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A digitally delivered low-carbohydrate type 2 diabetes self-management program



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Background: Type 2 diabetes has serious health consequences including blindness, amputation, stroke, and dementia, and its annual global costs are more than \$800 billion. Although typically considered a progressive, nonreversible disease, some researchers and clinicians are now arguing that type 2 diabetes may be effectively treated with a carbohydrate-reduced diet.

Objectives: Our objective of this study was to evaluate the one year outcomes of a digitally delivered low carb program (LCP), a nutritionally focused, 10-session educational intervention for glycemic control and weight loss for adults with type 2 diabetes. The program reinforces carbohydrate restriction using behavioral techniques including goal setting, peer support, and behavioral self-monitoring.

Methods: The study used a quasi-experimental research design comprised of an open-label, single arm pre- and post-intervention using a sample of convenience. Adults with type 2 diabetes who had joined the program and had a complete baseline dataset were included in the study. We randomly selected participants to be followed for one year (N=1000; mean age 56.1, SD 15.7, years; 59% (593/1000) women; mean HbA1c 7.8, SD 2.1, %; mean body weight 89.6, SD 23.1, kg; taking an average of 1.2 diabetes medications).

Results: Of the 1,000 study participants, 708 (70.8%) individuals reported outcomes at 12 months, 672 (67.2%) completed at least 40% of the lessons, and 528 (52.8%) completed all lessons of the program. Of the 743 participants with a starting HbA1c at or above the type 2 diabetes threshold of 6.5%, 195 (26.2%) reduced their HbA1c to below the threshold while taking no glucose-lowering medications or just metformin. Of the participants who were taking at least one hypoglycemic medication at baseline, 40.4% (289/714) reduced one or more of these medications. Almost half (46.4%, 464/1000) of all participants lost at least 5% of their body weight. Overall, glycemic control and weight loss improved, especially for participants who completed all 10 modules of the program. For example, participants with elevated baseline HbA1c ($\geq 7.5\%$) who engaged with all 10 weekly modules reduced their HbA1c from 9.2% to 7.1% ($P < .001$) and lost an average of 6.9% of their body weight ($P < .001$).

Conclusions: Especially for participants who fully engage, an online program that teaches a carbohydrate reduced diet to adults with type 2 diabetes can be effective for glycemic control, weight loss, and reducing hypoglycemic medications.

Biography

Charlotte is responsible for the creation and delivery of digital education programs with proven health outcomes and cost savings. With a background in psychology, Charlotte's passion and expertise lie in creating offline accountability and sustainable health behavioral change in a digital age.

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Arjun has a decade of experience with intelligent health systems and big data. Holding a Masters in Artificial Intelligence from Imperial College London, Arjun's focus is transforming healthcare through empowering patients - through the use of real-world big data and genomics.

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