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Macronutrients intake in overweight adults with chronic spinal cord injury – result from Spinal Clinic for Obese Outpatient Project (SCOOP)

S. S. Wong^{1,2}, A. Graham¹, T. Ng¹, A. Forbes² and G. Grimble²¹National Spinal Injuries Centre, Stoke Mandeville Hospital, Aylesbury, UK and ²Centre of Gastroenterology and Clinical Nutrition, University College London Hospital, Aylesbury, UK

Approximately 40 000 British currently live with spinal cord injury (SCI)⁽¹⁾ and up to 60% of them are estimated to be overweight or obese⁽²⁾. This study aims to describe the macronutrients intake in a sample of adults with SCI before they attend a weight management clinic. Twenty-two adults, aged 19–75 years completed a 7-d food diary and their weights and body compositions were measured. Nutrient intake was compared to the British Reference Nutrient Intake (RNI) set by the Department of Health⁽³⁾ and the National Diet Nutrition Survey (NDNS) data⁽⁴⁾. These data are summarised in Table 1, of 22 patients included (47.1 ± 13.4 years; BMI: 35.5 kg/m²). The total energy intake was lower than the general able-bodied population (male: 7.15 MJ (1721 kcal)/d v. 9.72 MJ (2312 kcal)/d; Female: 5.17 MJ (1242 kcal)/d v. 6.87 MJ (1632 kcal)/d). Overall, men consumed more energy per kg body weight than women [66.5256 kJ/d/kg (15.9 kcal/d/kg) v. 56.9024 kJ/d/kg (13.6 kcal/d/kg)] and consumed more alcohol than the national average (11.9 g v. 6.5 g/d). Men consumed proportionately more fat than women [22.1752 kJ/kg/d (5.3 kcal/kg/d, 33.1% of total energy v. 17.9912 kJ/kg/d (4.3 kcal/kg/d), 31.7% of total energy) but women consumed more carbohydrate [30.1248 kJ/kg/d (7.2 kcal/kg/d), 52.6% v. 28.0328 kJ/kg/d (6.7 kcal/kg/d), 42.3%] and protein [10.46 kJ/kg/d (2.5 kcal/kg/d), 18% v. 10.878 kJ/kg/d (2.6 kcal/kg/d), 16%]. Both males and females were found to consume more sugar and protein than the recommendation and women were found to consume more carbohydrate than the RNI. There is a fall in the intake dietary fibre when compared to the NDNS and RNI. Energy intakes appeared to be 9% less than that which would be calculated using Schofield's approach⁽⁵⁾ (6.73 MJ/d v. 7.42 MJ/d, $P < 0.05$). The present study shows there is evidence of nutrient imbalance, relative to the RNI and national data for both men and women with SCI. Current guidance (RNI) on nutritional requirement may be overestimated in the SCI population and their diets are too high in sugar and excessive alcohol consumption, but low in fruits and vegetables and this may contribute towards obesity and poor vitamin and minerals status. In order to determine the optimal nutritional requirements in this specific 'at risk' group of patients, further research on measuring energy expenditure and nutrient intake, with a larger sample size is warranted.

| Nutrient group | SCI group (mean) | | NDNS | | RNI | |
|------------------------------|------------------|-------|------|-------|------|-------|
| | Men | Women | Men | Women | Men | Women |
| Energy (MJ/d) | 7.15 | 5.17 | 9.72 | 6.87 | 10.6 | 8.1 |
| Carbohydrate (% food energy) | 42.3 | 52.6 | 47.7 | 48.5 | 50 | 50 |
| Sugar (% food energy) | 24.3 | 26.9 | 13.6 | 11.6 | 11 | 11 |
| Protein (% food energy) | 16 | 18 | 16.5 | 16.6 | – | – |
| Fat (% food energy) | 33.2 | 31.7 | 35.8 | 34.9 | 35 | 35 |
| SFA | 11.3 | 11.5 | 13.4 | 13.2 | 11 | 11 |
| MUFA | 10.4 | 10 | 12.1 | 11.5 | 13 | 13 |
| PUFA | 4.9 | 5.1 | 6.4 | 6.3 | 6.5 | 6.5 |
| Fibre | 9.98 | 10.2 | 15.2 | 12.6 | 18 | 18 |

SCI: spinal cord injury group; NDNS: National Dietary and Nutrition Survey⁽⁴⁾; RNI: reference nutrient intake⁽³⁾.

1. Spinal Injury Association (2009) <http://www.spinal.co.uk/page/Some-basic-facts-about-SCI> (accessed 8 February 2010).
2. Gupta N, White K & Sandford P (2006) *Spinal Cord* **44**, 92–94.
3. Department of Health (1991) *Dietary Reference Values of Food Energy and Nutrients for the United Kingdom*. Report on Health and Social Subjects No. 41. London: H.M. Stationery Office.
4. Henderson L, Gregory J & Swan G (2003a) *The National Diet and Nutrition Survey: Adults Aged 19 to 64 years. Vol. 2. Energy, Protein, Carbohydrates, Fat and Alcohol Intake*. London: The Stationery Office.
5. Schofield WN (1985) Predicting basal metabolic rate, new standards and review of previous work. *Hum Nutr Clin Nutr* **44**, 1–19.