

Malnutrition Matters, Joint BAPEN and Nutrition Society Meeting, 2nd and 3rd November 2010, Harrogate

## An assessment of nutritional status of orthopaedic fracture patients on admission to hospital

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The high prevalence of malnutrition among hospitalised patients has been reported in many studies and remains a significant problem<sup>(1,2)</sup>. Nutritional status can indirectly affect fracture risk in many ways. Low body weight is a risk factor for fracture as the protective padding offered by adipose tissue is reduced and there is also an associated loss of mass and strength of skeletal muscle<sup>(3)</sup>. The objective of this project was to determine the nutritional status of fracture patients admitted to the orthopaedic ward in a large academic teaching hospital.

Data were collected prospectively over a one-month period in spring/summer. Patient demographics and anthropometric measurements were recorded. Nutritional status was categorised according to BMI combined with triceps skinfold thickness (TSF) and mid-arm muscle circumference (MAMC) values in comparison with widely accepted criteria outlined in larger studies in Ireland and Scotland<sup>(1,2)</sup>.

A total of 27 patients were assessed, 63% male, with a mean age of 60.5 years (median 72, range 16–90 years). The malnutrition universal screening tool was completed on all patients and 14.8% (*n* 4) were found to be 'at risk' of malnutrition (11.1% medium risk and 3.7% high risk). Handgrip measurement described 51.9% (*n* 14) as being protein malnourished (<85% of normal), of which 42.9% (*n* 6) also had MAMC<5th percentile.

	5th percentile (%)	Minimum value	Maximum value
Triceps skinfold thickness (mm)	3.7%	5	38.3
Mid-upper-arm circumference (cm)	14.8%	19.75	45
Mid-arm muscle circumference (cm)	44.4%	8.6	32.97

The same results were obtained irrespective whether BMI alone or combined measurements were used to categorise nutritional status. Undernutrition was prevalent in 11.1% (7.4% moderate and 3.7% severe) which is very similar to data from a previous study in two large teaching hospitals in Dublin<sup>(1)</sup> and also to unpublished screening data from this hospital. A similar percentage of patients, both in this study and the previous study by Corish *et al.* (*n* 569), had normal BMI or were overweight/obese (40.7 and 48.1% v. 40 and 46% respectively).

It would appear in this instance that undernutrition and obesity are no more prevalent among fracture patients than the general hospitalised population. To date, studies have focused on the effect of undernutrition as a risk factor for fracture. However, almost half this sample was found to be overweight/obese. Given that obesity levels are continuing to rise among the population, excess body weight may also pose a fracture risk by increasing musculoskeletal strain, especially in those with a low bone mass and low levels of physical activity. Direct comparisons with similar studies are difficult to make as they tend to target specific populations such as elderly, female, hip fracture patients in winter. A longer study assessing elderly patients would yield more specific results eliminating otherwise healthy young patients and account for seasonal variations.

1. Corish CA, Flood P & Kennedy NP (2000) Apparent low frequency of under-nutrition in Dublin hospital in-patients: should we review the anthropometric thresholds for clinical practice? *Br J Nutr* **84**, 325–335.
2. McWhirter JP & Penninton CR (1994) Incidence and recognition of malnutrition in hospital. *Br Med J* **308**, 945–948.
3. Kinney JM (2004) Nutritional frailty, sarcopenia and falls in the elderly. *Curr Opin Clin Nutr Metab Care* **7**(1), 15–20.