Diabetes prevention and control projects

“Every 30 seconds, a leg is lost to diabetes somewhere in the world.”

1 Cover of Lancet vol. 366, no. 9498.

Photo 2011 © Corentin Fohlen / Handicap International
Introduction

Around the world, every minute, six people lose their life to diabetes.

Although high rates of diabetes have typically been associated with wealthy nations, the occurrence of the disease in poorer countries is dramatically increasing. The number of cases in poor countries is expected to increase by 50% by 2030. In India, for example, the number of people with diabetes is set to rise to 80 million by 2030, up from 32 million today. Its incidence is difficult to measure, particularly in the developing world, due to a lack of research in this field. In rich countries, diabetes affects mainly older people, but in poorer countries its incidence is rising among younger people.

The World Report on Disability (WHO/World Bank, 2011), the first of its kind, estimated that noncommunicable diseases (diabetes, cardiovascular diseases, cancer, and chronic respiratory illnesses) account for 66.5% of all years lived with disability in low-income and middle-income countries. Diabetes is now one of the world's major causes of disability.

A Major Economic Impact

In 2009, the International Diabetes Federation estimated that healthcare expenditures on diabetes would account for 11.6% of the total healthcare expenditure in the world in 2010. There is, however, a large disparity in healthcare spending on diabetes between regions and countries. More than 80% of the global expenditures on diabetes are made in the world's economically richest countries, not in the low- and middle-income countries where 70% of people with diabetes will soon live.

The World Health Organization (WHO) predicted net losses in national income from diabetes and cardiovascular disease of $557.7 billion in China, $303.2 billion in the Russian Federation, $336.6 billion in India, $49.2 billion in Brazil, and $2.5 billion in Tanzania between 2005 and 2015.

Figures

- 78% of people with diabetes in Africa have not been diagnosed.
- Europe has the highest rate of type 1 diabetes in children.
- Six out of the world's top ten countries for highest prevalence of diabetes are in the Middle East and North Africa.
- out of every 10 adults in North America is affected by diabetes.
- 12.3% of all deaths in South and Central America are attributable to diabetes.
- Nearly one-fifth of all adults with diabetes in the world live in just seven countries in South East Asia.
- The western Pacific region has the highest number of people with diabetes including 132 million adults.

Source: International Diabetes Federation (http://www.idf.org/diabetesatlas/5e/regional-overviews)
“To fight diabetes is to fight a disabling disease.”

Handicap International launched its campaign against diabetes in 2006, organizing prevention programs and providing care and support to people with diabetes. The organization’s aim is to prevent the onset of the disease and to limit complications for people already affected. Dr. Davide Olchini, Technical Advisor for Non Communicable Diseases, explains more.

Why is Handicap International involved in the prevention and control of diabetes?
Diabetes is fast becoming a major global problem. According to the International Diabetes Federation, 551.8 million people worldwide will have diabetes in 2030. The developing countries in which we work are being affected by a major diabetes epidemic, especially among the poorest populations. Contrary to popular belief, diabetes is not confined to the inhabitants of rich countries.

What’s at risk for affected populations?
It’s important to point out that diabetes is a disabling disease. Diabetic neuropathy and diabetes-induced arteriopathy can cause chronic ulcerations (diabetic foot) which can lead to amputations. The disease can also cause blindness and give rise to strokes, which lead to paralysis, heart and kidney failure, and erection problems. An estimated 20% to 50% of diabetics will suffer from impairments or disabilities. It is therefore extremely important to combat this scourge.

Did Handicap International launch its actions against diabetes recently?
Handicap International launched its campaign against diabetes in 2006, organizing prevention programs and providing care and support to people with diabetes, with help from local partners in seven developing countries: the Philippines, Kenya, Tanzania, Burundi, Nicaragua, Mali and India. Handicap International’s diabetes programs in Nicaragua were transferred to a local organization in 2011.

What steps are you taking to combat diabetes?
To prevent the onset of diabetes, we need to change the way people behave by encouraging them to exercise regularly and eat a healthier diet. This means raising the awareness of the disease in the populations most at risk as well as with educator, and the general public. We are setting up programs to prevent diabetes-related disabilities and to make prevention, care, and rehabilitation services more widely available, responsive, and accessible. To achieve this, the organization is building the capacities of local operators, in terms of organization and training, to promote prevention and enhance the medical case-management of the disease through rehabilitation, for example. We also work to promote the rights of people living with diabetes.

