

# Ketogenic Diet Myths vs. Facts

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A slew of articles in recent months have referred to the ketogenic diet as a “fad” or “trend.” It’s “dangerous,” claimed one article, and an anonymous post by the Harvard Public School of Public Health said the diet “comes with serious risks.”<sup>1</sup> Yet strangely, these critics seldom cite scientists or doctors who work with the diet, and many—including the Harvard article—cite no medical literature to substantiate their allegations. Without substantiation, many simply rehash long-contradicted, outdated claims.

A ketogenic diet is high in fat and low in carbohydrates. It’s called “ketogenic” because people on this diet shift from using glucose (a type of sugar) as their main fuel source to ketone bodies, which are derived from fat. In other words, people on the ketogenic diet can use their bodies’ fat stores as fuel—and this is why many studies show that this diet is superior for sustainable weight loss.

Still, the headlines keep coming. *Men’s Health* declared, “Ketogenic Diet Side Effects: How the Trendy Low-Carb Diet Can Give You Acne.” The health and fitness website *Livestrong.com* warned about “The Ketogenic Diet and Insomnia.” Other articles raised fears of bloat and constipation or cautioned that the regimen requires inhuman willpower from its followers.

**Full disclosure:** I have followed a low-carb diet for nearly a decade and find no problem adhering to it. I’ve lost weight and all my cardiovascular biomarkers have improved. Moreover, I’ve studied the science and history behind low-carbohydrate diets, so beyond my personal experience, I bring an evidence-based perspective. (Previously, for 25+ years, I adhered faithfully to a “mostly plants” regimen of fruits, veggies, and whole grains, including my own homemade 7-grain bread, while exercising religiously. Yet during that time my blood lipids were unhealthy, and I never could shake an extra 10–20 pounds.)

To be clear, I am not suggesting a ketogenic diet *for all*. However, this diet is clearly a safe and highly effective option for people with metabolic diseases (obesity, diabetes, heart disease, etc.), and therefore should not be falsely portrayed as a dangerous fad.

In this article, I address the 13 most common anti-keto claims found in the media.

My principal hope in this article is to provide journalists with a resource to do what basic journalism demands, namely to ensure that stories are scientifically balanced and accurate. At the end of this post I provide contacts for some of the credentialed experts who helped me compile this research. Reporters, please seek out these or other low-carb diet experts so you can provide accurate, up-to-date information for your readers.

## Claim #1. Keto is bad for athletes

*“This Keto diet can definitely help one lose fat, but the resulting lack of carb fuel makes one tired and unable to perform at desired levels.” –Lewis Maharam, M.D. and Daily News columnist<sup>2</sup>*

### **Response:**

Numerous studies show that the ketogenic diet has helped athletes improve their body composition, trim fat, maintain performance and improve recovery. These studies have included marathon runners,<sup>3</sup> triathlon competitors,<sup>4</sup> CrossFit athletes,<sup>5</sup> gymnasts,<sup>6</sup> and other athletes performing high intensity<sup>7</sup> and interval<sup>8</sup> exercises.

One study found that after 12 weeks eating a ketogenic diet, endurance athletes cut body fat, increased oxidation and sprint power, and performed better overall on a critical power test compared to athletes on high-carb diets.<sup>9</sup>

## Claim #2. Keto is dangerous if you have diabetes

*“New research published in the Journal of Physiology indicates that ketogenic diets, which are low carbohydrate high fat eating plans that are known to lead to weight loss, may cause an increased risk of Type 2 diabetes in the early stage of the diet.” Medical Xpress<sup>10</sup>*

### **Response:**

First, that study, which was reported upon widely, was on mice. Mice are not like humans in the way they fatten or contract metabolic diseases. Journalists/media should stop reporting on mice stories as if they were applicable to humans, *especially* when there is such a large body of clinical trial data on *humans*. Let's be clear: rigorous clinical trial data on humans trumps any data on mice. Every time. And what does the rigorous data on humans say?

