



## Changes in implicit wanting and explicit liking and wanting for food after gastric bypass surgery

T. Redpath<sup>1</sup>, R.K. Price<sup>1</sup>, G. Finlayson<sup>2</sup>, A. Boyd<sup>1</sup>, F. Naseer<sup>1</sup>, D. Liddy<sup>1</sup>, C.W. Le Roux<sup>3</sup> and M.B.E Livingstone<sup>1</sup>

<sup>1</sup>Nutrition Innovation Centre for Food and Health (NICHE), Ulster University, Coleraine, BT52 1SA, <sup>2</sup>Institute of Psychological Sciences, University of Leeds, West Yorkshire, LS2 9JT and <sup>3</sup>Diabetes Complications Research Centre, University College Dublin, Ireland.

Gastric bypass surgery (GB) is a safe, effective treatment for morbid obesity<sup>(1)</sup>. Aside from reduced energy consumption, patients report changes in food preferences and appetite that may contribute to weight loss post-surgery<sup>(2,3)</sup>. Food preferences can be separated into two constructs; 'liking' (pleasure) and 'wanting' (motivation/desire to eat)<sup>(4)</sup> which may be influenced by physiological and psychological changes post-surgery. The aim of this study was to investigate changes in food preferences ('liking' and 'wanting') in GB patients from pre- to post-surgery, compared to weight-stable controls.

Nineteen patients (45.2 ± 12.5 years, Body Mass Index (BMI): 45.3 ± 6.4 kg/m<sup>2</sup>) and sixteen time-matched controls (44.7 ± 15.6 years, BMI: 25 ± 4.4 kg/m<sup>2</sup>) completed the computer-based Leeds Food Preference Questionnaire, which assesses preferences for sweet/savoury foods and low-fat/high-fat foods<sup>(5)</sup>, at baseline (1-month pre-surgery) and 3-months post-surgery. Explicit liking and wanting (conscious hedonic feelings/desire to consume) were measured using Visual Analogue Scales, whilst implicit wanting (unconscious motivational expression) was measured using food selection and reaction times in a forced-choice task.

There were no significant differences in food preferences between patients and controls at baseline. BMI for controls remained stable (+0.1 ± 1.3 kg/m<sup>2</sup>, p = 0.73), whilst BMI in patients significantly decreased (−8.3 ± 2.7 kg/m<sup>2</sup>, p = <0.01). GB patients expressed a significant decrease in the explicit liking (F(1,33) = 10.42, p = 0.03), explicit wanting (F(1,33) = 5.76, p = 0.02) and implicit wanting (F(1,33) = 4.92, p = 0.03) for sweet foods after surgery. However, there were no significant changes in preferences for high-fat foods in patients from pre to post-surgery. There were no significant changes in preferences for controls for sweet or high-fat foods.

In conclusion, patients express a significant decrease in preferences for sweet foods post-surgery. As changes in implicit unconscious motivational expression of food preferences may be more predictive of actual food consumption<sup>(6)</sup> these findings highlight a possible mechanism responsible for the success of GB as an obesity treatment.

1. Colquitt JL, Pickett K *et al.* (2014) *Cochrane Database Syst Rev* **8**, CD003641.
2. Mathes CM & Spector AC (2012) *Physiol Behav* **107**, 476–483.
3. Miras AD & Le Roux CW (2013) *Nat Rev Gastroenterol Hepatol* **10**, 575–584.
4. Berridge KC & Robinson TE (2003) *Trends Neurosci* **26**, 507–513.
5. Finlayson G, King N & Blundell J (2008) *Appetite* **50**, 120–127.
6. Pool E, Sennwald V *et al.* (2016) *Neurosci Biobehav Rev* **63**, 124–142.