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✉ nutrition@scientexconferences.com

☎ +1 341-208-2801



TITLE: The Effects of Mobile-App-Based Low-Carbohydrate Dietary Guidance on Postprandial Hyperglycemia in Adults with Prediabetes

Name: Xiaoyu Chen

Affiliation: Lecturer at Shanghai University of Medicine and Health Sciences

Country: China

Email ID: 1334427886@qq.com

ABSTRACT (upto 300 words)

Introduction: Postprandial hyperglycemia is independently associated with many adverse complications, while diets with a low glycemic load are beneficial in improving post-meal glucose levels. This study aims to determine if mobile-app-based low-carbohydrate dietary guidance will reduce exposure to postprandial hyperglycemia in adults with prediabetes.

Methods: This single-blind, randomized controlled pilot study included 100 participants (39 men; mean age 53.6 ± 11.9 years) and was performed in the PKU Care CNOOC Hospital, China. The intervention group ($n = 57$) received low-carbohydrate dietary guidance through a mobile app (CARENA) for 3 months, while the control group ($n = 43$) only received health education on a diabetic diet. The primary outcome was change in time of postprandial hyperglycemia between baseline and 3 months.

Results: The study revealed that the mean time in postprandial hyperglycemia ($[7.8 \text{ mmol/l [140 mg/dl]}$) monitored by flash glucose monitoring changed from 3.27 h/day at baseline to 2.34 h/day at 3 months in the intervention group and from 3.08 h/day to 2.96 h/day in the control group, with a between-group difference of -0.81 h/day ($P < 0.05$). Fasting plasma glucose and glycated

hemoglobin (HbA1c) in the intervention group decreased significantly, although no significant difference was seen between the two groups. Compared with the control group, the intervention group had a significant decrease in anthropometric and body composition measurements as well as triglycerides.

Conclusion: The mobile-app-based low-carbohydrate dietary guidance effectively reduced the time spent in postprandial hyperglycemia in adults with prediabetes. This new type of nutritional management has beneficial effects on people with prediabetes and needs further research.

BIOGRAPHY (upto 200 words)

Xiaoyu Chen has completed his PHD at the age of 27 years from Tianjin Medical University, China. She has published 20 papers with a total IF score of over 50; among them, she has published 9 papers as the first author. She has published 6 monographs, including 1 chief editor and 2 deputy chief editors.

Presenter Name: Xiaoyu Chen

Mode of Presentation: Oral/Poster.

Contact number: +86 18822002275

