

Keto Diet Improved Life Quality of RRMS Patients in Trial

Written by [Marisa Wexler, MS](#) | May 6, 2022



Eating a ketogenic diet — one low in carbohydrates and high in fats — led to markedly less fatigue and depression for people with [relapsing-remitting multiple sclerosis](#) (RRMS) in a small clinical trial that was designed to assess the tolerability of the dietary intervention.

Measures of disability and quality of life also improved during the study while participants were eating a ketogenic diet. Overall, these results support future research to robustly explore the effectiveness of the ketogenic diet in [multiple sclerosis](#) (MS), though researchers stressed there is not yet enough evidence to recommend this diet for MS patients outside of closely monitored clinical trials.

Results of the trial were [presented](#) at the 2022 annual meeting of the American Academy of Neurology. Full data are now reported in the *Journal of Neurology, Neurosurgery and Psychiatry*, in the "[Phase II study of ketogenic diets in relapsing multiple sclerosis: safety, tolerability and potential clinical benefits.](#)"

The Phase 2 trial ([NCT03718247](#)), which was sponsored by the University of Virginia, included 64 people with RRMS. Two of the participants were teenagers (ages 15 and 17); the rest were adults. The majority of participants were female and white. During the trial, participants were instructed to eat a ketogenic diet for six months.

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The term “ketogenic diet” is sometimes used to broadly refer to any diet that is relatively low in carbohydrates. Here, the researchers used a more technical definition, specifically defined as a diet that promotes ketosis – when the body “burns” fat, instead of carbohydrates, as its main source of energy.

During the trial, participants’ urine was evaluated daily to assess whether their diets were inducing ketosis. Those with a positive test for ketosis on 85% or more days over the six-month trial duration were considered adherent to the diet.

A total of 83% of participants remained in the study for the six months and met the adherence criteria. Two participants withdrew from the study due to digestive side effects from the diet, including nausea and loss of appetite. Others were lost to follow-up or were considered not adherent.

The study’s main goal was to assess the tolerability of the ketogenic diet in people with RRMS. The researchers noted “this study was not designed to demonstrate efficacy, which will require a larger [randomized] controlled trial.”

Among the participants who completed the entire study, the most common side effects attributed to the ketogenic diet were constipation (43%), diarrhea (18%), nausea (9%), weight gain (9%), fatigue (5%), worsened depression or anxiety (5%), and acne (5%). Changes in the timing and heaviness of periods were reported in

27% of menstruating participants.

However, about one in four patients did not experience any side effects from the diet, and “the majority who experienced side effects noted these during the first 2 weeks, with subsequent resolution,” the researchers noted.

Participants underwent a battery of assessments before starting on the ketogenic diet, and additional assessments during the study out to six months. Results showed a nearly 50% decline in participant-reported scores of depression and fatigue while on the ketogenic diet. Participants also reported substantial increases in physical and mental quality of life.

The average score on the Expanded Disability Status Scale decreased significantly, by 0.5 points, indicating slightly less impactful disability. Average scores on the Nine-Hole Peg Test, a measure of hand dexterity, and on the six-minute walking test, which measures walking ability, also improved significantly.

Average body mass index — a ratio of weight to height — decreased significantly over the six-month study. A number of measures of body fat also decreased, as did levels of a pro-inflammatory, fat-derived hormone called leptin. Levels of adiponectin, another fat-derived hormone that has anti-inflammatory effects, increased on the ketogenic diet.

“We show that [the ketogenic diet] is a well-tolerated dietary intervention in patients with relapsing MS that leads to weight loss, reduced fatigue and depression, and improved QoL [quality of life],” researchers wrote.

“Our results support the rationale for a large-scale study of a [ketogenic diet] as a complementary treatment for MS,” the team added. “Our data do not, however, support widespread adoption of [ketogenic diets] as a therapeutic strategy for MS outside of a clinical trial.”

The scientists stressed that participants in this trial were monitored by an expert dietician, and underwent routine laboratory and neurological examinations. They noted that a ketogenic diet could theoretically lead to health problems like vitamin

deficiencies, abnormal fat levels, or kidney stones.

The team also noted that this study is limited by the lack of a control group on a “regular” diet against which to make comparisons.

“While the current study lacks controls, the findings herein are essential for next step phase III trial design,” they wrote.

“Given our data, future research should aim to study [the ketogenic diet]s as a complementary therapeutic approach to the treatment of MS,” the scientists concluded.



About the Author

[Marisa Wexler, MS](#) Marisa holds a Master of Science in cellular and molecular pathology from the University of Pittsburgh, where she studied novel genetic drivers of ovarian cancer. Her areas of expertise include cancer biology, immunology, and genetics, and she has worked as a science writing and communications intern for the Genetics Society of America.

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