

ORIGINAL ARTICLE

How do spinal cord injury centres manage malnutrition? A cross-sectional survey of 12 regional centres in the United Kingdom and Ireland

S Wong^{1,2}, F Derry³, G Grimble² and A Forbes²

Study design: A multi-centre, cross-sectional survey.

Objectives: To establish and compare the resources allocated against existing national standards, and to document current nutritional screening practices.

Setting: Spinal cord injury centres (SCICs) in the United Kingdom and the Republic of Ireland.

Methods: After obtaining research ethics committee approval, 12 SCICs in the United Kingdom and the Republic of Ireland were surveyed by a postal questionnaire. Data collected included the number of whole time equivalent (WTE) staff available, whether a nutrition team was present and the use of nutritional screening tools in the SCIC.

Results: Eleven (92%) SCICs responded. In total there were 482 allocated beds, and the average numbers of patients per WTE staff (s.d.), including consultants, nurses, dietitians, physiotherapists, occupational therapists and psychologists, were recorded. Eight centres used a nutritional screening tool, and only two centres had a clinical nutrition team.

Conclusion: The resources allocated to nutritional care in SCICs appear to be very limited. This suggests that malnutrition will continue to be under-recognised and under-treated. There is a clear need for additional resources to address the nutritional needs of this special population group. Each SCIC should ensure regular access to nutritional advice, and the establishment of local nutrition support teams should be a priority.

Spinal Cord (2012) **50**, 132–135; doi:10.1038/sc.2011.118; published online 18 October 2011

Keywords: malnutrition; spinal cord injury centre; staffing level; spinal cord injury

INTRODUCTION

The recognition of malnutrition and the initiation of adequate nutritional support are important to clinical care.^{1–10} A recent study in the UK general hospitals showed that nearly 30% of all in-patients are at risk of malnutrition. Patients in all diagnostic categories are at risk,¹ but the prevalence of malnutrition is higher (44%) in patients with a spinal cord injury (SCI).¹¹

In fact, malnutrition may not only be present at admission, but may also occur during a hospital stay. Lean and Wiseman² have suggested that the prevalence of malnutrition risk in hospital inpatients may be as high as 70%. The association between poor nutritional status, the treatment outcomes and an increased cost of health care has been shown in different clinical settings.^{1,5} Poor nutrition is linked, for example, to an increased risk of infections, the development of pressure ulcers, and to impaired wound healing³ and compromised respiratory function.⁹

The nutritional needs and management of patients who have sustained an SCI and are still recovering from the acute trauma and those who are stable and undergoing rehabilitation are quite different.^{6–10} Variation in energy intake and nutritional requirements depend on the phase of the SCI and the patient's age, gender and mode of ambulation. Weight loss is common during the acute and early rehabilitation phases of an SCI. There is reduced activity, and muscle mass is lost, leading to a decrease in energy requirements.

However, in the long term, there is a tendency for the person with SCI to gain weight as the catabolic phase resolves but activity remains low.

There are eleven SCI centres in the United Kingdom and one in the Republic of Ireland. They are equipped to resuscitate, manage and rehabilitate patients with an SCI and also offer life-long follow-up care and management of SCI patients. The joint standard development groups of the South of England Review Group (JSDG) have published recommendations on the staffing levels working in the SCI centres (SCICs), but they do not make any recommendations for dietitians.¹¹ Although dietitians are considered essential members of the multi-disciplinary team (MDT) caring for patients,⁵ the numbers of dietitians are unknown. We, therefore, conducted this national survey in order to cover all SCICs in the United Kingdom and Ireland with the aims of (i) establishing current staffing levels with reference to the national standards,¹¹ (ii) establishing the current use of nutritional screening tools and (iii) studying the existence of clinical nutrition teams in the SCICs.

METHODS

A cross-sectional survey was used for this study. Before commencing the study, approval was obtained from the National Research and Ethics Committee. The questionnaire was developed in collaboration with dietitians from SCICs in the United Kingdom and the Republic of Ireland (i) to assess the number of available beds at each SCIC; (ii) to assess the workforce allocations, including

¹Department of Nutrition and Dietetics, Stoke Mandeville Hospital, London, UK; ²Centre for Gastroenterology and Clinical Nutrition, University College, London, UK and ³National Spinal Injuries Centre, Stoke Mandeville Hospital, London, UK

Correspondence: S Wong, Department of Nutrition and Dietetics, Stoke Mandeville Hospital, Aylesbury HP21 8AL, UK.