Handicap International’s Actions Against Diabetes

The organization launched several integrated projects to respond to this emerging phenomenon. Our approach centers on disease prevention and, for people already suffering from diabetes, on reducing the onset of disabling complications.
To prevent complications from diabetes, the organization’s actions aim to:

- improve the equipment and organization of primary and community health systems, such as health clinics;
- build the capacities of health professionals (nurses, doctors, etc.) through training in prevention, diagnostics, patient education, and medical follow-up;
- strengthen civil society by helping to set up support groups for people with diabetes where they can share experiences, learn more about the disease, provide each other with mutual support, and advocate better access to health services.

To manage the complications of diabetes, Handicap International primarily focuses on capacity-building for professional pedorthists and orthoprosthesis to case-manage diabetic foot and amputations.

Lastly, the organization performs advocacy work with local authorities to include non-communicable diseases such as diabetes in national and local health policies.

**In 2011, in Burundi, Kenya, Tanzania, the Philippines, and Nicaragua:**

* More than 87,000 people benefited from our prevention and awareness programs.
* More than 70,700 people benefited from medical case-management and access to care.
* Around 4,000 health professionals and workers benefited from training.

**Cost of Our Actions**

- **$5.34** for a hygiene kit (Philippines) to prevent infections, or **$53** to help 10 people perform simple but vital tasks to prevent their health from deteriorating and avoid the onset of disabilities. These kits usually contain items such as gauze, soap, lotion, and a mirror.

- **$48** for 10 prevention sessions, each attended by an average of 50 people. These day-long prevention sessions are organized in the neighborhoods of Davao, in the Philippines, where health professionals test and follow-up visitors.

**Case Study: The Philippines**

Handicap International launched its first program dedicated to diabetes in Davao City, Philippines, in 2007 to tackle an increase in the number of diabetics in the region.

The Philippines has a **prevalence rate of 7.7%**, which is expected to increase.
considerably in the years to come\(^2\). In 2006, the WHO estimated that the number of people with diabetes would triple within 30 years to around 8 million in 2030.

In the region of Davao, the most common type of diabetes, type 2, is the 6\(^{th}\) leading cause of death\(^3\). 70\% of amputations are due to diabetes\(^4\), although many diabetics die after refusing amputation, despite it being the only way to prevent gangrene.

Diabetes is no longer exclusively a disease of the rich. On the contrary, the poorest people are the worst affected, due in particular to rural depopulation. In fact, the urbanization of the population has led to more sedentary lifestyles and less balanced diets, including foods with a higher fat and sugar content and less fresh produce. Genetic factors also have an influence on the onset of diabetes.

∞ Worrying Socioeconomic Effects

Poor people find it harder to access care and so only consult a doctor when the disease has reached an advanced stage, requiring more costly treatment. Unfortunately, many poor people cannot afford this treatment.

Overwhelmed by this phenomenon, medical facilities in the region of Davao can no longer cope with the growing number of diabetics. In 2006, the mayor of Davao City, Rodrigo Duterte, said: “I appeal to everyone living in Davao to support the fight against diabetes and its disabling complications by taking greater care and adopting a healthier lifestyle. Health professionals also need to get involved by providing care and treatment adapted to diabetics.”

∞ Handicap International’s Actions in the Philippines

Since 2007, Handicap International has been running a pilot program in Davao dedicated to cardiovascular diseases that includes a diabetes component.

Handicap International set up a project in 10 barangays (neighborhoods) in Davao City to reduce the prevalence of diabetes and to help those already affected. The conclusive results of the three-year pilot project (2007-2010) prompted Handicap International to extend its actions to all 182 barangays in densely populated Davao City. The aim was to develop and enhance the local health system to improve the prevention, control, and case-management of patients with diabetes-related impairments and disabilities. The project is based on five key areas:

1/ Training and coordination of local and national health operators

\(^2\) Source: International Diabetes Federation (IDF).
\(^4\) Southern Philippines Medical Center (SPMC) surgery unit.
Handicap International's activities include:
- equipping care and testing facilities;
- training health staff to detect and case-manage people with diabetes;
- organizing screening sessions and consultations dedicated to diabetes and therapeutic education sessions for patients; and
- providing professionals with specialized tools (patient registers, screening questionnaires, follow-up booklets for diabetics, education kits for nutritionists, diabetic foot care kits, etc.).

