Obesity, now viewed as a growing global problem, is continuously and enormously contributing to a ballooning health problem as it eventually impacts negatively on a nation’s economy. The development of serious illnesses, like heart diseases, diabetes, stroke, respiratory illnesses, certain cancers and even emotional stress can now all be attributed to obesity.

Genetic predisposition in combination with inactive lifestyles and high caloric intake leads to excessive weight gain. Obese people are often advised to lose weight through proper diet and exercise, which are often taken as a death sentence, especially by Filipinos who have humongous appetites and sweet tooth for cakes, pastries, and all the sugary concoctions the creative Pinoy cook can come up with. Exercise appears to be a grueling task and a waste of time for Filipinos who are on the go. Fad diets come and go with the promise of fast fat lossing results, but these diets, more often than not, leaves one hopeful deprived of those gastronomic happiness.

In case of indiscretions on diet, a karmic rebound weight gain booms! One who finds recommended fad diets not easy to subscribe to daily would wish for a diet that does not leave him deprived and depressed, but even allows him to enjoy what he likes most – meat and fat!

Well, the Ketogenic Diet appears to be a wish granted, but its safety remains uncertain.

The Ketogenic Diet: A consenting weight-reduction diet

Ketogenic Diet is simply defined as high-fat and a low carbohydrate diet. Origins of this diet started in the 1920s when Dr. Russel Wilder from the Mayo Clinic used high fat diets for the treatment of epilepsy. Significant weight loss was an observed side effect, and that started it all.

There are two basic types of Ketogenic Diet. The Classical Keto Diet is defined as <130g of carbohydrate per day or less than 20% of caloric intake based on a 2,000 kcal/day diet.

The Very Low-Carbohydrate Keto Diet (VLCKD), on the other hand, consists of 20–50 g/d of carbohydrate or less than 10% of a 2,000 kcal/day diet.

This diet is in contrast to the usual Filipino diet - one that is usually high in carbohydrates with all the rice and less on the meat. Carbohydrates, like rice, bread and noodles, are broken down into glucose when digested in the gut. Fruits are also rich in fructose, a simpler form of carbohydrates that is likewise digested further into glucose in the intestines.

With a high carb diet, increased glucose production and insulin secretion are consequent events that eventually lead to increased body fat production. Unless burned during exercise or increased physical activity, these body fats get stored in the body thus an increase in weight and body size.

Glucose is the easiest molecule the body can convert to energy. The body naturally prefers glucose as primary fuel sources.

By lowering the intake of carbs, the body is deprived of glucose and is pushed into a state called ketosis. Ketosis is a natural process the body initiates to help the physical body survive when food intake is low. During this state, the body produces ketones, which are products of fat breakdown in the liver. The ultimate goal of a properly maintained Ketogenic Diet is thus to force the body into this metabolic state. The body is starved of those carbohydrates thus shifting bodily metabolism to ketosis. When the body gets overloaded with fat and denied of carbohydrates, it changes gears towards producing and burning ketones as primary fuel sources.

Optimal ketone levels offer many health benefits including weight loss, and enhanced physical and mental performances.

Ketosis is a natural effect, and that observed side effect, and that started it all.
Does Ketogenic Diet work?
There are a number of studies on Ketogenic Diet but these are rather small and restricted to certain groups of people. Study methodologies are far from perfect and were conducted over a limited period.
In a study done by Paoli, results support claims that Ketogenic Diet is effective as a weight loss therapy. However, mechanisms underlying the effects of Ketogenic Diet on weight loss are still a subject of hot debate. A number of different hypotheses have been proposed. Paoli proposed the mechanisms behind the weight loss induced with Ketogenic Diet. The investigator claims weight loss is achieved through reduction in appetite due to the higher satiety effect of proteins and fats. Other mechanisms include the effects on appetite control hormones, a possible direct appetite suppressant action of the ketogenic bodies, reduction in lipogenesis (fat production) and increased lipolysis (fat burning), greater metabolic efficiency in consuming fats highlighted by the reduction in the resting respiratory quotient, and increased metabolic costs of gluconeogenesis (glucose production) and thermic effect of proteins.

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In another study by D’Alba and colleagues that included 83 obese patients with a body mass index greater than 35 kg/m², and high glucose and cholesterol levels, Ketogenic Diet for 34 weeks showed beneficial effects. It significantly reduced body weight and body mass index of individuals who advocated the high fat, low carb diet. Levels of triglycerides, LDL cholesterol (the bad fat) and blood glucose were noted to improve together with an increase in the level of HDL cholesterol (the good fat). Other studies would also claim control of blood pressure in patients who underwent the diet.

