mean something like an egg, some people like it hard boiled and some soft and ken it's just your own habits*." (Patient 3 wife)

"*I think that's 'cause it's home food you know and times as well.....you know I had said this to you before, that you know having my lunch at 12 o' clock and my dinner at 5.....I've had too many years of psyche where that hasn't applied, you couldn't just change that around*." (Patient 4)

In hospital, food is often prepared differently to habitual preferences with restricted food choices and timing of meals. Many patients in this study had additional snacks brought in for them by relatives, food that was familiar to them and food that they previously enjoyed. The hospital model of three meals a day failed to meet the needs of post ICU patients as the physiological problems experienced by this patient group such as poor appetite, early satiety and altered sleep patterns limited food intake at meal times.

Category 3: Encountering organisational nutritional care delivery failures

Patients experienced a variety of nutritional care delivery failures that influenced their nutritional intake during their ward stay. These findings have been published in another paper (Merriweather et al 2013). System-centred failures resulted in breakdowns in the delivery of nutritional supplements and snacks, patients struggled to feed themselves due to ICU related neuromuscular weakness which resulted in meals being uneaten. Observations identified problems with an inflexible hospital routine with issues around the timing and structure of hospital meals. Some patients were unused to having three set meals a day as they were used to eating when they felt like it, others found it difficult having a main meal for lunch as they were accustomed to having a snack at this time.

Observations from the medical notes revealed communication failures between healthcare professionals. An example of this was medical staff documenting the fact that the feeding should be stopped and the tube removed despite a previous entry by the dietitian highlighting the patient's insufficient oral intake and recommending the continuation of enteral nutrition. This fragmented approach to care, with each health professional operating independently on the ward, does not appear to promote optimal nutritional care. Observations, particularly from ward rounds, highlighted a lack of nutritional knowledge, especially about the complex needs of the post ICU patient. This lack of knowledge resulted in enteral nutrition being discontinued earlier than necessary, failure to identify on-going nutritional problems and incorrect information relating to nutritional intake being recorded in the medical notes.

Interrelated system breakdowns during the nutritional recovery process

The overarching category is 'Interrelated system breakdowns during the nutritional recovery process'. All three categories were related to the core category and to each other. Encountering organisational nutritional care delivery failures (experiencing system-centred failures, struggling with an inflexible hospital routine, communication failures and staff knowledge gap) highlighted the organisational factors which influenced patients' experience of eating. The interaction between these organisational factors and the patients' dysfunctional body highlights the failings of the organisation in responding to and managing a dysfunctional body (facing physiological changes, facing psychological changes, dealing with changes to body, self and identity) and the socio-cultural changes related to eating (experiencing social isolation, struggling to adapt to an unfamiliar culture, importance of food habits and routine).

Using the findings from the study a checklist approach, which systematises the assessment and individualised delivery model of nutritional care, has been developed (Table 3). This novel construct highlights the need for an individualised approach to the provision of nutritional care as opposed to the traditional model that utilises a service centred approach for the delivery of nutritional care.

Discussion

The findings from the study provide deeper understanding of patients' experiences of eating after critical illness. The data challenge the traditional models of service delivery and leads to a novel construct for provision of nutritional care that addresses the system breakdowns experienced by post ICU patients.

There was an identified need to provide the patient with information about the common problems associated with critical illness that influence nutritional intake. This would include physiological changes such as poor appetite, early satiety, taste changes, fatigue, weakness and also psychological issues such as delirium, sleep disturbances and low mood. Critical illness resulted in bodily changes both in terms of the functioning of the body and bodily appearance that were out-with individual control. In order to restore the body, patients have to overcome the self's intrinsic regulation of food and relearn what to eat and how much. This is ultimately made more difficult because of the negative influence of the underlying physiological changes previously discussed. In an organisation which traditionally treats the physical body, care needs to be provided for the individual as a whole to assist the patient to come to terms with changes to their body, self and identity. Wainwright et al (2007) highlights that "*the process by which we make sense of physiological change through social interaction also influences the recovery of physical performance, including appetite and food consumption*". This is in line with current government priorities to provide 'care' as well as to 'treat' patients. NHS Scotland's action plan states that it should "*deliver patient centred care which is respectful, compassionate and responsive to individual patient preferences, needs and values*" (Scottish Government 2007).

