

# A case series on nutrition in hip fracture patients: a mismatch between needs and dietary intake

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## Introduction

Hip fractures are common in the United Kingdom with an overall estimated annual incidence of 100 fractures per 10,000 of the population for males and 81 per 10,000 for females,<sup>1</sup> and with an ageing population this figure is set to rise.<sup>2</sup> From recent estimates, this costs the British tax payer over £750,000,000 a year, with over half this amount spent in social care of the patients recovering from the fracture.<sup>3</sup> Elderly hip fracture patients often have co-morbidities and mortality in the first year can be as high as 33%.<sup>4</sup>

A major cause of morbidity and mortality in hip fracture patients is malnutrition. Adequate nutrition plays a major role in fracture and wound healing, cardiac, respiratory and maintaining gastro-intestinal function, prevention of infection, energy for movement and reduces the incidence of premature death.<sup>5</sup> Markers of malnutrition include a BMI of less than 18.5, or unintentional weight loss of greater than 10% in 6 months. Patients at risk of malnutrition are defined as those who have eaten little or nothing for 5 days and likely to continue this trend for next 5 days, or patients who have poor absorptive capacity, high nutrient losses and increased nutritional demands from these losses or catabolism.<sup>6</sup>

For hip fracture patients, the recommended energy intake is 30 kilocalories/kg/day.<sup>7</sup> The aim of this case series was to gauge whether hip fracture patients in our hospital were receiving sufficient nutrition to obtain the above recommended calories during the first week after sustaining the fracture.

## Methods

From the published UK national guidelines on nutrition by the National Institute of Clinical Excellence (NICE), all patients with a fractured neck of femur should have a nutritional screen, and those at risk have a record of food intake on a chart.

A proforma was developed that incorporated the patient's age, weight, date of admission, whether a nutrition screen was carried out, the score of this screen, presence of food chart, and amount of food consumed.

Where the weight was not readily available, it was estimated from the length of the ulna (olecranon to styloid process) and mid arm circumference.<sup>7</sup>

The catering department of the hospital was sought, and together with the dieticians, estimated the average energy value of food per meal to be - 500 kilocalories. A snack added an additional 100 kilocalories. The total number of kilocalories consumed per patient for seven consecutive days was then determined and divided by seven to get the average energy intake per day. This figure was then matched against the weight dependent recommended calorie intake of the patient.

During the week of study, there were 25 hip fracture patients on the trauma and orthopaedic ward, all of whom were selected for the study. Two patients passed away in the course of the week, and in 10 patients the food chart could not be found or was inadequately filled. This left 13 eligible patients, with an age range of 60 to 93 and a median of 82 years.

## Results

Eight patients did not meet their nutritional requirements (62%), and five did meet them (38%) over the week the study was carried out (Figure 1 & Figure 2). None of the patients over the week had wound breakdown or leaking, but two of the patients who did not meet their requirements suffered from chest infections, which were being treated with antibiotics by the time the week long study came to an end. They were both mobilising very poorly and being transferred from bed to chair.



Figure 1 Meeting nutritional Requirements.

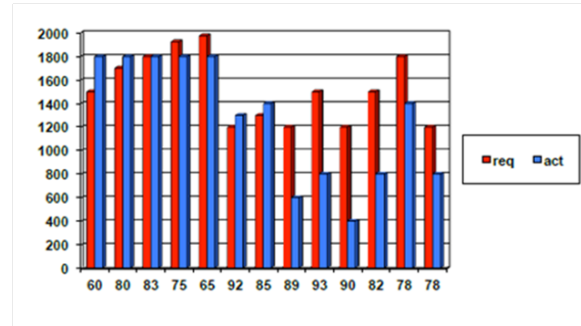


Figure 2 Requirements in calories measured against actual intake.

Req: Required calories according to weight  
Act: Actual calories consumed by patient

## Discussion and recommendations

A large percentage of patients are not receiving their recommended minimum amounts of energy. This often overlooked problem can lead to recumbence and its all too often encountered risks, pressure sores, wound and chest infection, depression, venous thrombosis, and ultimately an untimely death.

What can be done about it? On admission, all hip fracture patients must have a nutritional screen, which can be made part of the neck of femur fracture pathway, and those at risk of malnutrition be identified early and assigned a food chart for accurate measurement of oral intake.

If the patient is seen to be falling behind on oral intake, the nursing staff should bring this to the attention of the doctors and dieticians to find a cause for loss of appetite and to augment hospital food intake e.g. with high energy drinks. Nurses specially trained in dietetics should be present on every ward to ensure this process takes place, as frequently nursing staff are often busy with their regular duties to take note of patients who might not be eating sufficiently. Healthcare auxiliary staff is an invaluable source of information regarding patient's eating habits and should be available to impart this knowledge on to clinicians during ward rounds.

The pain associated with a neck of femur fracture is often severe, even in the first few days after operative fixation or joint arthroplasty. This may prevent patients from moving towards food placed on the table and the presence of extra staff to assist patients to eat during meal times could see the amount of malnourished patients on the ward decrease.

For the patients who did not meet their nutritional requirements, it would have been interesting to note whether they had greater morbidity when compared to the patients who were adequately fed, but such a study was beyond the scope of this paper. At present, the results are an important surrogate outcome but further studies would have to be performed to determine the level of impact malnutrition has on patient morbidity.

Lastly, the importance of nutrition is a subject rarely taught in medical and nursing school. Stressing this aspect of patient care at grassroots level could spur a change of attitude and get more ward staff involved in better assessing their patients' nutritional needs.

## Limitations

Healthy hip fracture patients are often left to their own devices so in this case series the 10 patients in whom the food charts were not available may have been eating satisfactorily and nursing staff may not have seen the need to keep the charts.

A chart is only as useful as the accuracy of the information put on it. Food charts are estimates of how much patients eat and not an accurate reflection of intake.

The numbers involved in this study were small and as a cross sectional study may not have represented the overriding nutritional trend in the department or indeed the hospital.

## Conclusion

The majority of hip fracture patients, among the most elderly and frail in the hospital, are not meeting their nutritional requirements. Hopefully the above recommendations will go some way in redressing this correctible risk factor of morbidity and mortality.

## Take away points

1. Our findings in this hospital setting indicated that nutrition is often neglected ahead of more 'medical' health concerns
2. Dietary intake should be tightly monitored and where it falls below recommended levels mechanisms should be in place to counter this
3. Regular similar audits should be carried out in institutions to guard against under-nutrition as a cause of morbidity and potential mortality

## Acknowledgments

None

## Conflicts of interest

None.

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