



Use of a web-based dietary intervention for enhanced blood pressure control

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Hypertension (HTN) is an important but under-diagnosed risk factor for vascular morbidity and mortality which affects 71 % of men and 54 % of women aged over 45 years in Ireland⁽¹⁾. Dietary interventions, including those delivered online, have been shown to be effective in achieving reductions in blood pressure (BP)^(2,3). However, the provision of preventative lifestyle interventions for cardiovascular disease is poorly supported in Ireland⁽⁴⁾. The objective of this study was to assess the short-term efficacy of a six-week online BP management programme in achieving reductions in systolic and diastolic BP, body mass index (BMI) and waist circumference. The study also assessed if programme participation was associated with improved dietary knowledge and dietary behaviour.

A convenience sample of staff (n 100) from a third level institution (mean age 47 years, SD 9.9 years) were recruited to the six-week online BP management trial in February 2015. At baseline, mean BMI was 29.5 kg/m² (SD 4.8) in men and 26.4 kg/m² (SD 5.2) in women, with mean waist circumference of 104 cm (SD 12.5) in men and 89 cm (SD 12.1) in women. Mean systolic BP was 137 mmHg (SD 18.2) in men and 122 mmHg (SD 16.4) in women, with mean diastolic BP of 82 mmHg (SD 11.6) in men and 72 mmHg (SD 10.6) in women. Overall, 25 % (n = 25) of the initial cohort were classified as hypertensive (BP > 130/85 mmHg) at baseline measurement, with 14 % previously diagnosed with HTN by a physician. *Twenty-four percent* of the men and 15 % of the women were taking anti-hypertensive medications.

The online application provided participants with an overall dietary quality score (%) based on their reported intakes in six dietary domains relevant to BP control (fruit and vegetables, dairy, fish, salt, alcohol and supplements)⁽⁵⁾; with higher scores indicating more favourable dietary behaviour in relation to blood pressure control. The application also provided participants with individualised dietary advice in each of the six domains, based on their submitted responses to the online dietary assessment questionnaire. *Sixty nine* participants met the minimum inclusion criterion of logging into the programme at least once, with 17 men and 17 women returning for final measurement after the six-week intervention.

Completion of the programme (n 34) was associated with significant reductions in systolic BP (-7.2 mmHg; P = 0.001), but not diastolic BP (-1.5 mmHg; P = 0.303). Of the seven subjects who had a systolic BP \geq 140 mmHg at baseline and who participated in the programme and returned for re-measurement at six weeks; five achieved a systolic BP \leq 140 mmHg at their return appointment (P = 0.023).

Small reductions were also observed in BMI (-0.2 kg/m²; P < 0.039) and waist circumference (-1.7 cm; P < 0.001) over the intervention period. Completion of the programme was associated with increased knowledge about the dietary management of HTN (P = 0.017), and with improved overall dietary quality scores (48.2 to 66.6 %; P < 0.001).

Completion of this online dietary intervention programme was associated with enhanced dietary knowledge and behaviour, and with reduced systolic BP, BMI and waist circumference. Despite the high participant attrition rates observed, the reduction of systolic BP among hypertensive individuals in this study highlights the potential efficacy of such online programmes in the clinical management of cardiovascular risk factors.

1. Barron S, Balanda K, Hughes J *et al.* (2014) *BMC Public Health* **14**, 24.
2. Sacks FM, Svetkey LP, Vollmer WM *et al.* for the DASH-Sodium Collaborative Research Group (2001) *N Engl J Med* **344**, 3–10.
3. Moore TJ, Alsabeeh N, Apovian CM *et al.* (2008) *J Med Internet Res* **10**, e52.
4. O'Keeffe C, Kabir Z, O'Flaherty M *et al.* (2013) *BMJ Open* **3**, e002837.
5. McCartney DM1, Byrne DG, Turner MJ (2015) *Ir J Med Sci* **184**, 81–90.