In order to facilitate patient-centred processes, consideration needs to be given to the care environment (McCormack & McCance 2006). In the delivery of patient-centred nutritional care the ward routine should be designed to suit the needs of patients. It was evident from the data that patients who were experiencing early satiety struggled with hospital meals that were provided three times a day as they only managed small amounts of food at each meal and yet these meals were only available thrice daily. Lack of flexibility in relation to the timing of meals meant that patients with altered sleeping patterns often missed meals or found that no food was available during the periods they were awake. Provision could be made for a later breakfast to allow these patients to sleep later in the morning and food could be made available out-with normal mealtimes. Visiting hours could be adapted to include mealtimes to enable family members to provide assistance with feeding and encourage patients to eat. Family involvement in nutritional care could continue from ICU with relatives playing an important role in the social facilitation of eating. Tables and chairs could be provided to allow patients to eat together rather than in or beside their bed. Family members could be encouraged to come in and eat with their relative to further address the social aspects of eating. The effects of social interaction on food consumption has been well documented (de Castro & de Castro 1989, de Castro & Brewer 1992, Clendenen et al 1994). In a study of healthy individuals it was shown that eating with family or friends increased food intake by as much as 44% compared with eating alone (de Castro 1996). The influence of others on eating behaviour

has also been shown in hospitalised patients. A study by Wright et al (2006) examined the nutritional intake of acute elderly inpatients and found energy intake was 36% greater in patients using a supervised dining room compared to those eating beside their bed.

The timing and structure of meals are governed by the organisation; however this system is not patient centred. Naithani et al (2008) identified meal serving times as an organisational barrier to eating in an observational study of hospital inpatients' experiences of access to food. In the study patients reported that meals were served at times that were different to their usual routine. This was detrimental not only to their nutritional intake, as some were not accustomed to eating at set meal times and others were used to having their meals at different times, but also to their emotional well-being. The role that hospital food plays in providing both physical and emotional support to patients during their hospital stay has been identified by Johns et al (2010). Thus it was evident that hospital food was clearly failing to provide the necessary emotional support to those patients in the study that had expressed issues with timing of meals and meal structure. Hospital culture dictates that food is non-individualised and is provided as a medical treatment (Ferrie 2010). Hospital food is provided for its nutritional properties with a focus on the biological need for nutrients i.e. 'functional meal provision', not the culturally derived food preferences or choices evident in meals provided at home (Batstone 1983).

In order to address these issues a number of recommendations are proposed. First, the ward staff should have a discussion with the patient regarding their usual eating patterns and food likes and dislikes. Secondly, where possible meals could be chosen from the menu, however, alternative provision should be made for meals from the canteen if suitable food choices or timing of meals could not be accommodated within the hospital meal service. Thirdly, meals should be served one course at a time as patients with a poor appetite found that having three courses served at one time provided a disincentive to eating. The size of the meals was also found to be off putting for patients with reduced appetites. The influence of appetite on portion sizes was highlighted in a study of older patients in an acute care setting by Xia and McCutcheon (2006) where patients with poor appetites reported that big portion sizes were unappealing. Fourthly, there should be the provision of additional snacks on the ward for patients who struggle to eat sufficient quantities at mealtimes due to early satiety. Snack options could include toast, scones, soups, crackers and cheese, biscuits, custard and rice pudding. By encouraging small frequent meals nutritional intakes could be increased which may reduce the need for additional nutritional supplements. For patients who struggle to tolerate the prescribable supplement drinks, ward staff could make milkshakes on the ward according to individual preferences. These could be made with fresh milk, ice-cream and fruit

providing a nutritious alternative to the ready-made nutritional supplements. All of these tasks could also be carried out by ward volunteers who would require a training program to equip them with the necessary information and expertise to carry out these tasks. A study by Walton et al 2008 highlighted the benefits of volunteers at mealtimes; providing assistance with eating and encouraging patients to eat which led to a concurrent increase in energy and protein intakes.

