Effect of Body Mass Index on Inpatient Rehabilitation Outcomes After Stroke

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Introduction
Recent studies examining the relationship between body mass index (BMI) and health outcomes have yielded mixed results. Some studies have reported increased mortality rates in severely obese patients, whereas others have found no significant differences in mortality or morbidity between BMI groups. The impact of BMI on rehabilitation outcomes, such as length of stay (LOS) and hospital costs, remains uncertain. In this study, we examined the relationship between BMI and rehabilitation outcomes, including LOS and discharge destination, using data from the National Rehabilitation Reporting System (NRS), a database containing information on adult inpatient rehabilitation in Canada. As of 2012–2013, the NRS contained 13 years of data from more than 100,000 patients. A subdivision of the NRS called the National Rehabilitation Reporting System (NRS) was divided into four BMI groups: underweight (BMI < 18.5 kg/m²), normal (18.5 to 24.9 kg/m²), overweight (25.0 to 29.9 kg/m²), and obesity (≥30 kg/m²). The relationship between BMI and rehabilitation outcomes was examined using multivariable regression analyses.

Methods
Using data from the National Rehabilitation Reporting System (NRS), patients discharged from inpatient rehabilitation between April 1, 2010, and March 31, 2013, (n = 14,197) were divided into four BMI groups: underweight (n = 601), normal (n = 5,027), overweight (n = 2,708), and obesity (n = 365). The relationship between BMI group and rehabilitation outcomes was examined using multivariable regression analyses.

Results
Average age and proportion of patients living alone prior to admission were similar across BMI groups. Average function scores tended to be lower for underweight patients (Table 1). After controlling for the above-mentioned patient characteristics (Table 2), underweight patients stayed longer (Figure 1) to achieve the same total function gain as were 27% less likely to be discharged back home (Figure 2) compared to patients in the normal BMI group. Compared to patients in the normal BMI group, patients with a BMI < 18.5 kg/m² (≥30 kg/m²) had slightly higher average discharge function scores and were 72% more likely to be discharged back home (Figure 2).

Conclusions
Rehabilitation following stroke provided comparable increases in function regardless of BMI. However, underweight patients demonstrated the greatest increases in function and were 27% less likely to be discharged back home. Our findings suggest that targeted interventions in underweight individuals may improve outcomes in rehabilitation care delivery.

References