

Review of alternative medicine (AM) treatments for diabetes

Abstract

In the US, diabetes is a significant public health issue. It is one of the leading causes of death and number one cause of kidney failure. Even with increased awareness and medical advances, the diabetic trends with the US adult population are not very encouraging. The number of diabetes cases in the US the last twenty years has more than doubled and out of the 37.3 million adults in the US with diabetes, 20% of them don't even know that they have it.¹ Diabetes is a chronic disease with no available cure, medical practitioners and researchers have focused on controlling it with through medicine and lifestyle changes. Diet, exercise and healthy lifestyle are the most important factors on managing diabetes. There are several Alternative Medicine (AM) treatments that are available to manage diabetes today. Diet, exercise, herbs and supplements, yoga and meditation are some of the available AM treatments for diabetes. Herbs and supplements do not come under the purview of the U.S. Food and Drug Administration (FDA) because they are not classified as medicines. Moreover, there are not enough definitive research that proves the efficiency and efficacy of AM treatments. In this paper, I have described AM treatments available today and their impact on diabetes management.

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Introduction

Per US Centers for CDC, 37.3 million or 11.3% of the US population have diabetes and 96 million or 38% of the US adult population have Prediabetes.¹ Diabetes is a chronic health disorder and is the 7th most important cause of death in the US. In the last 20 years, diabetes diagnosis in adults has more than expanded. Since we do not have a cure for diabetes yet, Alternative Medicine (AM) have attempted to cure diabetes through herbs, supplements, and diet, workout and relaxation methods. This paper explores some of the available AM treatments and their efficacy for diabetes.

What is diabetes mellitus?

Diabetes Mellitus is increased intensity of glucose in the blood due to complete or relative insufficiency of Insulin. Diabetes Mellitus (DM) literally means "sweet urine". Digestion is a natural process by the body provides energy for all vital functions. The food we consume is broken down by the body into glucose which is used to fuel all the body functions. Glucose is the main supplier of fuel for the body. After consumption, glucose is immersed in the bloodstream, where cells utilize it for strength and growth. Insulin is required by the cells to utilize glucose in the body. In case of Diabetes Mellitus, either insulin secretion from the pancreas is disturbed or its consumption by the cells. As a result, glucose cannot be used by the body but remains in the blood, leading to hyperglycemia. The excess blood glucose is excreted through the kidneys leading to Glycosuria.

Various types of Diabetes

Type I diabetes mellitus or Juvenile diabetes

- I. Insulin administration is compulsory.
- II. Usually onsets during younger age even though it can occur at any age.
- III. It occurs due to deficiency of insulin because of malfunctioning of beta cells of the pancreas.

The causative factors are:

- I. Genetic factors
- II. Environmental factors – Diet, Stress, Viruses infecting the pancreas

Type II diabetes mellitus

Type II diabetes is more common and it is due to inability of the cells to utilize the Insulin because of impaired functioning of their receptors, a condition called Insulin resistance. For both Type I and Type II diabetes the body is unable to efficiently use glucose in the blood as the main source of fuel. It usually occurs middle age and elderly individuals. This usually occurs after age of 40. Additional insulin is usually not required and the body's hormone insulin level is at near normal or even above normal.

Factors that cause Type II diabetes are:

- I. High Blood Pressure¹
- II. High blood triglyceride levels¹
- III. Gestational diabetes¹
- IV. High Fat diet¹
- V. High Alcohol intake¹
- VI. Sedentary lifestyle¹
- VII. Lack of exercise¹
- VIII. Obesity or being Overweight¹

Common symptoms of diabetes mellitus – type I & II

- I. Excessive urination (Polyuria)
- II. Excessive eating (Polyphagia)
- III. Excessive Thirst (Polydipsia)

- IV. Frozen shoulder
- V. Lethargy
- VI. Unexplained Weight loss
- VII. Fatigue
- VIII. Poor wound healing
- IX. Blurry vision
- X. Infections