Finally, patients in the study were often unaware of the importance of nutrition for recovery and the need to eat foods high in calories and protein to achieve this. There is an identified need therefore for health professionals to have an educational role in providing patients and relatives with information about the nutritional needs after critical illness and provide regular feedback as to whether these nutritional targets were being met. If nutritional goals were not being met then there would need to be a discussion with the patient to see if any solutions could be found. To facilitate this process ward staff would also need to receive appropriate training on the specific nutritional needs of post ICU patients.

The findings from the study highlighted a lack of nutritional knowledge about the complex needs of the post ICU patient which influenced the nutritional care of this patient group. This was compounded by poor communication between health professionals. Traditionally the responsibility for nutritional care has been a part of the nursing role and it is argued that nurses have a duty of care to ensure that patients receive adequate nutrition (Tolson et al 2002). However, nutritional responsibilities have evolved over time and Beck et al (2002) highlighted that a major barrier to optimal nutritional care was the ambiguity over responsibility for the specific elements of nutritional care. There is a need for a multidisciplinary approach to nutritional care in order to provide a consistent, systematic approach to the management of the identified factors influencing nutritional intake in post ICU patients.

Study limitations

Despite the usefulness of the findings, there are a number of limitations associated with this study. The study employed a qualitative design with a single researcher who was intrinsically involved in the research process and interpretation of results. However, the researcher kept a detailed reflexive account throughout the study in order to ascertain her influence in the research inquiry. The qualitative nature of the study also meant that the sample size was small although a large amount of data was generated. Further research is needed to ascertain the transferability of these findings.

Conclusion

Despite the plethora of nutrition related research in ICU, little is known about nutritional recovery in patients after critical illness. The findings from this study provide a unique contribution to knowledge by offering important insights into patients' experiences of eating after critical illness. The study demonstrated that existing processes to provide nutritional rehabilitation to post intensive care patients are not effective and, consequently patients frequently fail to meet their nutritional targets. The data from this study suggest that improvements in nutritional care could be achieved by implementing an individualised model of care to address the identified organisational and patient related factors that influence the nutritional recovery of patients after critical illness. This model of care will be implemented and evaluated in future work.

References

Batstone E (1983) Hierarchy of maintenance and maintenance of hierarchy IN Murcott A *The Sociology of Food and Eating* Gower Aldershot

Beck AM Balknas UN Camilo ME Furst P Gentile MG Hasunen K Jones L Jonkers-Schuitema C Keller U Melchior JC Mikkelsen BE Pavcic M Schauder P Sivonen L Zinck O Oien H Oversen L (2002) Practices in relation to nutritional care and support - report from the Council of Europe *Clinical Nutrition* **21**(4) 351-354

Brogden BJ (2004) Clinical skills: importance of nutrition for acutely ill hospital patients *British Journal of Nursing* **13**(15) 914-920

Bulmer H (1969) *Symbolic Interactionism: Perspective and Method* Prentice Hall Englewood Cliffs

Charmaz K (2000) Grounded theory - objectivist and constructivist methods IN Denzin N Lincoln Y (eds) *Handbook of Qualitative research* Sage Publications Thousand Oaks

Charmaz K (2006) *Constructing Grounded Theory A Practical Guide Through Qualitative Analysis* Sage Publications London

Clendenen VI Herman CP Polivy J (1994) Social facilitation of eating among friends and strangers Appetite 23(1) 1-13

de Castro JM de Castro ES (1989) Spontaneous meal patterns of humans: influence of the presence of other people *American Journal of Clinical Nutrition* **50** 237–247

de Castro JM Brewer E (1992) The amount eaten in meals by humans is a power function of the number of people present *Physiology and Behavior* **51** 121–125

de Castro JM (1996) How can eating behavior be regulated in the complex environments of free-living humans? *Neuroscience and Biobehavioral Reviews* **20**(1) 119-131

Department of Health (DH) (2000) *The NHS Plan: A Plan for Investment, a Plan for Reform* HMSO London

Department of Health (DH) (2004) *Better Hospital Food* HMSO London

Department of Health (DH) (2007) *Improving Nutritional Care: A Joint Action Plan from the Department of Health and the Nutrition Summit Stakeholders* Available from: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/Publications PolicyAndGuidance/DH_07993

