

FINAL REPORT

DATE: 7/8/2024

GRANT: Abbie Fennessy Memorial Fellowship 2022 (sponsored by Mediplast)

RECIPIENT: Dr Tiffany DWYER

PROJECT TITLE: Investigations into the associations between exercise, physical activity and sedentary behaviour with glycaemic control in adults with cystic fibrosis after initiation of Trikafta®.

Overview

People with cystic fibrosis (CF) often have high and low blood sugar levels, which can negatively affect health and quality of life. Diabetes and pre-diabetes are common in adults with CF, with 40-50% of adults diagnosed with CF-related diabetes. In people with other types of diabetes, there is a risk of low blood sugar levels after exercise, but overall improved blood sugar levels with regular exercise. Exercise is important for maintaining and improving health in all people with CF, yet we don't know the impacts of exercise and physical activity on blood sugar levels. Trikafta® improves lung function, quality of life and overall blood sugar level control, but can also cause low blood sugar levels in some people. Our study used gold-standard measures of blood sugar levels and physical activity to investigate the effects of exercise and physical activity on blood sugar level control in adults with CF who have started taking Trikafta®. Participants wore a blood sugar level monitor for 10 days and on one occasion attended a supervised 20-min exercise session. Results will inform safe exercise prescription (to reduce low blood sugar levels after exercise) and provide guidelines on physical activity and sedentary behaviour (to improve overall blood sugar level control).

Outcomes of the research

32 adults with CF and 15 adults without CF completed the study. Overall there was no difference in the prevalence of low blood sugar levels in the 48hr after the supervised exercise session when comparing those with CF and those without CF. However, the adults with CF, who had pre-diabetes or CF-related diabetes, had a higher prevalence and longer time with low blood sugar levels in the 48hr after the exercise session compared to the adults with CF with normal glucose tolerance. 14 adults with CF had previously completed this study before they started Trikafta®, and there was no difference in the prevalence of low blood sugar levels in the 48hr after the exercise session from before they started to Trikafta® to after they started Trikafta®.

Research Summary

Low blood sugar levels after exercise are more prevalent in people with CF who have pre-diabetes or CF-related diabetes, though those episodes were mostly mild and brief. There was no increase in low blood sugar levels after exercise once people started Trikafta®. Next steps are to analyse the physical activity measures collected in this study and investigate the effects from people's physical activity (including analysing different types and intensity of exercise) and sedentary behaviour on their overall blood sugar level control.



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