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The acceptability, effectiveness, and impact of different models of care for paediatric weight management services: a concurrent mixed-methods study

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Introduction: Paediatric obesity is a serious, but clinically neglected, chronic health problem. Excess weight problems are rarely managed when children attend clinical services. It is recommended that obesity treatment uses a "chronic-care" approach to management, with different types and intensity of treatment dependent upon severity of obesity. There are several new secondary and tertiary weight management services being implemented within New South Wales (NSW), Australia in 2017/2018 with differing models of care. This study will ascertain what factors affect acceptability, reach, and participation, as well as measure the clinical effectiveness of these services.

Methods: This is an acceptability and effectiveness study building upon existing and planned secondary and tertiary level service delivery in several health districts. This study will recruit participants from seven different paediatric weight management services (PWMS) across five Local Health Districts in NSW, Australia. Using a mixed-methods approach we will document a range of process, impact and clinical outcome measures in order to better understand the context and the effectiveness of each PWMS model. The project development and implementation is guided by the Theoretical Domains Framework. Participants will include parents of children less than 18 years of age attending PWMS, clinicians working as part of PWMS and health service managers. Data will be captured using a combination of anthropometric measures, questionnaires, one-on-one semi-structured interviews and focus groups.

Findings: Barriers and enablers to the development and commencement of this study protocol will be presented. Preliminary data on the views of parents of paediatric weight management clinics will also be presented.

Discussion: Results from this study will assess the acceptability and effectiveness of different models of care for paediatric weight management. Such information is required to inform long-term sustainability and scalability of secondary and tertiary care services to the large number of families with children above a healthy weight.

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Comparing two exercise training doses on cardiac autonomic function in adults with overweight/obesity and type 2 diabetes: a randomised controlled trial

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Introduction: Compromised cardiac autonomic function (CAF) is an independent predictor of cardiovascular disease and all-cause mortality in adults with T2D. High-intensity interval training (HIIT) has been shown to improve CAF, but it's unclear whether a lower volume of training produces equivalent effects. We aimed to compare the effects of low-volume combined aerobic and resistance HIIT (C-HIIT) with combined aerobic and resistance moderate intensity continuous training (C-MICT) on CAF in adults with overweight/obesity and T2D following 8-weeks of supervised training and 10-months of home-based training.

Methods: 35 individuals (age 59.5 ± 8.7y, BMI 34.0 ± 7.7 kg/m^2, 63% male) diagnosed with T2D (mean HbA_{1c} 7.6 ± 1.1%) were randomly allocated to 8-weeks of either supervised C-HIIT (1x4 min high-intensity aerobic @ 85–95% HRpeak plus resistance training, 3 times/week), supervised C-MICT (52.5 min @ 55–65% HRpeak, 2 times/week; 22.5 min @ 55–65% HRpeak plus resistance training, 2 times/week) or control (usual care). Participants then completed 10-months of home-based training (same protocol), with once monthly supervised sessions. CAF was quantified using heart rate variability (HRV), and heart rate recovery (HRR) following a maximal exercise stress test (EST).

Results: There were no significant differences in any CAF variables between C-HIIT and C-MICT at either time point. Both C-HIIT and C-MICT significantly increased absolute change in HR at 2 min post-EST (36 ± 6.0 bpm to 43.1 ± 6.8 bpm, $p = .012$; 38 ± 10.4 bpm to 43 ± 9.3 bpm, $p = .039$ respectively) compared to control after 8 weeks. There was a significant effect of time for mean RR interval length ($p = .004$) and mean HR ($p = .004$) after 12-months, but no significant differences between groups.

Conclusion: Exercise training improved CAF in adults with T2D following 8-weeks of supervised training and 10-months of home-based training. There were no differences in improvements between C-HIIT and C-MICT, despite C-HIIT requiring one third of the time commitment. Therefore, C-HIIT is a time efficient alternative to C-MICT to improve CAF in T2D.

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