E-mail: Samford.Wong@ucl.ac.uk

Received 18 December 2010; revised 15 September 2011; accepted 17 September 2011; published online 18 October 2011

the numbers of whole time equivalent (WTE) medical staff, nursing staff, occupational therapists, physiotherapists and dietitians; and (iii) to assess nutritional practices in each SCIC, including the use of a nutritional screening tool and the availability, and purpose, of a nutrition team. The questionnaires were sent to all 12 SCICs in the United Kingdom and Ireland in 2008.

Data analysis

Data from the questionnaires were entered into spreadsheets using Minitab (Version 15.0). Descriptive statistics were used to calculate the mean and standard deviation (s.d.) for the WTE for each staff category per available bed, and they were compared with the JSDG recommendations.¹²

RESULTS

Eleven SCI units (92%) responded to the survey and their responses were analysed. The centres contained a total of 482 SCI beds (436 in the United Kingdom, 46 in the Republic of Ireland).

For the 482 allocated beds, the average number of patients per WTE staff (s.d.) were as follows: consultants: 14.9 (4.3); nurses: 0.98 (0.5); dietitians: 108.4 (101.7); physiotherapists 5.8 (2.2); occupational therapists: 9.1 (3.9); and psychologists: 33 (12.7). Workforce allocation is summarised in Tables 1 and 2.

Dietetic provision and the seniority (pay-grade) levels of dietitians are summarised in Figure 1.

Eight (73%) SCICs reported that they used a nutritional screening tool. Of those, 25% (2 out of 8) used the Spinal Nutrition Screening

Tool developed by Bearne (personal communication), 25% used the Malnutrition Universal Screening Tool,¹² and the rest used a local tool or individual care plans. Two SCICs (18.2%) stated that they have an established clinical nutrition team. However, those teams only provided support and advice for patients who required parenteral nutritional support. In all, only two (18.2%) SCICs reported that they weighed patients at admission; the rest reported no specialised weighing scale in their SCIC and, therefore, that they were unable to weigh patients until they were mobile.

DISCUSSION

To the best of our knowledge, this is the first survey carried out to report the provision of human resources and nutrition practice in UK SCICs. In addition to giving an overview of the current workforce provision, it also highlights the inconsistencies and inadequacies in dietetic funding, activity and nutritional support team membership.

SCI patients are often dependent on critical care in the early stage of their SCI, but they still need nutritional support when they leave the

Table 1 Human resources allocation in 11 SCICs in the United Kingdom and the Republic of Ireland

Staff category	Total WTE staff	Number of patients per WTE staff (mean (s.d.)) (range)	National recommendation ¹⁴
Medical consultants	32.3	14.9 (4.3) (10.5–24.4)	15–20
Other grades of medical staff	47.5	10.1 (3.6) (7.5–20.0)	—
Nurses	449.4	1.0 (0.5) (0.6–1.8)	2–3
Dietitians	4.8	108.4 (101.7) (30–387)	—
Physiotherapists	83.3	5.8 (2.0) (3.75–10.5)	5–7
Occupation therapist	56.5	9.1 (4.0) (3–16.6)	6–8
Psychologists	11.4	33 (12.7) (14–44)	15–20

Abbreviations: SCIC, spinal cord injury centre; WTE, whole time equivalent.

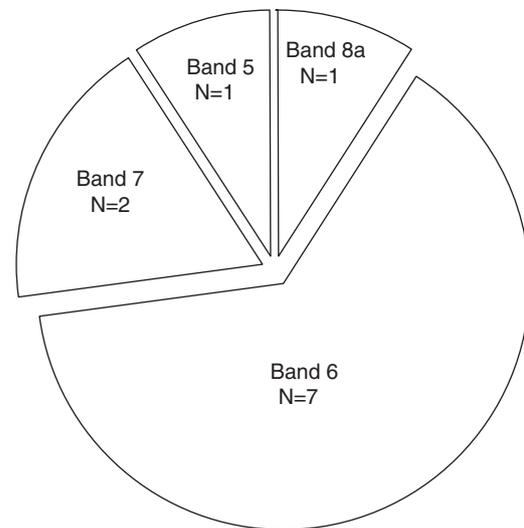


Figure 1 Distribution of UK SCIC dietitians' pay bands.

