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Degree of malnutrition (undernutrition) varies in SCI patients – result from a multi-centre study

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Different methods have been used to assess the risk of malnutrition in hospitalised patients, and there is no agreement as to which method best reflects nutritional status. The aims of the present study was to: (1) Determine the prevalence of malnutrition by using the Malnutrition Universal Screening Tool (MUST), Spinal Nutrition Screening Tool (SNST) and other common nutritional indices include BMI and serum albumin: Alb in patients with spinal cord injuries (SCI) and (2) assess the practical utility of these tools. This prospective study was done in 4 UK SCI centres comprising 40% of the total SCI beds in the UK. One-hundred-and-thirty-seven patients were studied after written informed consent was obtained. On admission, the MUST, SNST, their baseline clinical data, anthropometric measurements and laboratory were assessed. Differences between independent groups were assessed using the Mann–Whitney test and Kruskal–Wallis test. Agreement between two assessments against MUST as a reference method was analysed by the κ -statistic. Undernutrition was defined as: ⁽¹⁾ MUST score ≥ 1 ; ⁽²⁾ SNST score ≥ 11 ; ⁽³⁾ BMI $< 20 \text{ kg/m}^2$; and ⁽⁴⁾ serum albumin concentration (Alb) $< 30 \text{ g/l}$. On admission, 57% of patients were overnourished (BMI > 25) and the prevalence of undernutrition was varies from 11.4 to 38.6% (See Table 1). Apart from BMI showing a poor correlation with other clinical/nutritional indices, malnourished patients were found to have a significantly reduced concentration of total protein concentration, haemoglobin, appetite, magnesium and a significantly higher C-reactive protein and received more prescribed medications according to both nutritional screening tools and albumin level. No statistics significance was observed between tetraplegic and paraplegic patients regardless of nutritional state. When using MUST as a reference method, concordance and agreement were observed in [SNST: 106 of 123 (86%), κ : 0.538; BMI: 89 of (72.9%), κ : 0.343; Alb: 73 of 109 (66.9%), κ : 0.309]. The present study shows SNST has a better agreement when compared with other nutritional indices. Malnutrition is common in patients with SCI, and yet no universal agreement of assessment nutritional status may lead to under-detection and under-management. The present study suggests using SNST for nutrition screening, is a practical (89.8% patients screened) and may be better than using a single-parameter index. Further research on the best combination of simple clinical indices to assess nutritional status in patients with SCI is warranted.

Criteria for undernutrition	n (% screen)	Prevalence of undernutrition	κ -statistics (95% CI)	Sensitivity	Specificity
SNST screening (≥ 11)	123 (89.8%)	38.6%	0.538 [0.396, 0.679]	87.5%	85.3%
BMI ($< 20 \text{ kg/m}^2$)	122 (89.1%)	11.4%	0.343 [0.198, 0.487]	29.7%	100%
Hypoalbuminaemia (albumin $< 30 \text{ g/l}$)	109 (79.5%)	33.9%	0.309 [0.13, 0.487]	42.1%	79.0%

1. NICE (2006) *Nutrition Support in Adults: Oral Nutrition Support, Enteral Tube Feeding and Parenteral Nutrition*. NICE.
2. Royal College of Physicians (2008) *Chronic Spinal Cord Injury: Management Of Patients In Acute Hospital Settings: National Guidelines*. London: Royal College of Physician.
3. Wong SS, Derry F, Sherrington K *et al.* (2009) *Proc Nutr Soc* 68 (OCE1), E53.
4. Elia M (2003) *Screening for Malnutrition: A Multidisciplinary Responsibility. Development and Use of the Malnutrition Universal Screening Tool (MUST) for Adults*. Redditch: BAPEN.