The ketogenic diet is actually the *most* promising diet for people with Type 2 diabetes. Some studies have shown that extreme caloric restriction can reverse diabetes, but continued starvation is largely unsustainable.

The other nutritional remedy for T2 diabetes is *carbohydrate* restriction. In a large, ongoing university-based study, 60% of patients with Type 2 diabetes reversed their diagnosis of diabetes after just one year on a ketogenic diet, supplemented by support via a mobile phone app.<sup>11</sup> On this protocol, 94% of participants reduced or eliminated their need for insulin medications while improving the vast majority of cardiovascular risk factors.<sup>12</sup>

No other diet has demonstrated such promising results for Type 2 diabetes.

Moreover, upwards of 17 scientific studies<sup>13</sup> support the idea that carbohydrate restriction works to manage blood sugar, or glycemia, in patients with diabetes.

### Claim #3. Keto causes fatigue and flu-like symptoms

*“That totally miserable feeling is actually called the ‘keto flu’ and it’s basically a bunch of flu-like symptoms that often appear at the beginning of a keto diet overhaul.” –Sarah Bradley, Women’s Health reporter<sup>14</sup>*

#### **Response:**

Upon starting the diet, some patients report symptoms like fatigue, headaches, and muscle aches. However, these short-lived symptoms are, in fact, a sign that the diet is working, and the body is switching over from burning glucose as fuel to burning fat. This transition involves upregulating certain enzymes and down-regulating others; it is a profound shift for the human body that can have uncomfortable symptoms. However, these side effect usually last only 3-4 weeks. They can be ameliorated in most cases, by drinking several cups of bouillion broth during the day until the transition is completed.<sup>15</sup>

The idea of the “keto flu,” which used to be previously known as the “Atkins flu,” is an old concept that has been addressed, in the scientific literature and in practice, for more than two decades now.<sup>16</sup>

### Claim #4. Keto is bad for heart health and will raise your cholesterol

*“However, saturated fat has long been lauded as a heart-harming macronutrient; the American Heart Association recommends no more than 13 grams of saturated fat per day. In fact, Nieca Goldberg, M.D., medical director of the Joan H. Tisch Center For Women’s Health at NYU Langone Medical Center, said saturated fats can increase bad cholesterol.” –Christina Stiehl, PopSugar reporter<sup>17</sup>*

#### **Response:**

One meta-analysis<sup>18</sup> incorporating data from 447 participants found that low-carbohydrate diets not only helped individuals lose weight, but also improved their cholesterol. And another meta-analysis,<sup>19</sup> citing 17 clinical trials, found that low-carb diets protected against major cardiovascular risk factors. A third study<sup>20</sup> including 119 participants found that low-carbohydrate dieters had lower cholesterol than low-fat dieters after one year.

While it's true that low-carb diets do raise the so-called bad LDL-cholesterol in some people, it's important to note that LDL-C, when influenced by diet, has never been shown to have any effect on cardiovascular risk. Large clinical trials and observational studies show that one's level of LDL-C and the lowering of LDL-C through diet is not reliably linked to cardiovascular outcomes.<sup>21, 22, 23</sup>

Moreover, the ketogenic diet also reliably raise the "good" HDL-cholesterol, while also improving most other cardiovascular markers, including blood pressure, as this study shows.<sup>24</sup> Thus, the overall effect on cholesterol and other markers for heart disease is positive. In some lean hyper-responders, a keto diet will increase LDL particle number, and this effect needs further investigation.

## Claim #5. Keto will make you break out

*"The skin is a temperamental beast. Any change in your diet, but particularly one that turns our usual percentages of fats, carbohydrates, and proteins upside down, can be inflaming."* –Ross C. Radusky, M.D., dermatologist, *Men's Health*<sup>25</sup>

### **Response:**

One study<sup>26</sup> found carbs to be the "main culprit" in causing acne. And another study found that low-glycemic diets lessened acne.<sup>27</sup>

What's more, a review<sup>28</sup> conducted by Italian researchers suggested that the keto diet could target acne by reducing inflammation and levels of insulin and IGF-1 — all known causes of acne.<sup>29</sup>