Table 2 Workforce distribution and nutritional management in UK SCI centres

Staff group	Centre 1	Centre 2	Centre 3	Centre 4	Centre 5	Centre 6	Centre 7	Centre 8	Centre 9	Centre 10	Centre 11	Total	National average	National standard ^a
Consultants (pts per WTE)	4.5 (24.4)	1 (15)	1 (20)	3 (15.3)	3 (16)	2 (10.5)	4 (11)	4 (15)	3.8 (10.7)	3 (14.3)	3 (11.3)	32.3	14.9	15–20
Doctors (pts per WTE)	10 (11)	2 (7.5)	1 (20)	3 (15.3)	5 (9.6)	2 (10.5)	5 (8.8)	7 (8.57)	4 (10.3)	5 (8.6)	3.5 (9.7)	47.5	10.1	NA
Nurses (pts per WTE)	77.35 (1.42)	12 (1.25)	8 (2.5)	74 (1.22)	64 (0.75)	12 (1.75)	68 (0.64)	80 (0.75)	30 (1.36)		24 (1.41)	449.35	0.976	2–3
Dietitian (pts per WTE)	0.3 (387)	0.5 (30)	0.4 (50)	0.27 (170)	0.5 (96)	0.3 (70)	0.2 (220)	0.6 (100)	0.3 (136)	0.2 (215)	1 (34)	4.77	108.4	NA
Physio (pts per WTE)	14.5 (7.5)	4 (3.75)	3.6 (5.55)	10.4 (4.42)	7 (6.8)	2 (10.5)	8 (5.5)	8.4 (7.14)	10.4 (3.94)	5.2 (8.3)	9.8 (3.5)	83.3	5.78	5–7
OT (pts per WTE)	9 (12.2)	5 (3)	3 (6.67)	7.2 (6.38)	4.5 (10.6)	2 (10.5)	4 (11)	3.6 (16.6)	7.2 (5.69)	4 (10.7)	7 (4.85)	56.5	9.06	6–8
Psychologists (pts per WTE)	(39.2)	p/t	1.1 (18.1)	2 (23)	1 (48)	1.5 (14)	1 (44)			1 (43)	1 (34)	11.4	32.1	15–20

Abbreviations: OT, occupational therapist; physio, physiotherapist; pts, patients; WTE, whole time equivalent.

^aJoint Standard Development Groups of the South of England Review Group.¹¹

intensive care setting.⁶ With the low availability of specialist dietetic staff, these vulnerable patients are easily put at risk.^{5–9} Our multi-centre study found that 44.3% of patients with SCI were at risk of malnutrition on admission.¹³

Good nutrition is recognised as a necessary intervention to prevent complications and, subsequently, to optimise healing after multiple trauma, burn and brain injuries. In patients with an SCI, the initiation of feeding within 48–72 h can reduce complications, improve clinical outcomes and decrease the length of hospital stay.^{5,6} On the other hand, the continuity of staffing is also important to SCI rehabilitation.¹⁴ The need for a specialist dietitian as a multidisciplinary team member has been proposed in the national and international guidelines, including those from the National Institute for Health and Clinical Excellence,⁵ the Royal College of Physicians of London,⁷ the Consortium of Spinal Cord Medicine⁶ and, more recently, the Multidisciplinary Association of Spinal Cord Injury Professionals.⁸

The need for a specialist dietitian in assessing the complex nutritional needs in SCI patients is demonstrated by the changing energy requirements in the different phases after an SCI. The actual energy requirements for a patient after SCI are mostly lower than their predicted needs.^{10,15} In the stable rehabilitating phase, their needs may be as little as 45% of the recommended needs and particularly so in tetraplegics.¹⁵ However, in the acute phase, these differences are seldom recognised. Given the general absence of indirect calorimetry, the adjusting of the standard equations for SCI patients by an experienced dietitian may help to avoid over- or under-feeding of these patients.^{7,12}

Dietitians see as their remit the management of factors related to malnutrition surrounding the physiological, social-psychological and ethnic needs of the patient. Professional guidelines and recommendations offer views on how dietitians might improve the quality of care and outcomes.^{16–18} To tackle malnutrition and nutrition-related complications, the dietetic practice manual published by the British Dietetics Association¹⁹ has recommended that each SCIC should have access to a specialist dietitian in order to assess patients' nutritional status and to provide further nutritional advice. More recently, the American Dietetic Association has also published guidelines for managing patients with an SCI.¹⁰ It has emphasised the importance of a specialist dietitian in managing patients in acute, rehabilitation and community settings.

