Diabetes is a chronic disease that affects millions of people worldwide. But what does it exactly entail?

Actually, there are two main types of Diabetes. This is, by far, the most common type of Diabetes, reaching almost epidemic proportions.

Type I Diabetes (T1DM) generally appears at a young age caused by the destruction of the pancreatic cells in charge of producing insulin.

Type II Diabetes (T2DM) is characterized not by the absence of insulin, but rather by the resistance of the organism to its action. It appears generally at a more advanced age and it is related with a sedentary lifestyle and with a diet excessively high on fat and sugar.

Knowledge on Diabetes evolved in phases:

1869: The German physician Langerhans discovered the “Langerhans islets” which produce insulin in the pancreas.

1926: Discovery of insulin by the Canadians Banting and Best, following treatment with insulin injections of a dog without a pancreas.

1923: The Nobel Prize on Physiology and Medicine was awarded to the discovery of insulin. Diabetes day is commemorated on the 14th of November, the birthday of Frederick Banting.

1921: Foundation of the Associação Protetora dos Diabéticos de Portugal (APDP), the first Diabetic Patient Association in the world.

Diabetes is undisgnosed one of the major threats to public health in the world.

There are 414 million people living with diabetes.

In Portugal, more than one million people live with this disease.

It is expected that these numbers will double in upcoming years.

One out of two adults with diabetes is undiagnosed.

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Diabetes has implications in almost all organs of our body, causing, or exacerbating, different pathologies:

- **Liver**: Higher probability to suffer hepatic problems.

- **Respiratory system**: Sleep apnea or other sleep disturbances increase the predisposition to suffer from diabetes.

- **Cardiovascular system**: One of the major risk factors for the development of cardiovascular diseases.

- **Kidneys**: Predisposition to renal failure - diabetic nephropathy.

- **Reproductive system**: Infertility problems in both men and women. During pregnancy, diabetes can have serious consequences both for the mother and the fetus.

- **Extremities**: Loss of sensitivity in the extremities, chronic inflammation and peripheral vascular disease -- chronic wounds (diabetic foot).

- **Joints**: Risk factor to develop osteoarthritis, characterized by painful and rigid joints.

- **Skin**: Alterations in the skin microbiome that can lead to infections in chronic wounds.

- **Brain**: Increased propensity to suffer from neurodegenerative diseases (like Alzheimer’s disease) and stroke.

- **Cognitive impairments and memory**: Dysregulation of appetite (it affects the normal function of the hypothalamus, the regulatory center of energy balance).

- **Vision**: Diabetic Retinopathy, Cataracts.

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From the diagnostic techniques used by ancient Egyptians up until now, the knowledge on diabetes has evolved dramatically. You don’t need to be a scientist to contribute effectively in fighting diabetes and improving health issues in the population. However, the most efficient therapy consists of following a healthy diet, regular physical exercise, and adopting good sleep habits, together with educational and awareness initiatives.

For instance, research in biomarkers in urine or saliva helps identify people at risk, allowing for preventive interventions. There are also pharmacological and cellular strategies to control type II diabetes, namely with increased activity of mitochondria (the powerhouses of our cells), or the minimization of damage caused to the different organs.