## Claim #6. Keto is not good for your gut

*"Most ketogenic diets are very low in fiber, and fiber is usually integral for gut health, as it is the food that good bacteria eat."* –Charlie Seltzer, M.D., *Insider*<sup>30</sup>

### **Response:**

In fact, patients with gastroesophageal reflux disease (GERD) have been shown to *improve* after eating very low carbohydrate diets.<sup>31, 32</sup> Another study found increased carb-intake worsened GERD, while a high-fat, low-carbohydrate diet reduced symptoms.<sup>33</sup> And two studies have linked esophageal diseases, including Barrett's esophagus (BE)<sup>34</sup> and GERD,<sup>35</sup> to sugar and carbohydrate intake.

## Claim #7. Keto causes, or worsens, fatty liver disease

*"Keto is not desirable for people with most stages of diabetes, kidney disease, or other liver conditions,"* – Kelly Boyer, nutritionist, *This is Insider*<sup>36</sup>

### **Response:**

The European Association for the Study of the Liver actually cites a low-carbohydrate diet as a way to treat the disease.<sup>37</sup> Studies show that cutting carbohydrates<sup>38</sup> and particularly fructose,<sup>39</sup> or sugar from plants, works to *improve* liver fat metabolism.

What's more, high-carbohydrate diets have been associated with worsening non-alcoholic fatty liver disease. Find evidence here,<sup>40</sup> here<sup>41</sup> and here.<sup>42</sup>

## Claim #8. You'll lose sleep on a ketogenic diet

*"...May also lead to health problems, including insomnia or poor quality sleep."* –Lucy Burns, reporter, *Livestrong.com*<sup>43</sup>

### **Response:**

There seems to be no foundation for this claim. People eating diets very low in carbohydrates and high in fats and proteins have been found, in one study,<sup>44</sup> to enjoy better sleep quality, meaning they spent more time in deep sleep than those on high-carbohydrate, low-fat diets.

A survey of 1,580 low-carb consumers published in late 2017 by the *Journal of Insulin Resistance*<sup>45</sup> found that while more than 11% of respondents reported using sleep-aids before beginning their low-carb diet, less than 5% reported using them after their diet. Moreover, nearly seven in 10 reported improved quality of sleep after dieting while only 3.4% said their sleep quality had worsened.

## Claim #9. Keto causes gallbladder problems

*"The ketogenic diet can affect the gallbladder in a few ways. Frequent fasting has the effect of slowing bile production and usage. This leads to stagnant bile that eventually turns to sludge and gallstones."* –'Doctor Eden,' commercial blog<sup>46</sup>

### **Response:**

Multiple studies have found that diets higher in fat *prevent* gallstone formation. Examples are here<sup>47</sup> and here.<sup>48</sup> Meanwhile, diets low in fat actually increase gallbladder volume<sup>49</sup> and may increase the risk of gallstone development, as do diets high in sugar and carbohydrates.<sup>50</sup>

## Claim #10. It reduces lean body mass

*"We generally see greater lean body mass (LBM) loss in ketogenic diet groups"* –Adam Tzur, Brandon Roberts and Alex Leaf, contributing authors, *SciFit.net*<sup>51</sup>

### **Response:**

A three-month trial<sup>52</sup> found the keto diet had no impact on the lean body mass of CrossFit participants.

## Claim #11. Keto is not good for long-term weight management<sup>53</sup>

*“Because the diet requires diligent monitoring, diet planning and is very restrictive in nature, it is not recommended at this time for long-term use for weight management” -Kelcie Atkin, R.D., L.D., C.D.E.<sup>54</sup>*

### **Response:**

Studies have demonstrated that the keto diet may in fact be ideal for long term weight management. One meta-analysis<sup>55</sup> found that individuals following very low-carbohydrate ketogenic diets lost more weight in one year than those on low-fat diets.