After the survey, dietitians working in different SCICs met to review the service needs, and a consensus was reached that 1.0 WTE dietitians per 60 SCI beds was a reasonable and justifiable basis for dietetic service provision in the UK SCICs. Currently only 4 of 11 (36%) SCICs meet this target. Dietitians in 6 of the 11 (54%) SCICs still report covering more than 100 patients per WTE. For this reason, a letter requesting a review of the dietetic staffing levels was sent in July 2009 to the SCI commissioners, and the results were presented to the SCIC managers and specialist commissioners. We and our colleagues from other UK centres wished to emphasise the attention needed to ensure good nutritional practices in all SCICs. We are pleased to record that this has led to the inclusion of a dietetic professional in the updated JSDG recommendations.¹⁶

Apart from the dietetic staffing ratio, another important variable was the seniority of the dietitians, which is reflected in different pay-grades.^{17,18} The present study reveals considerable variation among the various SCICs (Figure 1). This may have been influenced by the introduction of the NHS Agenda for Change (A4C) programme.^{17,18} This is clearly reflected in the present study, in that only 3 of 11 dietitians were funded a band 7 (senior specialist dietitian), with one centre having only a newly qualified dietitian (on band 5; Figure 1). SCICs are specialist areas, and to place this responsibility on a novice,

who will be relatively unable to exert influence, appears unwise. The dietetic provision (adequate or not) is probably directly reflected in the quality of care being delivered.

In the present study: only four SCICs used a nutritional screening tool, demonstrating that the nutritional practices in SCI are below the recommendations set by the National Institute for Health and Clinical Excellence for all healthcare settings.⁵ Moreover, only a relatively small proportion of patients are being nutritionally screened at admission.²⁰ Without action, malnutrition will continue to be under-recognised and under-treated.

The authors hope that additional funds for dietetic provision will be found in order to ensure adequate nutritional care in all SCICs. Confirmed objective data from other conditions and good circumstantial evidence in SCI provide strong evidence that good nutritional care reduces the risk of developing pressure ulcers, obesity, diabetes mellitus, dyslipidaemia, coronary heart disease and osteoporosis. Preventing these complications can be cost effective and can serve as good medicine, as costs associated with treating these complications are higher than the initial preventive care required to avoid them.¹³

SCI care requires multi-disciplinary input, and the staffing level varies depending on the complexity of the case and this will affect the duration of treatment, follow-up and frequency of contact. We acknowledge that the present recommendations set down by professional groups and the general literature have to be validated against the views and wishes of SCI patients and their carers.^{11,15,16} In the absence of these data, further activity-based studies are warranted to ascertain more definitive dietetic staffing level.

CONCLUSION

The resources allocated to nutritional care in the UK SCICs seem insufficient. Subsequently, malnutrition is continually under-recognised and under-treated. Only four SCICs are using a validated nutritional screening tool. There is a need to implement the use of a validated nutritional screening tool to address the nutritional needs of this group of patients. To allow continuity of service provision, each SCIC should review their nutrition policy. We believe that regular access to nutrition advice and the establishment of local nutrition support teams should be a priority. A clearer understanding of the association of nutritional status and clinical outcomes in SCI will hopefully emerge from a study of the prevalence of malnutrition and its clinical outcomes, which is underway.

ACKNOWLEDGEMENTS

We thank Dr Allison Graham, Dr Joan Gandy and Dr Maureen Coggrave for reviewing the manuscript. We also thank the following persons who provided information for this study: Anthony Twist, The Robert Jones and Agnes Hunt Orthopaedics and District Hospital; Philippa Bearne, Salisbury District Hospital; Heather Nunn, Southport and Formby General Hospital; Louise Bentley, Musgrave Park Hospital; Kim Sheil and Lorna Fitzsimons, National Rehabilitation Hospital; Lynsey Clode and Sian Gruffudd, Rockwood Hospital; Karen Wiles, James Cook University Hospital; and Dr. Angela Gall, Prof. Michael Craggs, Judith Susser, Royal National Orthopaedic Hospital. Part of the study data were presented at the Nutrition Society annual meeting in July 2009 at University of Surrey, UK, and the International Spinal Cord Society annual meeting in June 2011. This project was partly funded by an unrestricted grant from Abbott Nutrition. University College London (UCL) Staff receive support from the Comprehensive Biomedical Research Centre funding awarded to UCL and its partner Trust by the National Institute for Health Research.