Desai SV Law TJ Needham DM (2011) Long-term complications of critical care *Critical Care Medicine* **39**(2) 371-379

Ferrie S (2010) Invasion of the Body Snatchers: Food, Feeding, and Power in Hospitals *Cultural Studies Critical Methodologies* **10**(6) 437-444

Glaser B Strauss A (1967) *The Discovery of Grounded Theory* Aldine DeGruyter New York

Griffiths RD Jones C (1999) ABC of intensive care - recovery from intensive care. BMJ 319:427-429

Guest JF Panca M Baeyens JP de Man F Ljungqvist O Pichard C Wait S Wilson L (2011) Health economic impact of managing patients following a community-based diagnosis of malnutrition in the UK *Clinical Nutrition* **30**(4) 422-429

Johns N Hartwell H Morgan M (2010) Improving the provision of meals in hospital the patients viewpoint *Appetite* **54** 181-185

Larsen LK Uhrenfeldt L (2013) Patients' lived experiences of a reduced intake of food and drinks during illness: a literature review *Scandinavian Journal of Caring Sciences* **27**(1) 184-194

McCormack B McCance TV (2006) Development of a framework for person-centred nursing *Journal of Advanced Nursing* **56**(5) 472-479

McKinlay AW (2008) Malnutrition: the spectre at the feast *Journal of the Royal College of Physicians of Edinburgh* **38**(3) 17-21

Merriweather J Smith P Walsh T (2013) Nutritional rehabilitation after ICU – does it happen: a qualitative interview and observational study *Journal of Clinical Nursing* **23**(5-6) 654-662

Naithani S Whelan K Thomas J Gulliford MC Morgan M (2008) Hospital inpatients experiences of access to food: a qualitative interview and observational study *Health Expectations* **11**(3) 294-303

National Institute for Health and Clinical Excellence (NICE) (2006) Nutrition support in adults: oral nutrition support, enteral tube feeding and parenteral nutrition. Available from: http://www.nice.org.uk/nicemedia/pdf/cg032fullguideline.pdf

Needham DM Davidson J Cohen H Hopkins RO Weinert C Wunsch H Zawistowski C Bemis-Dougherty A Berney SC Bienvenu J Brady SL Brodsky MB Denehy L Elliot D Flatley C Harabin AL Jones C Louis D Meltzer W Muldoon SR Palmer JB Perme C Robinson M Schmidt DM Scruth E Spill GR Porter Storey C Render M Votto J Harvey MA (2012) Improving long-term outcomes after discharge from intensive care unit: Report from stakeholders' conference *Critical Care Medicine* **40**(2) 502-509

NHS Quality Improvement Scotland (2003) *Food, Fluid and Nutritional Care in Hospitals* NHS Quality Improvement Scotland Edinburgh

Scottish Government (2007) *Better Health, Better Care: Action Plan* Scottish Government Edinburgh

Tolson D Schofield I Booth J Ramsay R (2002) Nutrition for physically frail older people *Nursing Times* **98**(28) 38-40

Wainwright D Donovan JL Kavadas V Cramer H Blazeby JM (2007) Remapping the body: learning to eat again after surgery for esophageal cancer *Qualitative Health Research* **17**(6) 759-771

Walton K Williams P Bracks B Qingsheng Z Pond L Smoothy R Tapsell L Batterham M Vari L (2008) A volunteer feeding assistance program can improved dietary intakes of elderly patients - A pilot study *Appetite* **51**(2) 244-248

Wright L Hickson M Frost G (2006) Eating together is important: using a dining room in an acute elderly medical ward increases energy intake *Journal of Human Nutrition and Dietetics* **19** 23-26

Xia C McCutcheon H (2006) Mealtimes in hospital who does what? *Journal of Clinical Nursing* **15** 1221-1227