Control of Blood Sugar and Decreased Insulin Resistance
A small investigation done at Duke University Medical Center recruited overweight participants with Type 2 Diabetes Mellitus and underwent Ketogenic Diet for a 16-week intervention trial. In the 21 subjects that successfully completed the study investigators observed a 16% decrease in Hemoglobin A1c at week 16. Subjects had an average weight loss of 8.7 kg. Additionally, average blood glucose levels decreased a total of 16.6% and average triglyceride levels decreased 41.0%. Overall, most subjects reduced or discontinued their diabetes medications.

Mental Focus
Many people use the ketogenic diet specifically to improve mental performance. Ketones are a great source of fuel for the brain. When you lower carb intake, you avoid big spikes in blood sugar. Together, this can result in improved focus and concentration.

Increased Energy & Normalized Hunger
By giving the body a better and more reliable energy source, one will feel more energized during the day. Fats are shown to be the most effective fuel to burn. On top of that, fat is naturally more satisfying and ends up leaving one fuller or in a satisfied state longer than usual.

Epilepsy
The ketogenic diet has been used since the early 1900s to treat epilepsy successfully. It is still one of the most widely used therapies for children who have uncontrolled epilepsy today. One of the main benefits of ketogenic diet on epilepsy is having fewer medications on board while still offering excellent control of seizures. In an article by Laura Dolson, emerging evidences showed that Ketogenic Diet can also benefit those with other neurological diseases including Parkinson’s Disease, Alzheimer’s Disease, narcolepsy, brain trauma, and amyotrophic lateral sclerosis.

Acne
It is common to experience improvements in the skin when one switches to a Ketogenic Diet. A study conducted relating nutrition and the development of acne showed that there is a physiological and biochemical basis for the use of ketogenic diet for a limited period (30-90 days) with the aim at reducing the ketogenic mechanisms underlying the acne vulgaris and restoring a proper hormonal status.

Ketogenic Diet: Is it safe?
While in theory and experimental studies show that Ketogenic Diet is effective in bringing down the weight, its use must be tamed in the general population. All studies are small and scientific investigations are not well designed and controlled in most. Results of these studies, no matter how promising these are, cannot be applied to the general population.

Ketogenic Diet is obviously not a balanced diet, and medical groups, physicians and nutritionists alike do not recommend the diet in their most recent guidelines. The main point of contention is in the meat itself, literally. Red meat is packed with all the bad fat and could end up clogging arteries in the heart and brain and elsewhere causing heart attacks and strokes. The intake of red meat has been established to cause increases in CVDS, thus the recommendation by experts for its moderate consumption.

The effect of a high fat, low carb diet on lipid levels are conflicting. Some studies have demonstrated improvement in cholesterol levels but some have shown worsening. The studies that have investigated Ketogenic Diet were not only small but were conducted over a short time, too short to determine the long-term effects on hard endpoints like death, heart attacks, and stroke, to name a few parameters in terms of safety.

While blood lipid levels and sugar control are strong determinants of future cardiovascular events, these are not the only factors that contribute to such future catastrophes. Moreover, no studies have been conducted on individuals with CVDS, thus it is not safe to recommend Ketogenic Diet to those afflicted with CVDS.

Some short term side effects have been observed in people subscribing to Ketogenic Diet. Some may have constipation or diarrhea. From studies, people on this diet may have headaches, muscle cramps and general weakness, while some report hallucinations or bad breath.

Long term adverse effects include disturbances in fat metabolism, severe fatty liver and mineral deficiencies. Because of excessive protein in the diet and an imbalance of nutrition, some reported kidney stone formation and even heart muscle weakness called cardiomyopathy.

To Keto or not to Keto?
Though the Ketogenic Diet may be promising and shows a great deal of benefit, one should always consult a physician prior to starting any diet. Diets play the biggest role in staying healthy and living longer. Weight is just one of the determinants of health, and to resort to a dietary regimen to lose weight, one must choose a diet that is effective, sustainable and most importantly, proven to be safe.

References:
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Dr. Jason Santos is a diplomate in cardiology. He had his training in cardiology at the University of Sto. Tomas Hospital and currently training in echocardiography at The Medical City.