Author contributions: SW—protocol development, data analysis, manuscript preparation; FD—protocol development, clinical supervision, manuscript revision; GKG—academic supervision, manuscript revision; AF—academic supervision, manuscript preparation and revision.

- 1 Brotherton A, Simmonds N, Stroud M. *Malnutrition Matters: Meeting Quality Standards in Nutritional Care*. BAPEN: Redditch, 2010.
- 2 Lean M, Wiseman M. Malnutrition in hospitals still common because screening tools are underused and poorly enforced. *BMJ* 2008; **336**: 290.
- 3 NICE. *The Management of Pressure Ulcers in Primary and Secondary Care: A Clinical Practice Guideline*. NICE: London, 2005.
- 4 Council of Europe Committee of Ministers. *Resolution RESAP on food and nutritional care in hospitals*. <https://wcd.coe.int/ViewDoc.jsp?id=85747>, 2003.
- 5 NICE. *Nutrition Support in Adults: Oral Nutrition Support, Enteral Tube Feeding and Parenteral Nutrition*. NICE: London, 2006.
- 6 Consortium for Spinal Cord Medicine. *Early Acute Management in Adults with Spinal Cord Injury: A Clinical Practice Guideline for Health-Care Providers*. Paralyzed Veterans of America: Washington, 2008.
- 7 Royal College of Physicians. *Chronic Spinal Cord Injury: Management of Patients in Acute Hospital Setting: National Guidelines*. Royal College of Physicians: London, 2008.
- 8 MASCIIP. *Management of the Older Person With a New Spinal Cord Injury*. MASCIIP: Middlesex, 2010.
- 9 Cheshire DJE, Coats DA. Respiratory and metabolic management in acute tetraplegia. *Paraplegia* 1966; **4**: 1–23.
- 10 American Dietetic Association. *Spinal Cord Injury (SCI) Evidence-Based Nutrition Practice Guideline* 2009. <http://www.adaevidencelibrary.com> (accessed April 2010).
- 11 Joint Standard Development Groups of the South England Review Group. *Standards for Patients Requiring Spinal Cord Injury Care* 2003. <http://www.mascip.co.uk/standardssciPDF> (accessed April 2010).
- 12 Elia M. *Screening for Malnutrition: A Multidisciplinary Responsibility. Development and Use of the Malnutrition Universal Screening Tool (MUST) for Adults*. BAPEN: Redditch, 2003.
- 13 Wong SS, Derry F, Harini S, Grimble G, Forbes A. How nutritional risk is assessed and managed in patients with spinal cord injuries (SCI) – results from a UK multicentre study. *Top Spinal Cord Inj Rehabil* 2011; **16**: 19–20.
- 14 Dijkers M. Importance of the continuity of staffing in inpatient spinal cord injury rehabilitation. *Arch Phys Med Rehabil* 2010; **91**: E17–E18.
- 15 Cox SA, Weiss SM, Posuniak EA, Worthington P, Prioleau M, Heffley G. Energy expenditure after spinal cord injury: an evaluation of stable rehabilitating patients. *J Trauma* 1985; **25**: 419–423.
- 16 Joint Standard Development Groups of the South England Review Group. *Standard for Patients Requiring Spinal Cord Injury Care (Revised 2010)* 2010. <http://www.secsdg.nhs.uk/EasySiteWeb/getresource.axd?AssetID=99975&type=full&servicetype=Attachment> (accessed 20 November 2010).
- 17 NHS Carers. *How Agenda for Change Works*, NHS Employers (2011). <http://www.nhsememployers.org/PayAndContracts/AgendaForChange/Pages/Afc-AtAGlanceRP.aspx> (accessed 28 February 2011).
- 18 NHS employer. *National Profile for Dietetics* 2011. <http://www.nhsememployers.org/PayAndContracts/AgendaForChange/NationalJobProfiles/Documents/Dietetics.pdf> (accessed 21 July 2011).
- 19 Thomas B, Bishop J. *Manual of Dietetic Practice*. Blackwell Publishing: Oxford, 2007.
- 20 Wong SS, Derry F, Sherrington K, Gerogery G. An audit to evaluate the use of nutrition screening tool in the National Spinal Injury Centre in Stoke Mandeville Hospital, Buckinghamshire Hospitals NHS Trust. *Proc Nutr Soc* 2009; **68** (OCE1): E53.