World Health Assembly

Research Report

The Question of:

Measures to prevent the increase in type II diabetes

Introduction

In a world where the focus lies on tackling the problem of huge food shortages and hunger, it might sound contradictory that each year, 1,6 million people die of exactly the opposite disease: diabetes. In the last decades, the diabetes prevalence has risen exponentially, leaving in today's world 8,8% of world's population with this serious disease.

In the United States of America, over 23 million people suffer from diabetes, whereof 90-95% diabetes type II. In addition, another 85 million people suffer from prediabetes. However, these are only the diagnosed people. As researched by the Centers for Disease Control and Prevention (CDC), one out of three adults in the USA has prediabetes. In 2013, approximately 20% of all health costs were addressed to people with diagnosed diabetes. This lead up to a total cost of diagnosed diabetes of an amount of $327 billion US dollars in 2017.

However, diabetes is definitely not only a problem in the US. World Health Organization (WHO) has estimated that every year, 1,6 million people die due to diabetes. More than 80% of these deaths occur in low- or middle-income countries. In developing countries, more than half of the people suffering from diabetes are undiagnosed, as the symptoms are not always clear and noticeable. Furthermore, the amount of people experiencing diabetes is estimated to double by 2030, while it has already almost doubled since 1980. Back then 4,5% of the world population suffered from diabetes, which is now 8,8%. Thus, immediate action has to be taken.

And a fitting solution for this problem is definitely imaginable, as a healthy diet and regular exercise can prevent prediabetes to turn into diabetes. These measures are also sufficient to control diabetes. Moreover, the effects of diabetes decrease the earlier it is diagnosed. Therefore, it is of utter importance we act now to improve knowledge and access to health care as soon as possible.

The Committee

The first World Health Assembly (WHA) conference was convened in 1948, two months after the World Health Organization (WHO) was founded. The WHA works as the brain of the WHO, meaning it is the decision-making body. Its main function is to determine the policies of the organization and it is the highest health policy setting body. The WHO realized it would be difficult to develop a hard working and fast programmes for all health matters requiring international attention during the first year of its existence, and thus accorded high priority to the first WHA for making some key decisions.

The WHA follows the standard rules of procedure, which means it is *not* an ad-hoc committee. In our conference, we will discuss issues related to major health problems and crises which concern an enormous number of people around the world. Furthermore, in our MUN committee, we are not to be concerned with financial clarifications, as long as proposals stay reasonable.

Key Terms

Type II Diabetes

Type II diabetes is a disease where the pancreas produces a hormone called insulin, however, the body does not process this hormone properly. For non-diabetics, insulin makes sure the body cells take up glucose from the blood. This results in a dangerously high blood glucose level, eventually resulting in physical complaints such as kidney failure, blindness, strokes, and fatigue. WHO estimated 422 million adults worldwide to suffer from diabetes type II. This is around 90-95% of all diagnosed diabetes cases.

Insulin

Insulin is a hormone produced in the pancreas that is necessary for the metabolism of carbohydrates and the blood sugar level. With type I diabetes, this hormone is not at all produced. People with type II diabetes do produce this, however, the body cells lack to use it properly. Another function of the hormone insulin is fat storage. As the blood sugar level rises, more insulin is produced by the pancreas and this is used to lower the blood sugar level by converting the glucose-molecules into fat.

Insulin resistance

Insulin resistance is the phenomenon where the body does not react well to the hormone insulin. This happens when the body cells become less sensitive to the hormone, eventually not reacting on it at all. Insulin regulates the conversion of glucose into fats. Therefore, insulin resistance stimulates the development of fatty tissues and therefore can contribute to weight gain.

Prediabetes

Prediabetes is the stadium before diabetes type II. Not all symptoms needed present to diagnose diabetes are there, however, the blood sugar level is abnormally high. Prediabetes is not defined as a disease and as said by the American Diabetes Association should be viewed as a higher risk to diabetes. Prediabetes is very often not diagnosed. In addition, the symptoms don't have to be clear and can even be completely absent. However, it is important to diagnose, whereas with the right adjustments, namely a good diet and regular exercise, in 58% of the cases prediabetes can be prevented to result in diabetes.