A survey published in the *Journal of Insulin Resistance*<sup>56</sup> found that three of four respondents on a low-carb diet reported losing 10 pounds or more; one-third reported losing more than 30 pounds. Six out of 10 respondents who were on the diet two years or more reported losing 20 pounds or more and 46% said they lost 3 inches from their waists.

## Claim #12. People just can't stay on keto

*“[I]t is hard to follow...it's so hard to stick with that people can't eat this way for a long time.” -Marcelo Campos, M.D., Harvard Medical School<sup>57</sup>*

### **Response:**

The ketogenic diet does not limit calories; people can eat as much as they like so long as they restrict carbohydrates. This means that people don't have to endure long periods of feeling hungry—which is why the ketogenic diet tends to be sustainable.

The survey in *Journal of Insulin Resistance* found that before respondents started their low-carb diets, nearly nine of 10 experienced intense hunger between meals. Once on the diet, only 3.5% said they grew hungry between meals. Respondents reported similar improvements in other aspects of their physical and psychological well-being.<sup>58</sup>

Of the 1,580 survey participants, more than half reported staying on a low-carb diet for at least one year, and 34% reported more than two years. Further, those on the diet for two years or more said that they had largely maintained their weight loss. This is a self-selected sample, with an obvious bias for people who are experiencing success (dieters are less inclined to report on their failures). However, this data does show that long-term adherence is possible.

“These overwhelmingly positive changes suggest that a low-carbohydrate diet may be especially sustainable,” the study's authors concluded.

Further evidence comes from a large, university-based study on patients with Type 2 diabetes, which showed an exceptional 84% adherence to a ketogenic diet at 1 year.<sup>59</sup>

## Claim #13. Keto Kills

“Low-carb diet linked to early death, medical study suggests.” *USA Today*, citing a study mainly by Harvard researchers published in *The Lancet Public Health*<sup>60</sup>

### Response:

As I wrote in op-eds for the *Wall Street Journal*<sup>61</sup> and *Medscape*,<sup>62</sup> the *Lancet Public Health* study is based on very thin data. The questionnaire underlying the report left out questions regarding popular foods, such as pizza and energy bars, and did not consider alcohol consumption. Moreover, the “low-carb” diet group in this study included people eating up to 37% of calories as carbohydrates—not low-carb according to the latest science. Ultimately, this is the kind of data that can show association but not establish causation, which means it is the kind of data one can use to generate hypotheses but not prove them. This kind of data would never be considered sufficient to approve a drug, for instance. The same standards should be applied to diet. Quite a few researchers, including myself, had our critiques published in *Lancet Public Health*.<sup>63</sup> The authors replied but did not respond to most of the criticisms.

Meanwhile, more than 70 trials have examined the health effects of a low-carb diet. They attest to the benefits<sup>64</sup> associated with ketosis and low-carb diets, including a reduction in body weight and body mass index, improved cardiovascular risk factors including blood pressure, and the reversal of Type 2 diabetes. It is virtually impossible to imagine that a diet with so many health improvements in the ‘near term’ (2 years) could ultimately shorten life—and the study authors offer no possible mechanism to explain how this might happen.

I think the larger question is why we are seeing such a sudden rash of anti-keto stories. So many of them quote no experts sources and do not provide citations for their claims. Skeptics with little acquaintance with the diet are quoted exclusively instead. From a journalistic perspective, this lack of balance of viewpoints and the failure to back up claims with evidence falls below basic reporting standards. Offenders on this list include even the Harvard School of Public Health, which recently published [more than one unsourced, one-sided article](#) on the keto diet (This is in addition to the *Lancet Public Health* article cited above, by Harvard researchers, which suggests that a low-carb diet kills you). These stories could reflect lazy reporting or they could very well be scare tactics to steer people away from the keto diet. Why would reporters or scientists at Harvard be doing such a thing? That’s material for another post. Stay tuned.

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**Many other low-carb practitioners who have familiarity with the scientific research can be found here:**

<https://www.lowcarbusera.org/low-carb-providers/lchf-doctors/>

**Other experts can be found by going to pubmed.com and searching for “keto” or “ketogenic” to find scientists who are studying this diet.**

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