Risk factors for diabetes mellitus I

- I. Age: Type II diabetes risk increases with age starting at age of 30.
- II. Alcohol: Alcohol aggravates glucose restraintance in the elderly.
- III. Low birth weight: Infants with low birth weight are at risk for developing Type II diabetes later in their lives.
- IV. Diet: People who eat old-fashioned diets high in fiber have a lower risk of developing Type II diabetes mellitus. High fiber vegetarian diets, have been described to be at low risk of being identified with type II diabetes mellitus. The fibre in foods like peas and beans) slows down the release of glucose in the blood thereby protecting the body from sudden increases in blood glucose.
- V. Fat and Diet: Saturated fat reduces glucose tolerance in the body. Eating food with high mono-unsaturated oils increases the body's tolerance to glucose.
- VI. Genetics: Genetics plays a major role in Type II diabetes. Individuals with a family history of diabetics are more at risk even though not all Type II diabetics have a diabetic family history.
- VII. Gestational diabetes: Gestational diabetes occurs in pregnant women and these women are at an higher risk of developing Type II diabetes later on in life.
- VIII. Obesity: Majority of Type II diabetics are obese and have excess abdominal fat. Individual who are normal weight but with excess abdominal fat are at higher risk even though abdominal fat does not impact insulin secretion in the body.

Diabetes diagnosis

A fasting blood glucose (sugar) lab test is the fast and reliable way to diagnose diabetes. For a fasting sugar blood test, the individual does not take any food for 8 to 12 hours before the blood test. People can test blood sugar levels at home using a glucometer and test strips.

- I. A normal fasting blood sugar level is between 80 and 100 milligrams per deciliter (mg/dl).
- II. An individual with fasting blood sugar level over 126 mg/dl on several days is diabetic.

A blood sugar level of 200 mg/dl or over, two hours after a meal denotes diabetes. Diminished Fasting Glucose (IFG) is the condition where fasting blood sugar levels are in the range of 100 to 126 mg/dl. People with IFG are not diagnosed as diabetic but this condition is not normal.

Review of available alternative medicine (AM) treatments for diabetes

Diet, exercise, herbs and supplements, yoga and meditation are some of the available AM treatments for diabetes.

Diet

- I. Food has a direct correlation with the blood sugar levels and the management of diabetes.
 - II. Diet for a diabetic individual should be customized to all their health conditions and nutritional needs. It should be easy to follow, practical and meet all the needs of the individual.
 - III. To successfully control weight, a diabetic patient should be encouraged to develop life-long, healthy eating and healthy life style habits.
 - IV. Genetics greatly influences the chances of an individual becoming diabetic. If parents are diabetic then one has to be extra careful regarding the weight as soon as they cross 40 years of age. If the person is already obese/overweight by 40 % then they are prone to develop diabetes. So it is important to keep weight under control.
 - V. It is important to regulate the diet as far as possible. Sugar, honey, glucose, sweets and processed food are not recommended for a diabetic individual. A diet with complex carbohydrates like brown rice, beans, oatmeal, wheat, oatmeal, and food with lots of fiber and nutrients will help to keep the blood sugar level under control.
 - VI. A balanced diet will help keep the diabetes under control.
- Diabetic patients should be encouraged to:
- I. Maintaining ideal body weight
 - II. Avoid excess sugar, salt and oily foods
 - III. Take small bites and chew foods thoroughly
 - IV. Eat protein rich food in each meal
 - V. Eat wisely at social gatherings and restaurants
 - VI. Avoid aerated and alcoholic drinks
 - VII. Avoid the use of tobacco and other harmful drugs

Exercise

The first type of AM treatment for diabetic patients is diet and exercise. Diet and physical activity are necessary in managing diabetes. An active lifestyle that includes a healthy diet helps prevent and lessen the symptoms of diabetes. For people without any activity restrictions, the American Diabetes Association (ADA) recommends doing resistance workouts twice per week.² People with Type II diabetes should get at least 150 minutes of moderate to intense aerobic exercise every week. The World Journal of Diabetes Trusted Source study found that physical activity is one of the best ways to manage Type II diabetes.³ Exercise can reduce blood pressure, reduce insulin resistance, and lower dangerously high blood sugar levels. Eventhough ADA makes the same physical activity recommendations for those with Type I diabetes,² people with Type I diabetes should approach physical activity cautiously as they are at a higher risk of hyperglycemia.