General Overview

A brief history

The first notions of diabetes come already from the Egyptians, around 1500 B.C, especially noticing the excessive amount of urine passing through the kidneys. Much later, in 1889, Joseph von Mering and Oskar Minkowski discovered the role of the pancreas in diabetes. In 1910, the hormone insulin was suggested to be the responsible factor to cause diabetes and in 1922, the first person suffering from diabetes was treated with an insulin injection. All these examples are however of type I diabetes, which is the form of diabetes where insulin is not produced at all. It was however not until the beginning of the 21st century, that diabetes type II truly became a problem, as an overload of food became more and more available, and heavily processed foods, high in sugar and fat, as well. In 2016, the World Health Organization came out with a report, on the occasion of world health day, putting this item on the agenda. The report stated for example that since 1980, the number of adults suffering from diabetes almost quadrupled leading to 422 million adults diagnosed with diabetes type II.

What is type two diabetes?

Type II Diabetes is a disease that causes the blood sugar level to rise, due to the fact that the body does not react well on the hormone called insulin, produced by the pancreas. Type II diabetes is the most common form of diabetes, responsible for over 90% of all diagnosed diabetes cases. With this specific form of diabetes, the pancreas still produces insulin, however, the body does not use it properly. Insulin is a necessary hormone that enables glucose to enter cells and eventually to be used as fuel for the cells. In other words, it starts up the 'burning' process of the glucose in a cell, providing it with energy. As a result of glucose not entering the cells, the blood sugar level rises, and all the glucose hopes up in the blood. Because of this, body cells are misfunctioning, which results in health issues such as blurred vision and fatigue but also problems like heart trouble and kidney failure.

Diabetes type II can be treated with medication that aims to control blood sugar levels, blood pressure, and cholesterol levels. However, because the body actually produces enough insulin but only the signal is disturbed, it can also be controlled and prevented by natural means such as clean eating and a sufficient amount of exercise. The effect of a healthy lifestyle and especially healthy eating are immense when it comes to diabetes type II, while it naturally keeps the blood sugar level low and reduces fat.

Causes of type II diabetes

First of all, a greater chance to develop type II diabetes can be hereditary. This does not mean that if one or both of the parents have diabetes, it will automatically be passed on, it simply makes the child more prone to the disease. Also, the change to get diabetes increases over the years. People older than 45 should be tested, as this specific age-group is most likely to develop the disease. The most important cause, however, is a lifestyle. Bad diet and lack of exercise are the biggest causes of the development of diabetes. This is also why diabetes is often associated with obesity.

What is more, the lack of exercise can do great harm to people and eventually cause diabetes. Exercise has several beneficial effects regarding the prevention (or controlment) of diabetes type II. For example, regular exercise makes the cells, especially muscle tissue, more sensitive to insulin, because during exercise, the muscles need more glucose to keep functioning. In addition, exercise increases the blood flow, making more glucose available to the muscle cells. Another benefit of exercise, is that it promotes abdominal fat loss, that is to say the fat stored directly around the organs. This type of fat storage, also known as visceral fat, has been found to increase blood pressure and high blood sugar levels. As a result of exercise, muscles also adopt another form of muscle fiber that is both

more sensitive to insulin. Lastly, exercise also removes glucose from the blood with an entire another mechanism than through insulin, which lowers the blood sugar balance.

Another important factor in developing diabetes is diet. A healthy, diverse lifestyle has a great impact on physical health in general, especially regarding diabetes. Regularly eating foods that contain a high level of fats and sugars make the body more prone to developing insulin resistance. This is because these foods, that is to say heavily processed foods such as fast food and candy, contain a disturbingly high level of either fats or sugars. Especially fat is responsible for insulin resistance. Excess fats hope up inside muscles, spreading breakdown products that block the insulin signaling. So even if there is enough insulin present, it won't work because the signal gets disturbed. This is also why visceral fat is so dangerous: it hopes up around the organs and blocks the insulin signal, thus preventing glucose from entering body cells and cutting off the fuel for the organs to work. For example, this is why kidney failure is often a problem accompanying diabetes or obesity.