Table 1 Overview of patients

Patient	Gender	Admitting illness	Length of ventilation (days)	Ward destination	Ward stay (days)	Number of interviews	Number of observations	Total observation time (hours)
1	Male	Acute pancreatitis	44	Surgical	33	5	14	15
2	Male	Pneumonia	6	Medical	14	4	6	6
3	Male	Chest infection	6	Medical	8	3	3	4
4	Male	Septic shock	41	Medical	33	4	13	15
5	Female	Pneumonia	34	Medical	16	3	7	8
6	Female	Pneumonia	9	Medical	7	2	3	3
7	Male	Pneumonia	32	Medical	4	2	1	2
8	Female	Pneumonia	4	Medical	5	2	2	3
9	Male	Pneumonia	23	Medical	14	3	6	7
10	Male	Hepatic encephalopathy	4	Medical	6	2	3	3
11	Female	Upper airway obstruction	3	Medical	7	2	3	3
12	Male	Out of hospital cardiac arrest	24	Medical	10	2	4	5
13	Female	Chest infection	19	Medical	6	1	3	3
14	Female	Acute pancreatitis	27	Surgical	53	6	23	25
15	Male	Peripheral vascular disease	13	Surgical	23	4	10	10
16	Male	Phaeochromocytoma	3	Surgical	4	2	1	2
17	Male	Acute pancreatitis	41	Surgical	28	4	12	15

Table 2 Core category, categories and properties

Core Category	**Interrelated system breakdowns during the nutritional recovery process**		
Category	Experiencing a dysfunctional body	Experiencing socio-cultural changes in relation to eating	Encountering organisational nutritional care delivery failures
Properties	Facing physiological changes	Experiencing social isolation	Experiencing system-centred failures
	Facing psychological changes	Struggling to adapt to an unfamiliar culture	Struggling with an inflexible hospital routine
	Dealing with changes to body, self and identity	Importance of food habits and routine	Communication failures
			Staff knowledge gap

Table 3 Checklist to promote the provision of effective nutritional care for post ICU patients

In the Intensive Care Unit	
1: The patient's nutritional issues are identified early	☐ pre-existing malnutrition prior to ICU admission (BMI<18kgm^2, history of weight loss and/or history of poor nutritional intake) ☐ long ICU stay (>7 days) ☐ swallowing problems Patient experiencing physiological factors influencing nutritional intake. ☐ loss of appetite ☐ early satiety ☐ taste changes ☐ pain ☐ nausea/vomiting ☐ diarrhoea ☐ fatigue ☐ breathlessness ☐ changes to sleep patterns Patient experiencing psychological factors influencing nutritional intake ☐ delirium ☐ low mood ☐ cognitive changes ☐ depression
2: The patient's identified nutritional issues are communicated to ward staff	Handover to ward staff to include: ☐ current route for nutrition ☐ identified factors influencing nutritional intake ☐ nutritional plan
During ward stay	

3: The patient's on-going physiological issues are identified	☐ loss of appetite ☐ early satiety ☐ taste changes ☐ pain ☐ nausea/vomiting ☐ diarrhoea ☐ fatigue ☐ breathlessness ☐ changes to sleep patterns Issues are discussed with multidisciplinary team
4: The patient's on-going psychological issues are identified	☐ delirium ☐ low mood ☐ cognitive changes ☐ depression Issues are discussed with multidisciplinary team
5: The patient has the appropriate provision of food	☐ meals served one course at a time ☐ meals provided at suitable times ☐ family encouraged to bring in favourite foods ☐ provision of meals from canteen where necessary ☐ additional snacks are provided between meals ☐ assistance with eating is provided where necessary ☐ eating with others is encouraged
6: The patient is aware of the importance of good nutrition	☐ emphasising the need to eat more for physical recovery ☐ discussion of factors affecting nutritional intake ☐ regular feedback to patient about adequacy of oral intake ☐ involvement of family in discussions
7: The patient's nutritional needs are discussed regularly by the MDT	☐ weekly multidisciplinary meetings ☐ dietitian highlights any nutritional issues ☐ the need for nutritional support is reviewed by the multi-disciplinary team
On discharge from hospital	
8 The patient is provided with the necessary nutritional aftercare	☐ written dietary information ☐ supply of nutritional supplements if necessary ☐ contact details ☐ regular follow-up by community dietitians