Herbs and supplements

Traditional natural supplements and herbs are commonly used in Alternative Medicine (AM) therapies for diabetes. The U.S. Food and Drug Administration (FDA) does not approve or regulate herbs and supplements. There is also no particular investigation that helps solely healing diabetes with herbs or natural supplements. Most support for these substances is not medically backed. It is important that people with illnesses always speak with their doctor about supplements they are considering taking. However, many patients do not know the necessity to as they are told natural supplements are 'natural' and 'non-toxic'. Some of the most popular natural foods and Ayurvedic supplements and healthier foods used for diabetes involve: Aloe vera, chromium, cinnamon, garlic, ginseng, gymnema sylvestre, magnesium, polyphenols, prickly pear cactus, and vanadium.

- I. Aloe Vera: The results of two clinical trials⁴ showed that the participants who took aloe vera for six weeks had diminished fasting blood sugar. These trials included extended use of aloe vera too but since aloe vera acts as a laxative when taken orally, diabetic individuals should use caution.
- II. Chromium: According to one research study, diabetic individuals who took chromium supplement along with their prescription medicine improved the stability of their blood sugar levels.⁵
- III. Cinnamon: A Mayo Clinic study showed that cinnamon can increase one's natural sensitivity to insulin which can be valuable for insulin takers for the longer time. Other studies have found no association in taking cinnamon and insulin effect of sensitivity. If cinnamon is beneficial, its impacts are minimal.
- IV. Garlic: Even though garlic is a considered to control blood sugar, clinical trials in people with Type II diabetes who got garlic did not show changes in blood sugar or insulin levels but found garlic decreased total cholesterol levels and blood pressure levels.
- V. Ginseng: Ginseng is a powerful herbal supplement but according to NCCIH, no existing research shows that ginseng is effective in managing blood sugar.
- VI. Gymnema Sylvestre: Gymnema plant leaf is used as an Ayurvedic treatment for diabetes. There are no clinical studies that support this.
- VII. Magnesium: Magnesium is a mineral found in many nutrients. A 2011 meta-analysis of diabetes investigation associated to magnesium found persons with low magnesium levels were more likely to improve diabetes. Consumption a diet rich in magnesium can help people make their meals healthier and is risk-free. But taking supplements is not mentioned until clinical studies can demonstrate its success.
- VIII. Omega-3: Omega-3 fatty acids are considered "natural good fats." They're noticed in foods like salmon, walnuts, and soybeans. Developments may prevent lower heart disease and triglyceride blood levels. But there is no suggestion they decrease the risk of diabetes or help people achieve sugar level. Omega-3 supplements can collaborate with medicines used to clear the blood.
- IX. Polyphenols: Polyphenols are antioxidants observed in fruits, vegetables, and whole grains. Indication on the effectiveness of a high-polyphenol diet has not generated certain findings.

X. Prickly pear cactus: Also known as nopal, the spiny pear cactus is a plant used in food preparation. It may also have tremendous medicinal effects. But there is no common link between taking nopal and the cure of diabetes.

XI. Vanadium: A few studies show that in very high doses, vanadium may help to increase a person's sensitivity to insulin. Confirmation is not yet conclusive.

Unfortunately, vanadium can affect side effects in high doses and turn out to be toxic to the human body.

Yoga

Yoga asanas (poses) exercises the whole body by stretching the entire skeletal system, spine, joints and tonifies the muscles. Yoga is believed to have a positive impact internal organs, glands, nervous system and this is one of the reasons that researchers are studying the health impact of yoga on various diseases. Studies have been conducted on yoga's ability to strengthen bones, improve balance, stave off mental decline, reduce mental stress and relieve depression. Even though there are no conclusive research available on the impact of yoga on diabetes, several yoga practioners have claimed that the following yoga poses helps control diabetes. Yoga practioners have found the following asanas to have the most impact in controlling diabetes.