How obesity and diabetes became a problem

As mentioned before, diabetes quadrupled over the past four decades. This naturally has to do with the industrialization that took place the past century. Due to industrialization, it became possible to produce foods faster and way cheaper, which for the first time created an overload of available food in (developed) countries. Moreover, heavily processed foods such as fast food, candy, cookies, and soda were produced. Those foods are way higher in sugar, salt, and fat levels, thus way higher in calories. What is more, not all sugars or starches are the same. Processed starches, like white bread and white rice, are broken down by the body way faster than whole wheat products. This results in two things. First of all, because the starches are broken down faster, blood sugar levels rise faster as well. As a result, this glucose is immediately stored by the body as fat, as it is not immediately needed for energy. Therefore, eating processed foods can quickly result in weight gain. The other effect is that these products are not satisfying hunger at all. The starches and sugars are broken down into simple sugars so fast, the blood sugar level remains high even when a lot of insulin is produced. Because of this, hunger is not stilled and we end up in a vicious cycle where we crave more and more sweets.

On the other hand, people started to move less and less, nowadays sitting at their desks behind their computers all day long, while the truly active tasks have largely been taken over by machines.

However, starting a healthier diet is often more easily said than done. In fact, an unhealthy eating pattern can develop a food addiction, which entails the compulsive consumption of certain products, high in either sugar or fat level, that activate the body's reward system. Responsibility for the problem lies thus not only with the individual, but also the government and local authorities that keep advertising, promoting and providing these unhealthy foods. Moreover, these truly unhealthy, diabetes-triggering foods are most of the time cheaper than healthy foods, whereby the government actually encourages their people to buy and consume these unhealthy foods instead of healthy ones. Due to this fact, diabetes is actually a bigger problem in low- and middle-income countries and households.

Major Parties Involved

United States of America

One out of three adults living in the US suffers from diabetes. Almost a quarter of people aged 65+ have diabetes. In the past decades, the diabetes prevalence has doubled from 5,5% in 1980 to 9,3% in 2013. Plus, diabetes is the seventh largest death cause in the country. Thus, diabetes forms a stressing problem, also taking up 20% of all US health care costs. America also has established

multiple NGO's concerning the prevention of diabetes, such as the American Diabetes Association and the Centers for Disease Control and Prevention, which is a governmental body. Other countries with a high diabetes prevalence are China, India, and countries in the Middle-East such as Saudi Arabia.

World Health Organization

The World Health Organization takes great responsibility in the battle against diabetes. The organization aims to find – and stimulates the research into – effective measures to decrease the diabetes prevalence. Therefore they raise awareness on the topic, provide guidelines for diabetes diagnosis and care, plus they provide scientific guidelines for the prevention of diabetes. In 2016, a report was published on the topic of diabetes. Furthermore, WHO has developed a "*Global strategy on diet, physical activity and health",* which consists of a programme that helps to develop a healthy lifestyle, therefore preventing diabetes.

Marshall Islands

This small island group in between Papua New Guinea and Hawaii holds a diabetes prevalence rate of no less than 35%. Causes for this immense rate are the replacement of fish and local foods with processed foods and lack of exercise. Fifty years ago, diabetes was not heard of in this place. The inhabitants were living off the land and locally produced foods. Nowadays, as the population has increased as well, close to 90% of all consumed foods are imported. The islands are simply not big enough to supply the entire community with food. What is more, a significant amount of people there is poor and does not have a large food budget. Therefore, getting enough food is a primary issue of whether it is healthy or not. In order to tackle the problem, the entire lifestyle of the community has to drastically change. It would be a slow process requiring a lot of effort from the community but also a deep understanding of the culture.

Timeline of Events

1500 B.C.	First Known Description of Diabetes Symptoms, Found on Egyptian Papyrus by Physician Hesy-Ra
1910	Sharpey-Schafer Coined the Term Insulin
1915	Strict dieting was promoted in order to treat diabetes for the first time
1916	*The Treatment of Diabetes Mellitus* was published
1922, January 11th	The first person was injected with insulin in order to treat diabetes
1923	The Nobel prize in Physiology and Medicine was awarded to Banting and Macleod for the discovery of insulin
1940	The American Diabetes Association was founded
1964	The first blood glucose test stripes came on the market. After this, multiple treatments in diabetes started to be launched.
1980	First dietary guidelines were published in America
2008	First Physical Activity Guidelines for Americans was published
2010	Several scientific researches show the influence of a healthy eating lifestyle on diabetes.
2016	WHO published their report on diabetes.