2/ Setting up support groups for diabetics

Handicap International helps groups of people with diabetes to set up awareness and support groups. These groups enable people to share their experiences, and support, assist and raise the awareness of diabetics and their friends and family. They also engage with local authorities to enhance access to care under optimal conditions.

3/ Orthopaedic-fitting of amputees

Handicap International set up a rehabilitation center to produce prostheses and orthoses. Managed by the Davao Jubilee Foundation, it has operated independently since 2004. Handicap International, which continued to train technicians until 2009, is working to build links between this center and the city health authority to integrate it into the local patient referral network.

4/ Diabetic foot

Handicap International performs specific diabetic foot prevention and amputation risk education activities. The organization has trained local health professionals to raise the awareness of and case-manage people with diabetes. It has also developed adapted prostheses.

5/ Awareness campaigns

Handicap International runs public awareness campaigns to promote healthy lifestyles and explain how to prevent diabetes and other noncommunicable diseases, such as cardiovascular disease. Scheduled to run for four more years, Handicap International's diabetes program will be transferred to the local health system in 2013, when it will operate an independent service for the case-management of diabetes and, more generally, cardiovascular diseases.
Testimony

Yolanda, diabetic, released from a downward spiral

Yolanda, 52, from Davao City, in the Philippines, has been diabetic for 16 years. She discovered she was diabetic after a sudden drop in weight. Ten years later, she also had to have her leg amputated to save her life, after injuring her foot. Often called “diabetic foot”, this is a regular complication of diabetes caused by an infected foot injury. This leads to an ulcer that, if left untreated, develops into a generalized infection. The only way to avoid gangrene is amputation. Her mother is also a diabetic and an amputee, and her example enabled Yolanda to accept this ultimate solution. She already knew there was no alternative and that it was a question of life and death.

Yolanda’s illness rapidly dragged the rest of her family into a downward spiral. She works in the accounts department of a small company, and her wages are the family’s only fixed income. With a mother, husband and three children to care for, her salary is barely enough to feed everyone, and she still needs to pay her treatment costs.

Living with diabetes is hard for poor people. The risks arising from the illness are increased by the lack of access to drugs, care and medical consultations. Yolanda needs to take an oral treatment but the drugs are expensive. Her glycaemia needs to be controlled regularly too and she still needs to fit her visits to the medical center around her work schedule. She has only been able to take part in one discussion group for diabetics. These meetings are organized by Handicap International to allow diabetics to share useful information and learn how to live better lives with the disease.

Today, what she desperately needs most is a new, lighter, better-fitting prosthesis. This will allow her to avoid new injuries and remain active. Just a few more fitting sessions and her life will seem a little easier.

(Testimony gathered in the Philippines, September 2011)

Handicap International’s other diabetes programs

In addition to the Philippines, Handicap International has set up diabetes projects in several countries since 2007, including Mali and India, where its activities have been completed. In 2011, the organization continued to run projects in Burundi, Tanzania, and Kenya, three African countries where a regional effort to promote a comprehensive and integrated approach to diabetes prevention and control has been set up. The diabetes program in Nicaragua has been transferred to one of Handicap International’s local partner organizations.