Sun salutation

The practice of Suryanamaskara can give a diabetic patient a complete exercise regimen. One round of Sun Salutation consists of twelve postures. It invigorates the whole body by exercising each and every part of the body.

Standing Asanas

- I. Tadasana
- II. Ardhakaticakrasana
- III. Trikonasana

Sitting Asanas

- I. Dandasana
- II. Vajrasana
- III. Baddhakonasana
- IV. Paschimottanasana
- V. Ustrasana
- VI. Gomukhasana
- VII. Ardha Matsyendrasana

VIII. Janu Sirsasana

Prone Asanas (Abdominal lie down position)

- I. Makarasana
- II. Bhujangasana
- III. Salabhasana
- IV. Dhanurasana

- Supine Asanas
- I. Navasana
 - II. Matsyasana
 - III. Suptaveerasana
 - IV. Sarvangasana
 - V. Halasana
 - VI. Savasana
- Pranayama
- I. Vibhaga Pranayama (Sectional Breathing)
 - II. Nadishudi (Balancing Pranayama)
 - III. Suryabedana
 - IV. Bhastrika
 - V. Brahmari
- Mudra Yoga Element (Fingers)
- I. Thumb – Fire “Angushtha”
 - II. Index – Air “Tarjani”
 - III. Middle – Sky “Madhyama”
 - IV. Ring – Prithivi (earth) “Anamika”
 - V. Little – Water “Kanishtha”
 - VI. Chin Mudra
 - VII. Pankaj mudra
 - VIII. Apana Mudra
 - IX. Varuna Mudra
 - X. Yoga Vayathu Mudra
 - XI. Yoga Mudra Linga
 - XII. Sanguthuthu Mudram

Suggestions on how to practice yoga by diabetics

In order to treat Diabetes holistically, the patient must understand the relationship between stress, emotional imbalance, dietary habits, and lifestyle. Begin with simple movements and positions before moving on to more complicated ones. Take appropriate medicinal dosages as and when required. Upon consultation with a physician, one may be able to reduce these dosages after several weeks. Overweight patients can begin with asanas, cleansing processes, pranayama, and relaxation. The movement should be performed slowly and smoothly, extending the limbs and joints and gently compressing the abdomen, without straining. The postures should be held for a considerable amount of time.

Meditation practice

Meditation is effective in maintaining good mental health and in reducing stress. Effects of meditation:

- I. Activates almost all glands; due to reverse circulation of blood during this
- II. Invigorates the facial tissues, the nervous system etc.
- III. Activates whole of abdominal area.

- IV. Activates pancreas, thus regularizing its functioning to secrete insulin in a normal way.
- V. Affects the waist and abdominal area.
- VI. Has great effect on pancreas, adrenal, thyroid and sex glands.
- VII. Corrects disorders of stomach, intestine, liver, kidneys, spleen etc.
- VIII. Develops digestive power; corrects menstrual problems in women

Discussion

The chronic nature and the lack of cure of diabetes makes the controlling and living with diabetes the main focus for diabetic patients. Diet, exercise and healthy lifestyle choices have the biggest impact on controlling diabetes. Since the number of people diagnosed with diabetes has more than doubled in the last twenty years, the changes we have made in our diet, exercise and lifestyle should be studied closely since they may be the main contributing factor for diabetes. Alternative Medicine (AM) has been around for a long time but we have not studied them using the latest research tools and methodologies to prove their effectiveness in current scenario. Since Federal Drug Administration (FDA) does not regulate herbs and supplement, the market is flooded with cures for almost every health condition. This makes researching AM treatments difficult because there is a lack of funding and desire to fully research them. The awareness to fully research AM treatments are gaining popularity, there are still not enough studies done for prove their effectiveness and efficacy.

Conclusion

There is no definite proof that AM treatments have any impact on controlling and managing diabetes. In general, almost all of the AM treatments for diabetes recommend moderation with diet, consistency with exercise and leading a well-balanced happy lifestyle. In the current environment, even if AM recommended practices do not cure or control diabetes, they are worth following to lead a healthy life.

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Conflicts of interest

The author declares that there are no conflicts of interest.

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