Previous attempts to solve the issue

Few steps have been taken in order to prevent diabetes and decrease wherever possible. Several conferences have been held to discuss this issue, for example in 2011 when the General Assembly met on noncommunicable disease prevention and control, which also includes diabetes. This lead to a global action plan that lines out guidelines for member states to take actions on local and global levels.

Furthermore, several action groups have been established. As previously mentioned the American Diabetes Association, but also in a lot of other countries, mostly developed countries, are NGOs trying to improve local health standards concerning diabetes through campaigns and supporting research. For example Diabetes UK, which is an NGO active in the UK, where diabetes is also a large problem: if nothing will be done, half of the UK's population could be obese in 2050.

On a global scale work has been done, too. For example, the International Diabetes Federation has been established. This is a worldwide alliance of over 230 local organizations fighting diabetes. It aims mostly to bring different shake holders into contact with each other in order to improve healthcare, raise awareness and educate both diabetes patients and healthcare providers. What is important to notice, is that the WHO has a lot of status in especially low- and middle-income countries, thus they have a lot of power, that – if effectively used – can do great good to this cause.

The Future

The WHO Global NCD Action Plan due is to expire in 2020. That means that in two years, all their goals should have been reached. Therefore a closer look should be taken on the results already made and what still needs to be done to meet all the goals. Furthermore, on 27 September 2018, the UN General Assembly is to meet in New York to discuss the NCD Action Plan and reflect on the progression made.

Important Decisions a Resolution Must Take

For the resolution the delegates are to make on this issue, few factors are of importance. Firstly, the resolution should focus on more and strong cooperation between the different member states. Knowledge should be shared between the so many local organizations as well as action plans. In addition, more research should be done on the topic. In South-East Asia and Sub-Saharan Africa, thin people are developing diabetes. Thus, there might be factors of influence we do not yet know.

Especially in these low- and middle-income countries, healthcare has to drastically improve. If we can reduce the prevalence of diabetes in high-income countries, this should also be possible in low-income countries. However, the question is if these countries can afford to improve their healthcare availabilities and if they are able to identify people with diabetes, prediabetes or the people who are at higher risk of developing the disease.
Some governments are already recommending the people to eat five pieces of fruit and vegetables a day, however, the grocery stores can simply not provide all these products. To cope with this lack of resources, the delegates have to come up with clever and effective solutions, that fit the countries situation: what works in a high-income country does not necessarily need to work in a low-income country and may not even be possible due to lack of knowledge, resources or money. These countries need better healthcare monitoring, better governance, better health finance models and a more structured database in order to keep track of all people suffering from diabetes.

Another aspect that should be focused on is the responsibility of governments in the issue. Think of for example tax raises on heavily processed foods and products high in sugar or white wheat. Governments can already make a big difference with such legislation or by starting large campaigns and educating the people on the problem and how to prevent it. What should be taken into consideration, is the culture and lifestyle of certain communities where diabetes prevalence is high. Their lives should be drastically changed in order to solve this issue, and these action plans will definitely take up a great amount of time and effort and should be largely supported as money remains a big factor in the problem.

Also with this issue, as with many other issues, education will make a great difference already in preventing diabetes. Educating people on the local and global level, teaching them how to develop a healthy, varying diet low in sugar and fat and how to make sure they get enough exercise will greatly benefit this issue. Hence, the delegates should come up with such campaigns that are effective, efficient and not expensive and that can be carried out in especially low- and middle-income countries.

The means mentioned above are only suggestions. The delegates should feel free to think of creative and different solutions themselves, as this is definitely not the limit.

Further Reading

Information about diabetes
http://www.who.int/diabetes/en/
https://en.wikipedia.org/wiki/Diabetes_mellitus

Global Report on diabetes
http://www.who.int/diabetes/global-report/en/

More about Insulin resistance
https://en.wikipedia.org/wiki/Insulin_resistance

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