



Delivery of a telehealth supported home exercise program with dietary advice to increase plant-based protein in people with non-alcoholic fatty liver disease: a 12-week pilot feasibility randomised controlled trial

C. Freer¹, E. George¹, S-Y. Tan¹, G. Abbott¹ and R. Daly¹

¹Institute for Physical Activity and Nutrition, Deakin University, Geelong, 3220, Australia

Telehealth overcomes common geographical barriers to community/clinic-based healthcare and lifestyle interventions, (1,2) but whether it is a feasible and safe mode of healthcare service delivery for lifestyle-based interventions in those with non-alcoholic fatty liver disease (NAFLD) remains unknown. This study evaluated the feasibility and safety of a home exercise program with dietary advice to increase plant-based protein delivered and monitored by healthcare professionals via telehealth in adults with NAFLD. Secondary aims were to assess changes in macronutrient intake including protein from plant and animal sources, body weight, physical activity and physical function. This was a 12-week pilot feasibility randomised controlled trial conducted in 28 inactive adults (>45 years) with NAFLD. Participants were randomly allocated to receive: 1) a home-based, muscle strengthening exercise program (3 days/week) delivered and monitored remotely by an exercise physiologist using the TeleHab exercise platform/app (VALD Health) plus support from a nutritionist to increase daily protein intake to ~1.2-1.5 g/kg/day from predominately plant-based sources and behavioural change support delivered via 3-4 weekly text messages (Pro-Ex, n = 14) or 2) usual care (UC, n = 14). Feasibility was assessed via retention (defined as ≤10% attrition), adherence [≥66% to the muscle strengthening program and ≥80% to the recommended daily protein serves [total (≥3-3½), plant (≥2) and animal (≤1-1½) per day (via protein checklist)] and safety (intervention-related adverse events). Secondary outcomes included macronutrient intake (3x24-hour records), weight (self-reported), habitual physical activity (PA) [moderate-to-vigorous (MVPA), minutes/week via the Short International Physical Activity Questionnaire], and physical function [30-second sit-to-stand (STS) performance]. Since this was a pilot feasibility study, mean group differences (6 and 12-weeks) were estimated, with 95% confidence intervals, and standardised effects [Cohen D, effect size (ES)] reported for secondary outcomes. Overall, 25 participants (89%) completed the intervention. In Pro-Ex, mean adherence to the exercise program was 52%, while adherence to the recommended plant, animal and total protein serves/day was 32%, 42% and 14% of participants, respectively. One minor exercise-related adverse event occurred from 241 completed sessions over 12 weeks. Relative to UC, Pro-Ex experienced a mean 2.7 (95%CI: 0.9, 4.4; large ES d = 1.29) increase in 30-sec STS number, 46 minute (95%CI: -153, 245; small ES d = 0.19) increase in MVPA, 1.7kg (95%CI: -3.5, 0.2; moderate ES d = 0.54) decrease in body weight, 35.2g (95%CI: 11.0, 59.3; large ES d = 1.23) increase in protein and 8.3g (95%CI: -20.5, 4.0; moderate ES d = -0.57) reduction in saturated fat. In middle-aged and older adults with NAFLD, a home exercise and plant-based dietary protein intervention delivered via telehealth was safe, but not feasible in terms of achieving the desired level of adherence. Despite this, exploratory analysis indicates this mode of healthcare service delivery could play a role to support weight management and improve physical activity and physical function in adults with NAFLD.

Keywords: non-alcoholic fatty liver disease; telehealth; plant-based protein; resistance exercise

Ethics Declaration

Yes

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