East Africa

Launched in 2009, the East Africa regional project is supported by a regional coordinator. The project promotes the decentralization of diabetes care and brings services closer to communities. It helps

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5 Handicap International provides technical support to the Davao Jubilee Foundation, which fits orthopaedic devices.
6 Source: Handicap International.
groups for people with diabetes implement adapted physical activities and public awareness-raising events. These activities are run directly by Handicap International’s teams in Kenya and Burundi, while in Tanzania they are managed by local partner organizations.7

∞ Kenya

Handicap International is working with the Kenyan Ministry of Health to improve the quality of life for people with diabetes by reducing the onset of disabling complications. The project aims to build the capacities of the country’s health system to provide quality diabetes care. To achieve this, the organization conducts diabetes prevention and awareness campaigns and capacity-building for members of the Kitale Diabetes Association. By performing consultations in district hospitals, the organization improves care quality and reduces the socio-economic impact of the disease on people with diabetes by providing them with easier and faster access to care. These “one stop shops” provide diabetes patients with comprehensive care from a multidisciplinary team.8

∞ Burundi

The population and public authorities in Burundi know very little about diabetes. Health professionals themselves are not adequately trained on this disease. Following advocacy by NGOs, and with the support of the World Health Organization (WHO), Burundi took its first practical step towards combating the disease by adopting a national diabetes control policy in 2007, before announcing the launch of the Integrated National Program on Non-Communicable Chronic Diseases on World Diabetes Day, 14 November 2008.

Diabetes remains a potentially explosive disease in Burundi, due to the large number of risk factors. The fight has only just begun. To meet these needs, Handicap International is working to improve the quality of life of people with diabetes and to reduce the incidence of diabetes-related complications. Diabetes prevention is also a major goal.

∞ Tanzania

Coordinated by Handicap International, this project is managed by local partners. As in Kenya and Burundi, it is heavily focused on enhancing regional expertise. It helps the Ministry for Health improve the services available to diabetics, builds the capacities of diabetic people’s support groups, and performs diabetes awareness and prevention activities. Handicap International has built a diabetes clinic in Monduli, supplies medical and laboratory equipment, produces mass awareness resources (posters, brochures and banners, etc.), and supports awareness-raising activities.

All current diabetes projects will run until 2013.

Diabetes Around the World in 2011
(source WHO 2011)

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7 Source: Handicap International.
8 Diabetes prevention and control projects in countries with limited resources - 2009 (Handicap International).
...and 2030

Table 3.0. Regional estimates for diabetes (20-79 years), 2011 and 2030

<table>
<thead>
<tr>
<th>REGION</th>
<th>2011</th>
<th>2030</th>
<th>Increase in the no. of people with diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Population</td>
<td>No. of people with diabetes</td>
<td>Comparative diabetes prevalence</td>
</tr>
<tr>
<td>AFR</td>
<td>207</td>
<td>147</td>
<td>4.5</td>
</tr>
<tr>
<td>EUR</td>
<td>653</td>
<td>528</td>
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</tr>
<tr>
<td>MENA</td>
<td>356</td>
<td>326</td>
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<tr>
<td>NAC</td>
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<td>377</td>
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<tr>
<td>SAGA</td>
<td>289</td>
<td>25.1</td>
<td>9.2</td>
</tr>
<tr>
<td>SEA</td>
<td>856</td>
<td>71.6</td>
<td>9.2</td>
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<tr>
<td>WP</td>
<td>1,544</td>
<td>131.9</td>
<td>8.3</td>
</tr>
<tr>
<td>World</td>
<td>4,407</td>
<td>366.2</td>
<td>8.5</td>
</tr>
</tbody>
</table>

(Source International Diabetes Federation http://www.idf.org/diabetesatlas/5e/regional-overviews)

Sources

- International Diabetes Federation (IDF): [www.idf.org](http://www.idf.org)
- World Health Organization (WHO): [www.who.int/fr/index.html](http://www.who.int/fr/index.html)
- PDA: [www.diabetesphil.org](http://www.diabetesphil.org)
- Diabetes Atlas: [www.diabetesatlas.org](http://www.diabetesatlas.org)
What is diabetes?

Diabetes occurs when the pancreas does not secrete enough insulin, a hormone that regulates the concentration of sugar in the blood, or if the body does not use the insulin it produces properly. It is a chronic disease that can be treated but not cured. Most people remain diabetic for the rest of their lives.

Different types of diabetes

<table>
<thead>
<tr>
<th>Type 1 diabetes</th>
<th>Type 2 diabetes</th>
<th>Gestational diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previously known as insulin-dependent or juvenile-onset diabetes. People with type 1 diabetes produce very little or no insulin and need injections of insulin every day. The reason why this occurs is not fully understood and, based on what we know today, it is not preventable.</td>
<td>Previously called non-insulin dependent diabetes or adult-onset diabetes, it is characterized by insulin resistance. Type 2 diabetes accounts for 85% to 95% of all cases of diabetes worldwide. Genetic factors play an important role in the onset of the disease, often associated with a sedentary lifestyle and a poorly balanced diet. Onset can be prevented or delayed by being physically active and eating a balanced diet.</td>
<td>This is a form of hyperglycemia that occurs or is detected for the first time during pregnancy. The symptoms are the same as those for type 2 diabetes. It is often detected during prenatal check-ups and not at the onset of symptoms.</td>
</tr>
<tr>
<td>Symptoms: frequent urination (polyuria), excessive thirst (polydipsia), increased hunger, weight loss, blurred vision, and tiredness. The onset of these symptoms is sometimes sudden and dramatic.</td>
<td>Symptoms are the same as those for type 1 diabetes but are often milder. It can therefore remain undetected for many years, after the onset of complications.</td>
<td>It can lead to complications during pregnancy and childbirth, a potential source of disabilities for children.</td>
</tr>
<tr>
<td>Until recently confined to adults, this type of diabetes now occurs among children.</td>
<td></td>
<td>Women with GDM and their offspring are at an increased risk of developing type 2 diabetes later in life (up to ten or so years).</td>
</tr>
</tbody>
</table>

Natural history of type 2 diabetes

Type 2 diabetes mainly affects people over 30 but children and teenagers are increasingly at risk. If there is a hereditary factor, it is exacerbated by a lack of physical exercise, a diet rich in fat and sugar, excess weight and obesity. The symptoms may go unnoticed for several years and it is often diagnosed at the onset of complications. The most common natural histories are:

### People at risk
- Physically inactive
- Family history
- Overweight, obese
- Low or high birth weight
- Diabetes during pregnancy

### Glucose intolerance
- Pre-diabetes

### Uncomplicated diabetes
- High levels of glucose in the blood
- No symptoms OR
- Thirsty, hungry
- Frequent urination
- Tiredness, sickness or faintness
- Blurred vision

### Complicated diabetes
- High levels of glucose in the blood
- Chronic ulcer
- Amputation
- Blindness
- Hemiplegia
- Arthritis of the legs
- Heart failure
- Kidney failure
- Impotence
Diabetes risk factors

There are multiple personal risk factors for type 2 diabetes: genetic, hereditary, advancing age, excess weight, obesity, diet rich in fats and sugars, lack of physical activity, low birth weight (linked to different factors such as maternal malnutrition, tobacco, and complications during pregnancy) or gestational diabetes. Environmental factors also play role, such as urbanization, town planning, and the availability of sports facilities, agri-food, and restaurant practices, etc.
Complications of Diabetes

Unless a patient is given proper medical treatment, diabetes can cause irreversible complications. Hyperglycemia is a common complication of uncontrolled diabetes. It can result in long-term damage to various organs. It can damage the heart, blood vessels, eyes, kidneys, and nerves:

- It increases the risk of heart disease and stroke, a potential source of hemiplegia or multi-infarct dementia. 50% of diabetics die from a cardiovascular disease.

- Diabetic neuropathy is damage to the nerves as a result of diabetes, and affects up to 50% of people with diabetes. Common symptoms are tingling, pain, numbness, or weakness in the feet and hands.

- Among the most common complications is "diabetic foot" which increases the chance of foot ulcers and eventual foot or leg amputation or even the death of the patient.

- Diabetic foot disorders are caused by damage to the nerves (neuropathy) associated with damage to the arteries (arteriopathy) leading to a loss of sensation and a decreased flow of blood and oxygen to body tissue, particularly the extremities.

- Diabetic retinopathy is an important cause of blindness, and occurs as a result of long-term accumulated damage to the small blood vessels in the retina. After 15 years of diabetes, approximately 2% of people become blind, and about 10% develop severe visual impairment.

- 10-20% of people with diabetes die of kidney failure.

- Ulcers must be treated to avoid amputation. In 85% of cases, amputation could be avoided.

- The overall risk of dying among people with diabetes is at least double the risk of their peers without diabetes.

9 Source: Handicap International